RERR IAAA of Mathematics
Report | Exposition | References | Research

SuperHyperDomination

Ideas | Approaches | Accessibility | Availability

Dr. Henry Garrett

Report | Exposition | References | Research #22 2023

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

Mathematician | Author | Scientist | Puzzler | Main Account is in Twitter: @DrHenryGarrett (www.twitter.com/DrHenryGarrett) | Amazon: https://www.amazon.com/author/drhenrygarrett | Website: DrHenryGarrett.wordpress.com

In this scientific research book, there are some scientific research chapters on "Extreme [illegible] SuperHyper[illegible]" and "Neutrosophic [illegible] SuperHyper[illegible]" about some scientific researches on [illegible] SuperHyper[illegible] by two (Extreme/Neutrosophic) notions, namely, Extreme [illegible] SuperHyper[illegible] and Neutrosophic [illegible] SuperHyper[illegible]. With scientific researches on the basic properties, the scientific research book starts to make Extreme [illegible] SuperHyper[illegible] theory and Neutrosophic SuperHyper[illegible] theory more (Extremely/Neutrosophicly) understandable.

Some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in the following by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3230 readers in Scribd. It's titled "Beyond Neutrosophic Graphs" and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory.

[Ref] Henry Garrett, (2022). "Beyond Neutrosophic Graphs", Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 978-1-59973-725-6 (http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf).

Also, some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in the following by Henry Garrett (2022) which is indexed by Google Scholar and has more than 4117 readers in Scribd. It's titled "Neutrosophic Duality" and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and SuperHyperDominating in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It's smart to consider a set but acting on its complement that what's done in this research book which is popular in the terms of high readers in Scribd.

[Ref] Henry Garrett, (2022). "Neutrosophic Duality", Florida: GLOBAL KNOW- LEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (http://fs.unm.edu/NeutrosophicDuality.pdf).

RERR IAAA of Mathematics

Report | Exposition | References | Research

SuperHyperDominating

Ideas | Approaches | Accessibility | Availability

Dr. Henry Garrett

Report | Exposition | References | Research #22 2023

RERR IAAA of Mathematics

Report | Exposition | References | Research

SuperHyperDominating

Ideas | Approaches | Accessibility | Availability

Dr. Henry Garrett

Report | Exposition | References | Research #22 2023

Contents

List of Figures

List of Tables

CHAPTER 1

ABSTRACT

In this scientific research book, there are some scientific research chapters on "Extreme SuperHyperDomination" and "Neutrosophic SuperHyperDomination" about some scientific research on SuperHyperDomination by two (Extreme/Neutrosophic) notions, namely, Extreme SuperHyperDomination and Neutrosophic SuperHyperDomination. With scientific research on the basic scientific research properties, the scientific research book starts to make Extreme SuperHyperDomination theory and Neutrosophic SuperHyperDomination theory more (Extremely/Neutrosophicly) understandable.

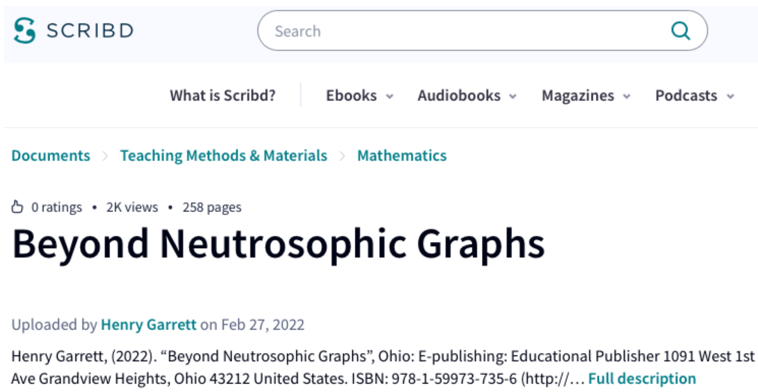
In the some chapters, in some researches, new setting is introduced for new SuperHyperNotions, namely, a SuperHyperDomination and Neutrosophic SuperHyperDomination . Two different types of SuperHyperDefinitions are debut for them but the scientific research goes further and the SuperHyperNotion, SuperHyperUniform, and SuperHyperClass based on that are well-defined and well-reviewed. The literature review is implemented in the whole of this research. For shining the elegancy and the significancy of this research, the comparison between this SuperHyperNotion with other SuperHyperNotions and fundamental SuperHyperNumbers are featured. The definitions are followed by the examples and the instances thus the clarifications are driven with different tools. The applications are figured out to make sense about the theoretical aspect of this ongoing research. The "Cancer's Recognition" are the under scientific research to figure out the challenges make sense about ongoing and upcoming research. The special case is up. The cells are viewed in the deemed ways. There are different types of them. Some of them are individuals and some of them are well-modeled by the group of cells. These types are all officially called "SuperHyperVertex" but the relations amid them all officially called "SuperHyperEdge". The frameworks "SuperHyperGraph" and "Neutrosophic SuperHyperGraph" are chosen and elected to scientific research about "Cancer's Recognition". Thus these complex and dense SuperHyperModels open up some avenues to scientific research on theoretical segments and "Cancer's Recognition". Some avenues are posed to pursue this research. It's also officially collected in the form of some questions and some problems. Assume a SuperHyperGraph. Then $\delta-$SuperHyperDomination is a maximal of SuperHyperVertices with a maximum cardinality such that either of the following expressions hold for the (Neutrosophic) cardinalities of SuperHyperNeighbors of $s \in S$: there are $|S \cap N(s)| > |S \cap (V \setminus N(s))| + \delta$; and $|S \cap N(s)| < |S \cap (V \setminus N(s))| + \delta$. The first Expression, holds if S is an $\delta-$SuperHyperOffensive. And the second Expression, holds if S is an $\delta-$SuperHyperDefensive; a Neutrosophic $\delta-$SuperHyperDomination is a maximal Neutrosophic of SuperHyperVertices with maximum Neutrosophic cardinality such that

either of the following expressions hold for the Neutrosophic cardinalities of SuperHyperNeighbors of $s \in S$ there are: $|S \cap N(s)|_{Neutrosophic} > |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta$; and $|S \cap N(s)|_{Neutrosophic} < |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta$. The first Expression, holds if S is a Neutrosophic $\delta-$SuperHyperOffensive. And the second Expression, holds if S is a Neutrosophic $\delta-$SuperHyperDefensive It's useful to define a "Neutrosophic" version of a SuperHyperDomination . Since there's more ways to get type-results to make a SuperHyperDomination more understandable. For the sake of having Neutrosophic SuperHyperDomination, there's a need to "redefine" the notion of a "SuperHyperDomination ". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values. Assume a SuperHyperDomination . It's redefined a Neutrosophic SuperHyperDomination if the mentioned Table holds, concerning, "The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph" with the key points, "The Values of The Vertices & The Number of Position in Alphabet", "The Values of The SuperVertices&The maximum Values of Its Vertices", "The Values of The Edges&The maximum Values of Its Vertices", "The Values of The HyperEdges&The maximum Values of Its Vertices", "The Values of The SuperHyperEdges&The maximum Values of Its Endpoints". To get structural examples and instances, I'm going to introduce the next SuperHyperClass of SuperHyperGraph based on a SuperHyperDomination . It's the main. It'll be disciplinary to have the foundation of previous definition in the kind of SuperHyperClass. If there's a need to have all SuperHyperDomination until the SuperHyperDomination, then it's officially called a "SuperHyperDomination" but otherwise, it isn't a SuperHyperDomination . There are some instances about the clarifications for the main definition titled a "SuperHyperDomination ". These two examples get more scrutiny and discernment since there are characterized in the disciplinary ways of the SuperHyperClass based on a SuperHyperDomination . For the sake of having a Neutrosophic SuperHyperDomination, there's a need to "redefine" the notion of a "Neutrosophic SuperHyperDomination" and a "Neutrosophic SuperHyperDomination ". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values. Assume a Neutrosophic SuperHyperGraph. It's redefined "Neutrosophic SuperHyperGraph" if the intended Table holds. And a SuperHyperDomination are redefined to a "Neutrosophic SuperHyperDomination" if the intended Table holds. It's useful to define "Neutrosophic" version of SuperHyperClasses. Since there's more ways to get Neutrosophic type-results to make a Neutrosophic SuperHyperDomination more understandable. Assume a Neutrosophic SuperHyperGraph. There are some Neutrosophic SuperHyperClasses if the intended Table holds. Thus SuperHyperPath, SuperHyperDomination, SuperHyperStar, SuperHyperBipartite, SuperHyperMultiPartite, and SuperHyperWheel, are "Neutrosophic SuperHyperPath", "Neutrosophic SuperHyperDomination", "Neutrosophic SuperHyperStar", "Neutrosophic SuperHyperBipartite", "Neutrosophic SuperHyperMultiPartite", and "Neutrosophic SuperHyperWheel" if the intended Table holds. A SuperHyperGraph has a "Neutrosophic SuperHyperDomination" where it's the strongest [the maximum Neutrosophic value from all the SuperHyperDomination amid the maximum value amid all SuperHyperVertices from a SuperHyperDomination .] SuperHyperDomination . A graph is a SuperHyperUniform if it's a SuperHyperGraph and the number of elements of SuperHyperEdges are the same. Assume a Neutrosophic SuperHyperGraph. There are some SuperHyperClasses as follows. It's SuperHyperPath if it's only one SuperVertex as intersection amid two given SuperHyperEdges with two exceptions; it's SuperHyperDomination if it's only one SuperVertex as intersection amid two given SuperHyperEdges; it's SuperHyperStar it's only one SuperVertex as intersection amid all SuperHyperEdges; it's SuperHyperBipartite it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming two separate sets, has no SuperHyperEdge in common; it's SuperHyperMultiPartite it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming multi separate sets, has no SuperHyperEdge in common; it's a SuperHyperWheel if it's only one SuperVertex as intersection amid two given SuperHyperEdges and one SuperVertex has one SuperHyperEdge with any common SuperVertex. The SuperHyperModel proposes the specific designs and the specific architectures. The SuperHyperModel is officially called "SuperHyperGraph" and "Neutrosophic SuperHyperGraph". In this SuperHyperModel, The "specific" cells and "specific group" of cells are SuperHyperModeled as "SuperHyperVertices" and the common and intended properties between "specific" cells and "specific group" of cells are SuperHyperModeled as "SuperHyperEdges". Sometimes, it's useful to have some degrees of determinacy, indeterminacy, and neutrality to have more precise SuperHyperModel which in this case the SuperHyperModel is called "Neutrosophic". In the future research, the foundation will be based on the "Cancer's Recognition" and the results and the definitions will be introduced in redeemed ways. The recognition of the cancer in the long-term function. The specific region has been assigned by the model [it's called SuperHyperGraph] and the long cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be Neutrosophic SuperHyperGraph] to have convenient perception on what's happened and what's done. There are some specific models, which are well-known and they've got the names, and some SuperHyperGeneral SuperHyperModels. The moves and the traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a Neutrosophic SuperHyperPath(-/SuperHyperDomination, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the longest SuperHyperDomination or the strongest SuperHyperDomination in those Neutrosophic SuperHyperModels. For the longest SuperHyperDomination, called SuperHyperDomination, and the strongest SuperHyperDomination, called Neutrosophic SuperHyperDomination, some general results are introduced. Beyond that in SuperHyperStar, all possible SuperHyperPaths have only two SuperHyperEdges but it's not enough since it's essential to have at least three SuperHyperEdges to form any style of a SuperHyperDomination. There isn't any formation of any SuperHyperDomination but literarily, it's the deformation of any SuperHyperDomination. It, literarily, deforms and it doesn't form. A basic familiarity with SuperHyperGraph theory and Neutrosophic SuperHyperGraph theory are proposed.

Keywords: SuperHyperGraph, (Neutrosophic) SuperHyperDomination, Cancer's Recognition

AMS Subject Classification: 05C17, 05C22, 05E45

In the some chapters, in some researches, new setting is introduced for new SuperHyperNotion, namely, Neutrosophic SuperHyperDomination . Two different types of SuperHyperDefinitions are debut for them but the scientific research goes further and the SuperHyperNotion, SuperHyper-Uniform, and SuperHyperClass based on that are well-defined and well-reviewed. The literature review is implemented in the whole of this research. For shining the elegancy and the significancy of this research, the comparison between this SuperHyperNotion with other SuperHyperNotions and fundamental SuperHyperNumbers are featured. The definitions are followed by the examples and the instances thus the clarifications are driven with different tools. The applications are figured out to make sense about the theoretical aspect of this ongoing research. The "Cancer's Neutrosophic Recognition" are the under scientific research to figure out the challenges make sense about ongoing and upcoming research. The special case is up. The cells are viewed in the deemed ways. There are different types of them. Some of them are individuals and some of them are well-modeled by the group of cells. These types are all officially called "SuperHyperVertex" but the relations amid them all officially called "SuperHyperEdge". The frameworks "SuperHyperGraph" and "Neutrosophic SuperHyperGraph" are chosen and elected to scientific research about "Cancer's Neutrosophic Recognition". Thus these complex and dense SuperHyperModels open up some avenues to scientific research on theoretical segments and "Cancer's Neutrosophic Recognition". Some avenues are posed to pursue this research. It's also officially collected in the form of some questions and some problems. Assume a SuperHyperGraph. Then an "$\delta-$SuperHyperDomination" is a maximal SuperHyperDomination of SuperHyperVertices with maximum cardinality such that either of the following expressions hold for the (Neutrosophic) cardinalities of SuperHyperNeighbors of $s \in S$: $|S \cap N(s)| > |S \cap (V \setminus N(s))| + \delta,$ $|S \cap N(s)| < |S \cap (V \setminus N(s))| + \delta.$ The first Expression, holds if S is an "$\delta-$SuperHyperOffensive". And the second Expression, holds if S is an "$\delta-$SuperHyperDefensive"; a"Neutrosophic $\delta-$SuperHyperDomination" is a maximal Neutrosophic SuperHyperDomination of SuperHyperVertices with maximum Neutrosophic cardinality such that either of the following expressions hold for the Neutrosophic cardinalities of SuperHyperNeighbors of $s \in S$: $|S \cap N(s)|_{Neutrosophic} > |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta,$ $|S \cap N(s)|_{Neutrosophic} < |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta.$ The first Expression, holds if S is a "Neutrosophic $\delta-$SuperHyperOffensive". And the second Expression, holds if S is a "Neutrosophic $\delta-$SuperHyperDefensive". It's useful to define "Neutrosophic" version of SuperHyperDomination . Since there's more ways to get type-results to make SuperHyperDomination more understandable. For the sake of having Neutrosophic SuperHyperDomination, there's a need to "redefine" the notion of "SuperHyperDomination ". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values. Assume a SuperHyperDomination . It's redefined Neutrosophic SuperHyperDomination if the mentioned Table holds, concerning, "The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph" with the key points, "The Values of The Vertices & The Number of Position in Alphabet", "The Values of The SuperVertices&The maximum Values of Its Vertices", "The Values of The Edges&The maximum Values of Its Vertices", "The Values of The HyperEdges&The maximum Values of Its Vertices", "The Values of The SuperHyperEdges&The maximum Values of Its Endpoints". To get structural examples and instances, I'm going to introduce the next SuperHyperClass of SuperHyperGraph based on SuperHyperDomination . It's the main. It'll be disciplinary to have the foundation of previous definition in the kind of SuperHyperClass. If there's a need to have all SuperHyperDomination until the SuperHyperDomination, then it's officially called "SuperHyperDomination" but otherwise, it isn't SuperHyperDomination . There are some instances about the clarifications for the main definition titled "SuperHyperDomination ". These two examples get more scrutiny and discernment since there are characterized in the disciplinary ways of the SuperHyperClass based on SuperHyperDomination . For the sake of having Neutrosophic SuperHyperDomination, there's a need to "redefine" the notion of "Neutrosophic SuperHyperDomination" and "Neutrosophic SuperHyperDomination ". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values. Assume a Neutrosophic SuperHyperGraph. It's redefined "Neutrosophic SuperHyperGraph" if the intended Table holds. And SuperHyperDomination are redefined "Neutrosophic SuperHyperDomination" if the intended Table holds. It's useful to define "Neutrosophic" version of SuperHyperClasses. Since there's more ways to get Neutrosophic type-results to make Neutrosophic SuperHyperDomination more understandable. Assume a Neutrosophic SuperHyperGraph. There are some Neutrosophic SuperHyperClasses if the intended Table holds. Thus SuperHyperPath, SuperHyperDomination, SuperHyperStar, SuperHyperBipartite, SuperHyperMultiPartite, and SuperHyperWheel, are "Neutrosophic SuperHyperPath", "Neutrosophic SuperHyperDomination", "Neutrosophic SuperHyperStar", "Neutrosophic SuperHyperBipartite", "Neutrosophic SuperHyperMultiPartite", and "Neutrosophic SuperHyperWheel" if the intended Table holds. A SuperHyperGraph has "Neutrosophic SuperHyperDomination" where it's the strongest [the maximum Neutrosophic value from all SuperHyperDomination amid the maximum value amid all SuperHyperVertices from a SuperHyperDomination .] SuperHyperDomination . A graph is SuperHyperUniform if it's SuperHyperGraph and the number of elements of SuperHyperEdges are the same. Assume a Neutrosophic SuperHyperGraph. There are some SuperHyperClasses as follows. It's SuperHyperPath if it's only one SuperVertex as intersection amid two given SuperHyperEdges with two exceptions; it's SuperHyperDomination if it's only one SuperVertex as intersection amid two given SuperHyperEdges; it's SuperHyperStar it's only one SuperVertex as intersection amid all SuperHyperEdges; it's SuperHyperBipartite it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming two separate sets, has no SuperHyperEdge in common; it's SuperHyperMultiPartite it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming multi separate sets, has no SuperHyperEdge in common; it's SuperHyperWheel if it's only one SuperVertex as intersection amid two given SuperHyperEdges and one SuperVertex has one SuperHyperEdge with any common SuperVertex. The SuperHyperModel proposes the specific designs and the specific architectures. The SuperHyperModel is officially called "SuperHyperGraph" and "Neutrosophic SuperHyperGraph". In this SuperHyperModel, The "specific" cells and "specific group" of cells are SuperHyperModeled as "SuperHyperVertices" and the common and intended properties between "specific" cells and "specific group" of cells are SuperHyperModeled as "SuperHyperEdges". Sometimes, it's useful to have some degrees of determinacy, indeterminacy, and neutrality to have more precise SuperHyperModel which in this case the SuperHyperModel is called "Neutrosophic". In the future research, the foundation will be based on the "Cancer's Neutrosophic Recognition" and the results and the definitions will be introduced in redeemed ways. The Neutrosophic recognition of the cancer in the long-term function. The specific region has been assigned by the model [it's called SuperHyperGraph] and the long cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be Neutrosophic SuperHyperGraph] to have convenient perception on what's happened and what's done. There are some specific models, which are well-known and they've got the names, and some SuperHyperGeneral SuperHyperModels. The moves and the traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a Neutrosophic SuperHyperPath(-/SuperHyperDomination, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the longest SuperHyperDomination or the strongest SuperHyperDomination in those Neutrosophic SuperHyperModels. For the longest SuperHyperDomination, called SuperHyperDomination,



and the strongest SuperHyperDomination, called Neutrosophic SuperHyperDomination, some general results are introduced. Beyond that in SuperHyperStar, all possible SuperHyperPaths have only two SuperHyperEdges but it's not enough since it's essential to have at least three SuperHyperEdges to form any style of a SuperHyperDomination. There isn't any formation of any SuperHyperDomination but literarily, it's the deformation of any SuperHyperDomination. It, literarily, deforms and it doesn't form. A basic familiarity with SuperHyperGraph theory and Neutrosophic SuperHyperGraph theory are proposed.

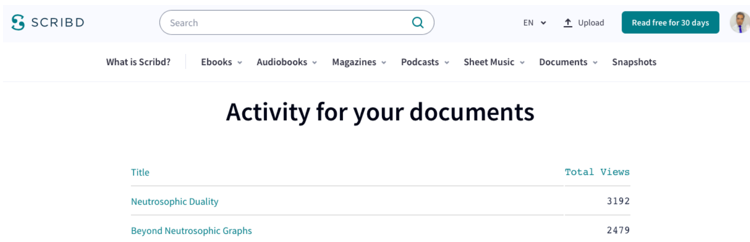
Keywords: Neutrosophic SuperHyperGraph, Neutrosophic SuperHyperDomination, Cancer's Neutrosophic Recognition

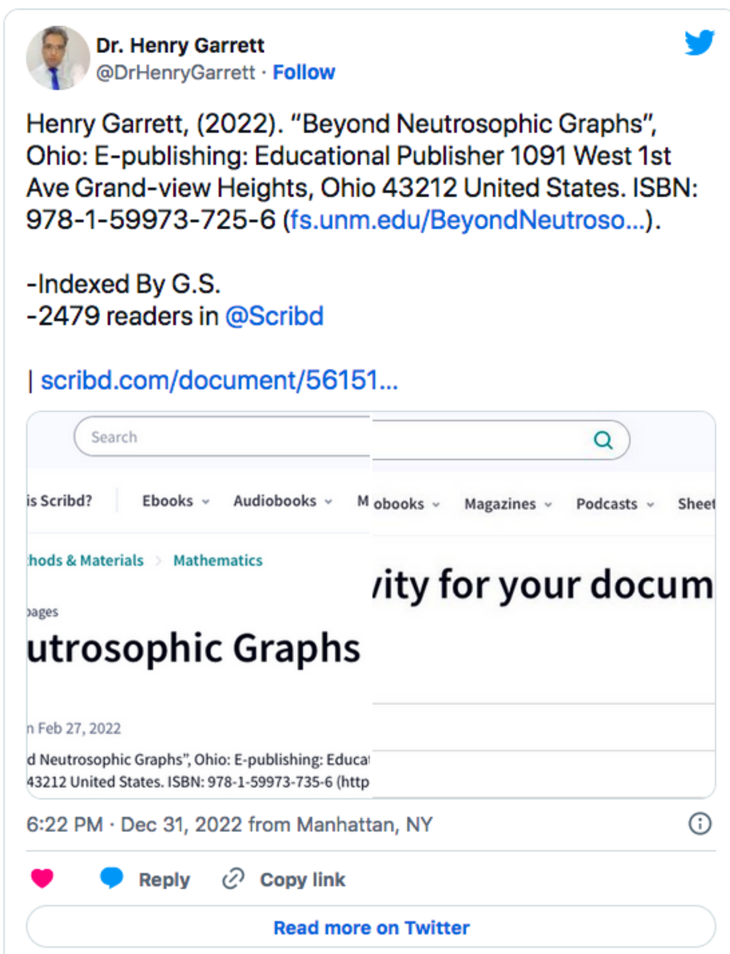
AMS Subject Classification: 05C17, 05C22, 05E45

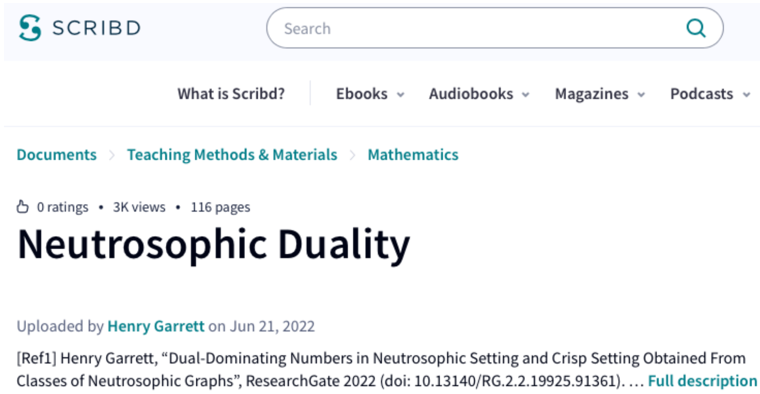
Some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in the following by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3181 readers in Scribd. It's titled "Beyond Neutrosophic Graphs" and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory.

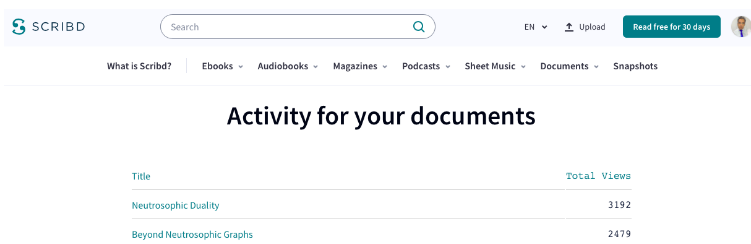
[Ref] Henry Garrett, (2022). "*Beyond Neutrosophic Graphs*", Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 978-1-59973-725-6 (http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf).
[Ref] Henry Garrett, (2022). "*Beyond Neutrosophic Graphs*", Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 978-1-59973-725-6 (http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf).

Also, some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in the following by Henry Garrett (2022) which is indexed by Google Scholar and has more than 4060 readers in Scribd. It's titled "Neutrosophic Duality" and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and


SCRIBD
Search
EN
Upload
Read free for 30 days
What is Scribd?
Ebooks
Audiobooks
Magazines
Podcasts
Sheet Music
Documents
Snapshots
Activity for your documents
Title
Total Views
Neutrosophic Duality
3192
Beyond Neutrosophic Graphs
2479


Dr. Henry Garrett
@DrHenryGarrett · Follow
Henry Garrett, (2022). "Beyond Neutrosophic Graphs", Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grand-view Heights, Ohio 43212 United States. ISBN: 978-1-59973-725-6 (fs.unm.edu/BeyondNeutroso...).
-Indexed By G.S.
-2479 readers in @Scribd
| scribd.com/document/56151...
Search
is Scribd?
Ebooks
Audiobooks
obooks
Magazines
Podcasts
Sheet
hods & Materials
Mathematics
ity for your docum
pages
utrosophic Graphs
n Feb 27, 2022
d Neutrosophic Graphs", Ohio: E-publishing: Educat
43212 United States. ISBN: 978-1-59973-735-6 (http
6:22 PM · Dec 31, 2022 from Manhattan, NY
Reply
Copy link
Read more on Twitter

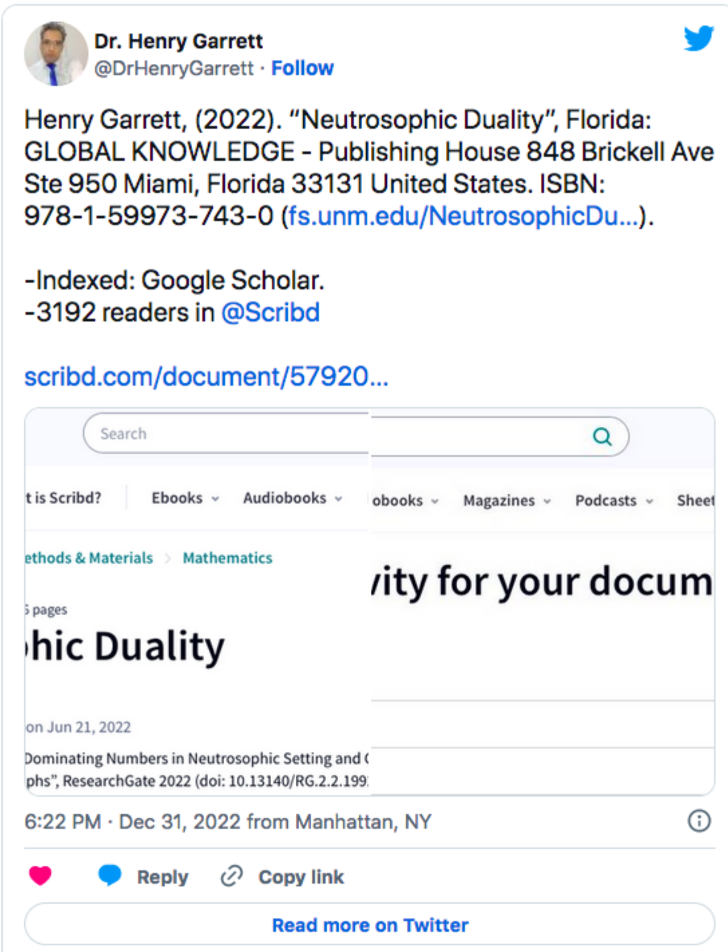




SuperHyperDomination in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It's smart to consider a set but acting on its complement that what's done in this research book which is popular in the terms of high readers in Scribd.

[Ref] Henry Garrett, (2022). "*Neutrosophic Duality*", Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (http://fs.unm.edu/NeutrosophicDuality.pdf).

[Ref] Henry Garrett, (2022). "*Neutrosophic Duality*", Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (http://fs.unm.edu/NeutrosophicDuality.pdf).


Dr. Henry Garrett
@DrHenryGarrett · Follow
Henry Garrett, (2022). "Neutrosophic Duality", Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (fs.unm.edu/NeutrosophicDu...).
-Indexed: Google Scholar.
-3192 readers in @Scribd
scribd.com/document/57920...
Search
t is Scribd?
Ebooks
Audiobooks
obooks
Magazines
Podcasts
Sheet
ethods & Materials
Mathematics
/ity for your docum
hic Duality
on Jun 21, 2022
Dominating Numbers in Neutrosophic Setting and
phs", ResearchGate 2022 (doi: 10.13140/RG.2.2.199
6:22 PM · Dec 31, 2022 from Manhattan, NY
Reply
Copy link
Read more on Twitter

CHAPTER 2

BACKGROUND

There are some scientific researches covering the topic of this research. In what follows, there are some discussion and literature reviews about them date back on January 22, 2023.
First article is titled “properties of SuperHyperGraph and neutrosophic SuperHyperGraph” in **Ref.** [**HG1**] by Henry Garrett (2022). It’s first step toward the research on neutrosophic SuperHyperGraphs. This research article is published on the journal “Neutrosophic Sets and Systems” in issue 49 and the pages 531-561. In this research article, different types of notions like dominating, resolving, coloring, Eulerian(Hamiltonian) neutrosophic path, n-Eulerian(Hamiltonian) neutrosophic path, zero forcing number, zero forcing neutrosophic- number, independent number, independent neutrosophic-number, clique number, clique neutrosophic-number, matching number, matching neutrosophic-number, girth, neutrosophic girth, 1-zero-forcing number, 1-zero- forcing neutrosophic-number, failed 1-zero-forcing number, failed 1-zero-forcing neutrosophic-number, global- offensive alliance, t-offensive alliance, t-defensive alliance, t-powerful alliance, and global-powerful alliance are defined in SuperHyperGraph and neutrosophic SuperHyperGraph. Some Classes of SuperHyperGraph and Neutrosophic SuperHyperGraph are cases of research. Some results are applied in family of SuperHyperGraph and neutrosophic SuperHyperGraph. Thus this research article has concentrated on the vast notions and introducing the majority of notions.
The seminal paper and groundbreaking article is titled “neutrosophic co-degree and neutrosophic degree alongside chromatic numbers in the setting of some classes related to neutrosophic hypergraphs” in **Ref.** [**HG2**] by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on general forms without using neutrosophic classes of neutrosophic SuperHyperGraph. It’s published in prestigious and fancy journal is entitled “Journal of Current Trends in Computer Science Research (JCTCSR)” with abbreviation “J Curr Trends Comp Sci Res” in volume 1 and issue 1 with pages 06-14. The research article studies deeply with choosing neutrosophic hypergraphs instead of neutrosophic SuperHyperGraph. It’s the breakthrough toward independent results based on initial background.
The seminal paper and groundbreaking article is titled “Super Hyper Dominating and Super Hyper Resolving on Neutrosophic Super Hyper Graphs and Their Directions in Game Theory and Neutrosophic Super Hyper Classes” in **Ref.** [**HG3**] by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on fundamental SuperHyperNumber and using neutrosophic SuperHyperClasses of neutrosophic SuperHyperGraph. It’s published in prestigious and fancy journal is entitled “Journal of Mathematical Techniques and Computational Mathematics(JMTCM)” with abbreviation “J

Math Techniques Comput Math" in volume 1 and issue 3 with pages 242-263. The research article studies deeply with choosing directly neutrosophic SuperHyperGraph and SuperHyperGraph. It's the breakthrough toward independent results based on initial background and fundamental SuperHyperNumbers.

In some articles are titled "0039 | Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph" in **Ref.** [**HG4**] by Henry Garrett (2022), "0049 | (Failed)1-Zero-Forcing Number in Neutrosophic Graphs" in **Ref.** [**HG5**] by Henry Garrett (2022), "Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer's Recognition as the Model in The Setting of (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG6**] by Henry Garrett (2022), "Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Neutrosophic Failed SuperHyperClique inside Neutrosophic SuperHyperGraphs Titled Cancer's Recognition" in **Ref.** [**HG7**] by Henry Garrett (2022), "Neutrosophic Version Of Separates Groups Of Cells In Cancer's Recognition On Neutrosophic SuperHyperGraphs" in **Ref.** [**HG8**] by Henry Garrett (2022), "The Shift Paradigm To Classify Separately The Cells and Affected Cells Toward The Totality Under Cancer's Recognition By New Multiple Definitions On the Sets Polynomials Alongside Numbers In The (Neutrosophic) SuperHyperMatching Theory Based on SuperHyperGraph and Neutrosophic SuperHyperGraph" in **Ref.** [**HG9**] by Henry Garrett (2022), "Breaking the Continuity and Uniformity of Cancer In The Worst Case of Full Connections With Extreme Failed SuperHyperClique In Cancer's Recognition Applied in (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG10**] by Henry Garrett (2022), "Neutrosophic Failed SuperHyperStable as the Survivors on the Cancer's Neutrosophic Recognition Based on Uncertainty to All Modes in Neutrosophic SuperHyperGraphs" in **Ref.** [**HG11**] by Henry Garrett (2022), "Extremism of the Attacked Body Under the Cancer's Circumstances Where Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG12**] by Henry Garrett (2022), "(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG13**] by Henry Garrett (2022), "Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints" in **Ref.** [**HG14**] by Henry Garrett (2022), "Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond" in **Ref.** [**HG15**] by Henry Garrett (2022), "(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well- SuperHyperModelled (Neutrosophic) SuperHyperGraphs " in **Ref.** [**HG16**] by Henry Garrett (2022), "Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints" in **Ref.** [**HG12**] by Henry Garrett (2022), "Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG17**] by Henry Garrett (2022), "Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints" in **Ref.** [**HG18**] by Henry Garrett (2022),"(Neutrosophic) SuperHyperModeling of Cancer's Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances" in **Ref.** [**HG19**] by Henry Garrett (2022), "(Neutrosophic) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer's Recognitions And Related (Neutrosophic) SuperHyperClasses" in **Ref.** [**HG20**] by Henry Garrett (2022), "SuperHyperGirth on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer's Recognitions" in **Ref.** [**HG21**] by Henry Garrett (2022), "Some

SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs and SuperHyperGraphs Alongside Applications in Cancer's Treatments" in **Ref.** [**HG22**] by Henry Garrett (2022), "SuperHyperDomination and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses" in **Ref.** [**HG23**] by Henry Garrett (2022), "SuperHyperMatching By (R-)Definitions And Polynomials To Monitor Cancer's Recognition In Neutrosophic SuperHyperGraphs" in **Ref.** [**HG24**] by Henry Garrett (2023), "The Focus on The Partitions Obtained By Parallel Moves In The Cancer's Extreme Recognition With Different Types of Extreme SuperHyperMatching Set and Polynomial on (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG25**] by Henry Garrett (2023), "Extreme Failed SuperHyperClique Decides the Failures on the Cancer's Recognition in the Perfect Connections of Cancer's Attacks By SuperHyperModels Named (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG26**] by Henry Garrett (2023), "Indeterminacy On The All Possible Connections of Cells In Front of Cancer's Attacks In The Terms of Neutrosophic Failed SuperHyperClique on Cancer's Recognition called Neutrosophic SuperHyperGraphs" in **Ref.** [**HG27**] by Henry Garrett (2023), "Perfect Directions Toward Idealism in Cancer's Neutrosophic Recognition Forwarding Neutrosophic SuperHyperClique on Neutrosophic SuperHyperGraphs" in **Ref.** [**HG28**] by Henry Garrett (2023), "Demonstrating Complete Connections in Every Embedded Regions and Sub-Regions in the Terms of Cancer's Recognition and (Neutrosophic) SuperHyperGraphs With (Neutrosophic) SuperHyperClique" in **Ref.** [**HG29**] by Henry Garrett (2023), "Different Neutrosophic Types of Neutrosophic Regions titled neutrosophic Failed SuperHyperStable in Cancer's Neutrosophic Recognition modeled in the Form of Neutrosophic SuperHyperGraphs" in **Ref.** [**HG30**] by Henry Garrett (2023), "Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG31**] by Henry Garrett (2023), "Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints" in **Ref.** [**HG32**] by Henry Garrett (2023), "(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG33**] by Henry Garrett (2023), "Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond" in **Ref.** [**HG34**] by Henry Garrett (2022), "(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG35**] by Henry Garrett (2022), "Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG36**] by Henry Garrett (2022), "Basic Neutrosophic Notions Concerning SuperHyperDomination and Neutrosophic SuperHyperResolving in SuperHyperGraph" in **Ref.** [**HG37**] by Henry Garrett (2022), "Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG)" in **Ref.** [**HG38**] by Henry Garrett (2022), there are some endeavors to formalize the basic SuperHyperNotions about neutrosophic SuperHyperGraph and SuperHyperGraph.

Some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in **Ref.** [**HG39**] by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3181 readers in Scribd. It's titled "Beyond Neutrosophic Graphs" and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory.

Also, some scientific studies and scientific researches about neutrosophic graphs, are proposed

as book in **Ref.** [**HG40**] by Henry Garrett (2022) which is indexed by Google Scholar and has more than 4060 readers in Scribd. It's titled "Neutrosophic Duality" and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and SuperHyperDomination in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It's smart to consider a set but acting on its complement that what's done in this research book which is popular in the terms of high readers in Scribd. See the seminal scientific researches [**HG1**; **HG2**; **HG3**]. The formalization of the notions on the framework of Extreme Failed SuperHyperClique theory, Neutrosophic Failed SuperHyperClique theory, and (Neutrosophic) SuperHyperGraphs theory at [**HG4**; **HG5**; **HG6**; **HG7**; **HG8**; **HG9**; **HG10**; **HG11**; **HG12**; **HG13**; **HG14**; **HG15**; **HG16**; **HG17**; **HG18**; **HG19**; **HG20**; **HG21**; **HG22**; **HG23**; **HG24**; **HG25**; **HG26**; **HG27**; **HG28**; **HG29**; **HG30**; **HG31**; **HG32**; **HG33**; **HG34**; **HG35**; **HG36**; **HG37**; **HG38**]. Two popular scientific research books in Scribd in the terms of high readers, 2638 and 3363 respectively, on neutrosophic science is on [**HG39**; **HG40**].

Bibliography

HG1 [1] Henry Garrett, "*Properties of SuperHyperGraph and Neutrosophic SuperHyperGraph*", Neutrosophic Sets and Systems 49 (2022) 531-561 (doi: 10.5281/zenodo.6456413). (http://fs.unm.edu/NSS/NeutrosophicSuperHyperGraph34.pdf). (https://digitalrepository.unm.edu/nss_journal/vol49/iss1/34).

HG2 [2] Henry Garrett, "*Neutrosophic Co-degree and Neutrosophic Degree alongside Chromatic Numbers in the Setting of Some Classes Related to Neutrosophic Hypergraphs*", J Curr Trends Comp Sci Res 1(1) (2022) 06-14.

HG3 [3] Henry Garrett, "*Super Hyper Dominating and Super Hyper Resolving on Neutrosophic Super Hyper Graphs and Their Directions in Game Theory and Neutrosophic Super Hyper Classes*", J Math Techniques Comput Math 1(3) (2022) 242-263.

HG4 [4] Garrett, Henry. "*0039 | Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph.*" CERN European Organization for Nuclear scientific research - Zenodo, Nov. 2022. CERN European Organization for Nuclear Research, https://doi.org/10.5281/zenodo.6319942. https://oa.mg/work/10.5281/zenodo.6319942

HG5 [5] Garrett, Henry. "*0049 | (Failed)1-Zero-Forcing Number in Neutrosophic Graphs.*" CERN European Organization for Nuclear scientific research - Zenodo, Feb. 2022. CERN European Organization for Nuclear Research, https://doi.org/10.13140/rg.2.2.35241.26724. https://oa.mg/work/10.13140/rg.2.2.35241.26724

HG6 [6] Henry Garrett, "*Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer's Recognition as the Model in The Setting of (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010308 (doi: 10.20944/preprints202301.0308.v1).

HG7 [7] Henry Garrett, "*Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Neutrosophic Failed SuperHyperClique inside Neutrosophic SuperHyperGraphs Titled Cancer's Recognition*", Preprints 2023, 2023010282 (doi: 10.20944/preprints202301.0282.v1).

HG8 [8] Henry Garrett, "*Neutrosophic Version Of Separates Groups Of Cells In Cancer's Recognition On Neutrosophic SuperHyperGraphs*", Preprints 2023, 2023010267 (doi: 10.20944/preprints202301.0267.v1).

HG9 [9] Henry Garrett, "*The Shift Paradigm To Classify Separately The Cells and Affected Cells Toward The Totality Under Cancer's Recognition By New Multiple Definitions On the Sets Polynomials Alongside Numbers In The (Neutrosophic) SuperHyperMatching Theory Based on SuperHyperGraph and Neutrosophic SuperHyperGraph*", Preprints 2023, 2023010265 (doi: 10.20944/preprints202301.0265.v1).

HG10 [10] Henry Garrett, "*Breaking the Continuity and Uniformity of Cancer In The Worst Case of Full Connections With Extreme Failed SuperHyperClique In Cancer's Recognition Applied in (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010262,(doi: 10.20944/preprints202301.0262.v1).

HG11 [11] Henry Garrett, "*Neutrosophic Failed SuperHyperStable as the Survivors on the Cancer's Neutrosophic Recognition Based on Uncertainty to All Modes in Neutrosophic SuperHyperGraphs*", Preprints 2023, 2023010240 (doi: 10.20944/preprints202301.0240.v1).

HG12 [12] Henry Garrett, "*Extremism of the Attacked Body Under the Cancer's Circumstances Where Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010224, (doi: 10.20944/preprints202301.0224.v1).

HG13 [13] Henry Garrett, "*(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1).

HG14 [14] Henry Garrett, "*Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints*", Preprints 2023, 2023010088 (doi: 10.20944/preprints202301.0088.v1).

HG15 [15] Henry Garrett, "*Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond*", Preprints 2023, 2023010044

HG16 [16] Henry Garrett, "*(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010043 (doi: 10.20944/preprints202301.0043.v1).

HG17 [17] Henry Garrett, *"Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs"*, Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1).

HG18 [18] Henry Garrett, *"Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints"*, Preprints 2023, 2023010088 (doi: 10.20944/preprints202301.0088.v1).

HG19 [19] Henry Garrett, *"(Neutrosophic) SuperHyperModeling of Cancer's Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances"*, Preprints 2022, 2022120549 (doi: 10.20944/preprints202212.0549.v1).

HG20 [20] Henry Garrett, "*(Neutrosophic) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer's Recognitions And Related (Neutrosophic) SuperHyperClasses*", Preprints 2022, 2022120540 (doi: 10.20944/preprints202212.0540.v1).

HG21 [21] Henry Garrett, "*SuperHyperCycle on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer's Recognitions*", Preprints 2022, 2022120500 (doi: 10.20944/preprints202212.0500.v1).

HG22 [22] Henry Garrett, "*Some SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs and SuperHyperGraphs Alongside Applications in Cancer's Treatments*", Preprints 2022, 2022120324 (doi: 10.20944/preprints202212.0324.v1).

HG23 [23] Henry Garrett, "*SuperHyperDomination and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses*", Preprints 2022, 2022110576 (doi: 10.20944/preprints202211.0576.v1).

HG24 [24] Henry Garrett,"*SuperHyperMatching By (R-)Definitions And Polynomials To Monitor Cancer's Recognition In Neutrosophic SuperHyperGraphs*", ResearchGate 2023,(doi: 10.13140/RG.2.2.35061.65767).

HG25 [25] Henry Garrett,"*The Focus on The Partitions Obtained By Parallel Moves In The Cancer's Extreme Recognition With Different Types of Extreme SuperHyperMatching Set and Polynomial on (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.18494.15680).

HG26 [26] Henry Garrett,"*Extreme Failed SuperHyperClique Decides the Failures on the Cancer's Recognition in the Perfect Connections of Cancer's Attacks By SuperHyperModels Named (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.32530.73922).

HG27 [27] Henry Garrett,"*Indeterminacy On The All Possible Connections of Cells In Front of Cancer's Attacks In The Terms of Neutrosophic Failed SuperHyperClique on Cancer's Recognition called Neutrosophic SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.15897.70243).

HG28 [28] Henry Garrett,"*Perfect Directions Toward Idealism in Cancer's Neutrosophic Recognition Forwarding Neutrosophic SuperHyperClique on Neutrosophic SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.30092.80004).

HG29 [29] Henry Garrett,"*Demonstrating Complete Connections in Every Embedded Regions and Sub-Regions in the Terms of Cancer's Recognition and (Neutrosophic) SuperHyperGraphs With (Neutrosophic) SuperHyperClique*", ResearchGate 2023, (doi: 10.13140/RG.2.2.23172.19849).

HG30 [30] Henry Garrett,"*Different Neutrosophic Types of Neutrosophic Regions titled neutrosophic Failed SuperHyperStable in Cancer's Neutrosophic Recognition modeled in the Form of Neutrosophic SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.17385.36968).

HG31 [31] Henry Garrett, "*Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.28945.92007).

HG32 [32] Henry Garrett, "*Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints*", ResearchGate 2023, (doi: 10.13140/RG.2.2.11447.80803).

HG33 [33] Henry Garrett, "*(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.35774.77123).

HG34 [34] Henry Garrett, "*Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond*", ResearchGate 2022, (doi: 10.13140/RG.2.2.36141.77287).

HG35 [35] Henry Garrett, "*(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs*", ResearchGate 2022, (doi: 10.13140/RG.2.2.29430.88642).

HG36 [36] Henry Garrett, "*Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs*", ResearchGate 2022, (doi: 10.13140/RG.2.2.11369.16487).

HG37 [37] Henry Garrett, *"Basic Neutrosophic Notions Concerning SuperHyperDomination and Neutrosophic SuperHyperResolving in SuperHyperGraph"*, ResearchGate 2022 (doi: 10.13140/RG.2.2.29173.86244).

HG38 [38] Henry Garrett, "*Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG)*", ResearchGate 2022 (doi: 10.13140/RG.2.2.25385.88160).

HG39 [39] Henry Garrett, (2022). "*Beyond Neutrosophic Graphs*", Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 979-1-59973-725-6 (http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf).

HG40 [40] Henry Garrett, (2022). "*Neutrosophic Duality*", Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (http://fs.unm.edu/NeutrosophicDuality.pdf).

| Book #108
| Title: SuperHyperDomination
#Latest_Updates
#The_Links
| Available at WordPress Preprints_org ResearchGate Scribd academia ZENODO_ORG Twitter LinkedIn Amazon googlebooks GooglePlay
–

#Latest_Updates

#The_Links

| Book #108

|Title: SuperHyperDomination

| Available at WordPress ResearchGate Scribd academia ZENODO_ORG Twitter LinkedIn Amazon googlebooks GooglePlay

–

| Publisher |
(Paperback): https://www.amazon.com/dp/-
(Hardcover): https://www.amazon.com/dp/-
(Kindle Edition): https://www.amazon.com/dp/-

–

| ISBN |
(Paperback): -
(Hardcover): -
(Kindle Edition): CC BY-NC-ND 4.0
(EBook): CC BY-NC-ND 4.0

–

| Print length |
(Paperback): - pages
(Hardcover): - pages
(Kindle Edition): - pages
(E-Book): 418 pages

–

#Latest_Updates

#The_Links

| ResearchGate: https://www.researchgate.net/publication/-

| WordPress: https://drhenrygarrett.wordpress.com/2023/02/18/SuperHyperDomination/

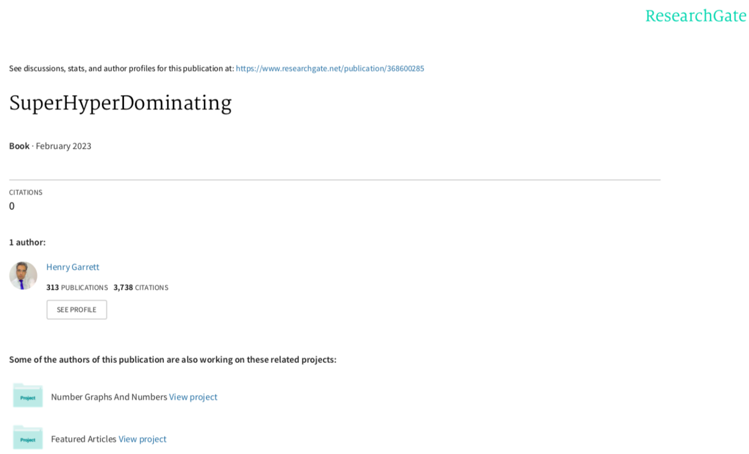
@Scribd: https://www.scribd.com/document/-

| academia: https://www.academia.edu/-

| ZENODO_ORG: https://zenodo.org/record/-

| googlebooks: https://books.google.com/books/about?id=-

| GooglePlay: https://play.google.com/store/books/details?id=-


ResearchGate

See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/368600285

SuperHyperDominating

Book · February 2023

CITATIONS
0

1 author:

Henry Garrett
313 PUBLICATIONS 3,738 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:

Number Graphs And Numbers View project

Featured Articles View project

Figure 2.1: "#108th Book" || SuperHyperDomination February 2023 License: CC BY-NC-ND 4.0 Print length: 418 pages Project: Neutrosophic SuperHyperGraphs and SuperHyperGraphs

SuperHyperDomination (Published Version)

The Link:

https://drhenrygarrett.wordpress.com/2023/02/18/SuperHyperDomination/

–

Posted by Dr. Henry Garrett

February 18, 2023

Posted in 0108 | SuperHyperDomination

Tags:
Applications, Applied Mathematics, Applied Research, Cancer, Cancer's Recognitions, Combinatorics, Edge, Edges, Graph Theory, Graphs, Latest Research, Literature Reviews, Modeling, Neutrosophic Graph, Neutrosophic Graph Theory, Neutrosophic Science, Neutrosophic SuperHyperClasses, Neutrosophic SuperHyperGraph, Neutrosophic SuperHyperGraph Theory, neutrosophic SuperHyperGraphs, Neutrosophic SuperHyperDomination, Open Problems, Open Questions, Problems, Pure Math, Pure Mathematics, Questions, Real-World Applications, Recent Research, Recognitions, Research, scientific research Article, scientific research Articles, scientific research Book, scientific research Chapter, scientific research Chapters, Review, SuperHyperClasses, SuperHyperEdges, SuperHyperGraph, SuperHyperGraph Theory, SuperHyperGraphs, SuperHyperDomination, SuperHyperModeling, SuperHyperVertices, Theoretical Research, Vertex, Vertices.

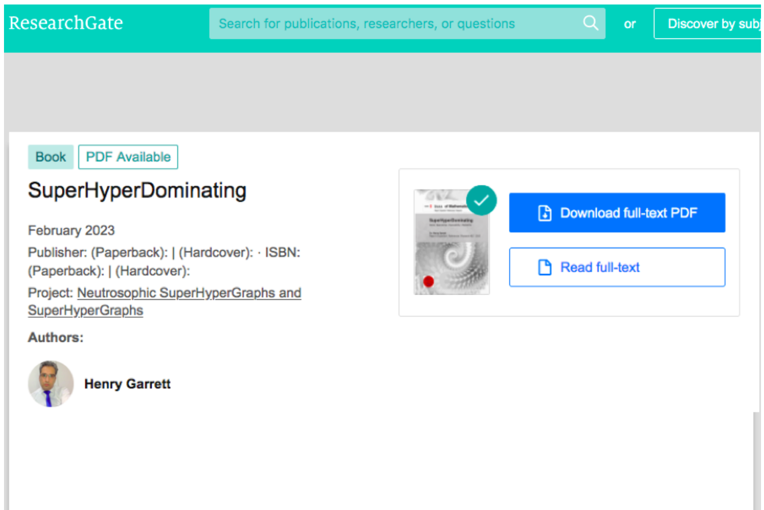


Figure 2.2: "#108th Book" || SuperHyperDomination February 2023 License: CC BY-NC-ND 4.0 Print length: 418 pages Project: Neutrosophic SuperHyperGraphs and SuperHyperGraphs

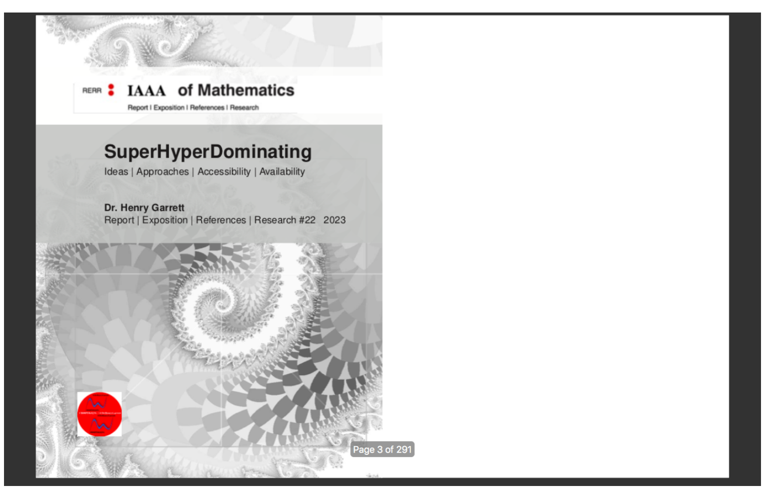


Figure 2.3: "#108th Book" || SuperHyperDomination February 2023 License: CC BY-NC-ND 4.0 Print length: 418 pages Project: Neutrosophic SuperHyperGraphs and SuperHyperGraphs

In this scientific research book, there are some scientific research chapters on "Extreme SuperHyperDomination" and "Neutrosophic SuperHyperDomination" about some researches on Extreme SuperHyperDomination and neutrosophic SuperHyperDomination.

CHAPTER 3

Acknowledgements

The author is going to express his gratitude and his appreciation about the brains and their hands which are showing the importance of words in the framework of every wisdom, knowledge, arts, and emotions which are streaming in the lines from the words, notions, ideas and approaches to have the material and the contents which are only the way to flourish the minds, to grow the notions, to advance the ways and to make the stable ways to be amid events and storms of minds for surviving from them and making the outstanding experiences about the tools and the ideas to be on the star lines of words and shining like stars, forever.

The words of mind and th minds of words, are too eligible to be in the stage of acknowledgements

CHAPTER 4

Extreme SuperHyperDominating

Henry Garrett, “New Ideas On Super Mixed-Devastations By Hyper Decisions Of SuperHyperDuality In Cancer’s Neutrosophic Recognition and Neutrosophic SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.34953.52320).

Henry Garrett, “New Ideas In Cancer’s Recognition As (Neutrosophic) SuperHyperGraph By SuperHyperDuality As Hyper Imaginations On Super Mixed-Illustrations”, ResearchGate 2023, (doi: 10.13140/RG.2.2.33275.80161).

Henry Garrett, “New Ideas In Cancer’s Recognition And Neutrosophic SuperHyperGraph By SuperHyperJoin As Hyper Separations On Super Sorts”, ResearchGate 2023, (doi: 10.13140/RG.2.2.11050.90569).

Henry Garrett, “New Ideas On Super connections By Hyper disconnections Of SuperHyperJoin In Cancer’s Recognition with (Neutrosophic) SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.17761.79206).

Henry Garrett, “New Ideas In Cancer’s Recognition And Neutrosophic SuperHyperGraph By SuperHyperPerfect As Hyper Idealism On Super Vacancy”, ResearchGate 2023, (doi: 10.13140/RG.2.2.19911.37285).

Henry Garrett, “New Ideas On Super Isolation By Hyper Perfectness Of SuperHyperPerfect In Cancer’s Recognition with (Neutrosophic) SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.23266.81602).

Henry Garrett, “New Ideas In Cancer’s Recognition And Neutrosophic SuperHyperGraph By SuperHyperTotal As Hyper Covering On Super Infections”, ResearchGate 2023, (doi: 10.13140/RG.2.2.19360.87048).

Henry Garrett, “New Ideas On Super Extremism By Hyper Treatments Of SuperHyperTotal In Cancer’s Recognition with (Neutrosophic) SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.32363.21286).

Henry Garrett, “New Ideas In Cancer’s Recognition And Neutrosophic SuperHyperGraph By SuperHyperConnected As Hyper Group On Super Surge”, ResearchGate 2023, (doi: 10.13140/RG.2.2.11758.69441).

Henry Garrett, “New Ideas On Super Outbreak By Hyper Collections Of SuperHyperConnected In Cancer’s Recognition With (Neutrosophic) SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.31891.35367).

Henry Garrett, “New Ideas In Cancer’s Recognition And Neutrosophic SuperHyperGraph By SuperHyperDominating As Hyper Closing On Super Messy”, ResearchGate 2023, (doi: 10.13140/RG.2.2.21510.45125).

Henry Garrett, “New Ideas On Super Missing By Hyper Searching Of SuperHyperDominating In Cancer’s Recognition With (Neutrosophic) SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.13121.84321).

CHAPTER 5

New Ideas On Super Missing By Hyper Searching Of SuperHyperDominating In Cancer's Recognition With (Neutrosophic) SuperHyperGraph

CHAPTER 6

ABSTRACT

In this scientific research, (Different Neutrosophic Types of Neutrosophic SuperHyperDominating). Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called Neutrosophic e-SuperHyperDominating if $\forall E_i \in E_{ESHG:(V,E)} \setminus E',\ \exists E_j \in E'$, such that $V_a \in E_i, E_j$; Neutrosophic re-SuperHyperDominating if $\forall E_i \in E_{ESHG:(V,E)} \setminus E',\ \exists E_j \in E'$, such that $V_a \in E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$; Neutrosophic v-SuperHyperDominating if $\forall V_i \in V_{ESHG:(V,E)} \setminus V',\ \exists V_j \in V'$, such that $V_i, V_j \in E_a$; and Neutrosophic rv-SuperHyperDominating if $\forall V_i \in V_{ESHG:(V,E)} \setminus V',\ \exists V_j \in V'$, such that $V_i, V_j \in E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$; Neutrosophic SuperHyperDominating if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating. ((Neutrosophic) SuperHyperDominating). Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called an Extreme SuperHyperDominating if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating; a Neutrosophic SuperHyperDominating if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; an Extreme SuperHyperDominating SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating;

and the Extreme power is corresponded to its Extreme coefficient; a Neutrosophic SuperHyperDominating SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; and the Neutrosophic power is corresponded to its Neutrosophic coefficient; an Extreme V-SuperHyperDominating if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating; a Neutrosophic V-SuperHyperDominating if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; an Extreme V-SuperHyperDominating SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating; and the Extreme power is corresponded to its Extreme coefficient; a Neutrosophic SuperHyperDominating SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; and the Neutrosophic power is corresponded to its Neutrosophic coefficient. In this scientific research, new setting is introduced for new SuperHyperNotions, namely, a SuperHyperDominating and Neutrosophic SuperHyperDominating. Two different types of SuperHyperDefinitions are debut for them but the research goes further and the SuperHyperNotion, SuperHyperUniform, and SuperHyperClass based on that are well-defined and well-reviewed. The literature review is implemented in the whole of this research. For shining the elegancy and the significancy of this research, the comparison between this SuperHyperNotion with other SuperHyperNotions and fundamental SuperHyperNumbers are featured. The definitions are followed by the examples and the instances thus the clarifications are driven with different tools. The applications are figured out to make sense about the theoretical aspect of this ongoing research. The "Cancer's Recognition" are the under research to figure out the challenges make sense about ongoing and upcoming research. The special case is up. The cells are viewed in the deemed ways. There are different types of them. Some of them are individuals and some of them are well-modeled by the group of cells. These types are all officially called "SuperHyperVertex" but the relations amid them all officially called "SuperHyperEdge". The frameworks "SuperHyperGraph" and "Neutrosophic SuperHyperGraph" are chosen and elected to research about "Cancer's Recognition". Thus these complex and dense SuperHyperModels open up some avenues to research on theoretical segments and "Cancer's Recognition". Some avenues are posed to pursue this research. It's also officially collected in the form of some questions and some problems. Assume a SuperHyperGraph. Assume a SuperHyperGraph. Then $\delta-$SuperHyperDominating is a maximal of SuperHyperVertices with a maximum cardinality such that either of the following expressions hold for the (Neutrosophic) cardinalities of SuperHyperNeighbors of $s \in S$: there are $|S \cap N(s)| > |S \cap (V \setminus N(s))| + \delta$; and $|S \cap N(s)| < |S \cap (V \setminus N(s))| + \delta$. The first Expression, holds if S is an $\delta-$SuperHyperOffensive. And the second Expression, holds if S is an $\delta-$SuperHyperDefensive; a Neutrosophic $\delta-$SuperHyperDominating is a maximal Neutrosophic of SuperHyperVertices with maximum Neutrosophic cardinality such that either of the following expressions hold for the Neutrosophic cardinalities of SuperHyperNeighbors of $s \in S$ there are: $|S \cap N(s)|_{Neutrosophic} > |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta$; and $|S \cap N(s)|_{Neutrosophic} < |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta$. The first Expression, holds if S is a Neutrosophic $\delta-$SuperHyperOffensive. And the second Expression, holds if S is a Neutrosophic $\delta-$SuperHyperDefensive It's useful to define a "Neutrosophic" version of a SuperHyperDominating . Since there's more ways to get type-results to make a SuperHyperDominating more understandable. For the sake of having Neutrosophic SuperHyperDominating, there's a need to "redefine" the notion of a "SuperHyperDominating ". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values. Assume a SuperHyperDominating . It's redefined a Neutrosophic SuperHyperDominating if the mentioned Table holds, concerning, "The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph" with the key points, "The Values of The Vertices & The Number of Position in Alphabet", "The Values of The SuperVertices&The maximum Values of Its Vertices", "The Values of The Edges&The maximum Values of Its Vertices", "The Values of The HyperEdges&The maximum Values of Its Vertices", "The Values of The SuperHyperEdges&The maximum Values of Its Endpoints". To get structural examples and instances, I'm going to introduce the next SuperHyperClass of SuperHyperGraph based on a SuperHyperDominating . It's the main. It'll be disciplinary to have the foundation of previous definition in the kind of SuperHyperClass. If there's a need to have all SuperHyperDominating until the SuperHyperDominating, then it's officially called a "SuperHyperDominating" but otherwise, it isn't a SuperHyperDominating . There are some instances about the clarifications for the main definition titled a "SuperHyperDominating ". These two examples get more scrutiny and discernment since there are characterized in the disciplinary ways of the SuperHyperClass based on a SuperHyperDominating . For the sake of having a Neutrosophic SuperHyperDominating, there's a need to "redefine" the notion of a "Neutrosophic SuperHyperDominating" and a "Neutrosophic SuperHyperDominating ". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values. Assume a Neutrosophic SuperHyperGraph. It's redefined "Neutrosophic SuperHyperGraph" if the intended Table holds. And a SuperHyperDominating are redefined to a "Neutrosophic SuperHyperDominating" if the intended Table holds. It's useful to define "Neutrosophic" version of SuperHyperClasses. Since there's more ways to get Neutrosophic type-results to make a Neutrosophic SuperHyperDominating more understandable. Assume a Neutrosophic SuperHyperGraph. There are some Neutrosophic SuperHyperClasses if the intended Table holds. Thus SuperHyperPath, SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultiPartite, and SuperHyperWheel, are "Neutrosophic SuperHyperPath", "Neutrosophic SuperHyperDominating", "Neutrosophic SuperHyperStar", "Neutrosophic SuperHyperBipartite", "Neutrosophic SuperHyperMultiPartite", and "Neutrosophic SuperHyperWheel" if the intended Table holds. A SuperHyperGraph has a "Neutrosophic SuperHyperDominating" where it's the strongest [the maximum Neutrosophic value from all the SuperHyperDominating amid the maximum value amid all SuperHyperVertices from a SuperHyperDominating .] SuperHyperDominating . A graph is a SuperHyperUniform if it's a SuperHyperGraph and the number of elements of SuperHyperEdges are the same. Assume a Neutrosophic SuperHyperGraph. There are some SuperHyperClasses as follows. It's SuperHyperPath if it's only one SuperVertex as intersection amid two given SuperHyperEdges with two exceptions; it's SuperHyperDominating if it's only one SuperVertex as intersection amid two given SuperHyperEdges; it's SuperHyperStar it's only one SuperVertex as intersection amid all SuperHyperEdges; it's SuperHyperBipartite it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming two separate sets, has no SuperHyperEdge in common; it's SuperHyperMultiPartite it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming multi separate sets, has no SuperHyperEdge in common; it's a SuperHyperWheel if it's only one SuperVertex as intersection amid two given SuperHyperEdges and one SuperVertex has one SuperHyperEdge with any common SuperVertex. The SuperHyperModel proposes the specific designs and the specific architectures. The SuperHyperModel is officially called "SuperHyperGraph" and "Neutrosophic SuperHyperGraph". In this SuperHyperModel, The "specific" cells and "specific group" of cells are SuperHyperModeled as "SuperHyperVertices" and the common and intended properties between "specific" cells and "specific group" of cells are SuperHyperModeled as "SuperHyperEdges". Sometimes, it's useful to have some degrees of determinacy, indeterminacy, and neutrality to have more precise SuperHyperModel which in this case the SuperHyperModel is called "Neutrosophic". In the future research, the foundation will be based on the "Cancer's Recognition" and the results and the definitions will be introduced in redeemed ways. The recognition of the cancer in the long-term function. The specific region has been assigned by the model [it's called SuperHyperGraph] and the long cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be Neutrosophic SuperHyperGraph] to have convenient perception on what's happened and what's done. There are some specific models, which are well-known and they've got the names, and some SuperHyperGeneral SuperHyperModels. The moves and the traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a Neutrosophic SuperHyperPath(-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the longest SuperHyperDominating or the strongest SuperHyperDominating in those Neutrosophic SuperHyperModels. For the longest SuperHyperDominating, called SuperHyperDominating, and the strongest SuperHyper-

Dominating, called Neutrosophic SuperHyperDominating, some general results are introduced. Beyond that in SuperHyperStar, all possible SuperHyperPaths have only two SuperHyperEdges but it's not enough since it's essential to have at least three SuperHyperEdges to form any style of a SuperHyperDominating. There isn't any formation of any SuperHyperDominating but literarily, it's the deformation of any SuperHyperDominating. It, literarily, deforms and it doesn't form. A basic familiarity with Neutrosophic SuperHyperDominating theory, SuperHyperGraphs, and Neutrosophic SuperHyperGraphs theory are proposed.

Keywords: Neutrosophic SuperHyperGraph, SuperHyperDominating, Cancer's Neutrosophic Recognition

AMS Subject Classification: 05C17, 05C22, 05E45

CHAPTER 7

Background

There are some scientific researches covering the topic of this research. In what follows, there are some discussion and literature reviews about them date back on January 22, 2023.
First article is titled “properties of SuperHyperGraph and neutrosophic SuperHyperGraph” in **Ref.** [**HG1**] by Henry Garrett (2022). It’s first step toward the research on neutrosophic SuperHyperGraphs. This research article is published on the journal “Neutrosophic Sets and Systems” in issue 49 and the pages 531-561. In this research article, different types of notions like dominating, resolving, coloring, Eulerian(Hamiltonian) neutrosophic path, n-Eulerian(Hamiltonian) neutrosophic path, zero forcing number, zero forcing neutrosophic- number, independent number, independent neutrosophic-number, clique number, clique neutrosophic-number, matching number, matching neutrosophic-number, girth, neutrosophic girth, 1-zero-forcing number, 1-zero- forcing neutrosophic-number, failed 1-zero-forcing number, failed 1-zero-forcing neutrosophic-number, global- offensive alliance, t-offensive alliance, t-defensive alliance, t-powerful alliance, and global-powerful alliance are defined in SuperHyperGraph and neutrosophic SuperHyperGraph. Some Classes of SuperHyperGraph and Neutrosophic SuperHyperGraph are cases of research. Some results are applied in family of SuperHyperGraph and neutrosophic SuperHyperGraph. Thus this research article has concentrated on the vast notions and introducing the majority of notions.
The seminal paper and groundbreaking article is titled “neutrosophic co-degree and neutrosophic degree alongside chromatic numbers in the setting of some classes related to neutrosophic hypergraphs” in **Ref.** [**HG2**] by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on general forms without using neutrosophic classes of neutrosophic SuperHyperGraph. It’s published in prestigious and fancy journal is entitled “Journal of Current Trends in Computer Science Research (JCTCSR)” with abbreviation “J Curr Trends Comp Sci Res” in volume 1 and issue 1 with pages 06-14. The research article studies deeply with choosing neutrosophic hypergraphs instead of neutrosophic SuperHyperGraph. It’s the breakthrough toward independent results based on initial background.
The seminal paper and groundbreaking article is titled “Super Hyper Dominating and Super Hyper Resolving on Neutrosophic Super Hyper Graphs and Their Directions in Game Theory and Neutrosophic Super Hyper Classes” in **Ref.** [**HG3**] by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on fundamental SuperHyperNumber and using neutrosophic SuperHyperClasses of neutrosophic SuperHyperGraph. It’s published in prestigious and fancy journal is entitled “Journal of Mathematical Techniques and Computational Mathematics(JMTCM)” with

abbreviation “J Math Techniques Comput Math” in volume 1 and issue 3 with pages 242-263. The research article studies deeply with choosing directly neutrosophic SuperHyperGraph and SuperHyperGraph. It’s the breakthrough toward independent results based on initial background and fundamental SuperHyperNumbers.

In some articles are titled “0039 | Closing Numbers and SupeV-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph” in **Ref.** [**HG4**] by Henry Garrett (2022), “0049 | (Failed)1-Zero-Forcing Number in Neutrosophic Graphs” in **Ref.** [**HG5**] by Henry Garrett (2022), “Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer’s Recognition as the Model in The Setting of (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG6**] by Henry Garrett (2022), “Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Neutrosophic Failed SuperHyperClique inside Neutrosophic SuperHyperGraphs Titled Cancer’s Recognition” in **Ref.** [**HG7**] by Henry Garrett (2022), “Neutrosophic Version Of Separates Groups Of Cells In Cancer’s Recognition On Neutrosophic SuperHyperGraphs” in **Ref.** [**HG8**] by Henry Garrett (2022), “The Shift Paradigm To Classify Separately The Cells and Affected Cells Toward The Totality Under Cancer’s Recognition By New Multiple Definitions On the Sets Polynomials Alongside Numbers In The (Neutrosophic) SuperHyperMatching Theory Based on SuperHyperGraph and Neutrosophic SuperHyperGraph” in **Ref.** [**HG9**] by Henry Garrett (2022), “Breaking the Continuity and Uniformity of Cancer In The Worst Case of Full Connections With Extreme Failed SuperHyperClique In Cancer’s Recognition Applied in (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG10**] by Henry Garrett (2022), “Neutrosophic Failed SuperHyperStable as the Survivors on the Cancer’s Neutrosophic Recognition Based on Uncertainty to All Modes in Neutrosophic SuperHyperGraphs” in **Ref.** [**HG11**] by Henry Garrett (2022), “Extremism of the Attacked Body Under the Cancer’s Circumstances Where Cancer’s Recognition Titled (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG12**] by Henry Garrett (2022), “(Neutrosophic) 1-Failed SuperHyperForcing in Cancer’s Recognitions And (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG13**] by Henry Garrett (2022), “Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer’s Neutrosophic Recognitions In Special ViewPoints” in **Ref.** [**HG14**] by Henry Garrett (2022), “Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer’s Neutrosophic Recognition And Beyond” in **Ref.** [**HG15**] by Henry Garrett (2022), “(Neutrosophic) SuperHyperStable on Cancer’s Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs ” in **Ref.** [**HG16**] by Henry Garrett (2022), “Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer’s Neutrosophic Recognitions In Special ViewPoints” in **Ref.** [**HG12**] by Henry Garrett (2022), “Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer’s Recognitions And (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG17**] by Henry Garrett (2022), “Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer’s Neutrosophic Recognitions In Special ViewPoints” in **Ref.** [**HG18**] by Henry Garrett (2022),“(Neutrosophic) SuperHyperModeling of Cancer’s Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances” in **Ref.** [**HG19**] by Henry Garrett (2022), “(Neutrosophic) SuperHyperAlliances With SuperHyper-Defensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer’s Recognitions And Related (Neutrosophic) SuperHyperClasses” in **Ref.** [**HG20**] by Henry Garrett (2022), “SuperHyperGirth on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer’s

Recognitions” in **Ref.** [**HG21**] by Henry Garrett (2022), “Some SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs and SuperHyperGraphs Alongside Applications in Cancer’s Treatments” in **Ref.** [**HG22**] by Henry Garrett (2022), “SuperHyperDominating and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses” in **Ref.** [**HG23**] by Henry Garrett (2022), “SuperHyperMatching By (V-)Definitions And Polynomials To Monitor Cancer’s Recognition In Neutrosophic SuperHyperGraphs” in **Ref.** [**HG24**] by Henry Garrett (2023), “The Focus on The Partitions Obtained By Parallel Moves In The Cancer’s Extreme Recognition With Different Types of Extreme SuperHyperMatching Set and Polynomial on (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG25**] by Henry Garrett (2023), “Extreme Failed SuperHyperClique Decides the Failures on the Cancer’s Recognition in the Perfect Connections of Cancer’s Attacks By SuperHyperModels Named (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG26**] by Henry Garrett (2023), “Indeterminacy On The All Possible Connections of Cells In Front of Cancer’s Attacks In The Terms of Neutrosophic Failed SuperHyperClique on Cancer’s Recognition called Neutrosophic SuperHyperGraphs” in **Ref.** [**HG27**] by Henry Garrett (2023), “Perfect Directions Toward Idealism in Cancer’s Neutrosophic Recognition Forwarding Neutrosophic SuperHyperClique on Neutrosophic SuperHyperGraphs” in **Ref.** [**HG28**] by Henry Garrett (2023), “Demonstrating Complete Connections in Every Embedded Regions and Sub-Regions in the Terms of Cancer’s Recognition and (Neutrosophic) SuperHyperGraphs With (Neutrosophic) SuperHyperClique” in **Ref.** [**HG29**] by Henry Garrett (2023), “Different Neutrosophic Types of Neutrosophic Regions titled neutrosophic Failed SuperHyperStable in Cancer’s Neutrosophic Recognition modeled in the Form of Neutrosophic SuperHyperGraphs” in **Ref.** [**HG30**] by Henry Garrett (2023), “Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer’s Recognition Titled (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG31**] by Henry Garrett (2023), “Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer’s Neutrosophic Recognitions In Special ViewPoints” in **Ref.** [**HG32**] by Henry Garrett (2023), “(Neutrosophic) SuperHyperStable on Cancer’s Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG33**] by Henry Garrett (2023), “Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer’s Neutrosophic Recognition And Beyond” in **Ref.** [**HG34**] by Henry Garrett (2022), “(Neutrosophic) 1-Failed SuperHyperForcing in Cancer’s Recognitions And (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG35**] by Henry Garrett (2022), “Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer’s Recognitions And (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG36**] by Henry Garrett (2022), “Basic Neutrosophic Notions Concerning SuperHyperDominating and Neutrosophic SuperHyperResolving in SuperHyperGraph” in **Ref.** [**HG37**] by Henry Garrett (2022), “Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG)” in **Ref.** [**HG38**] by Henry Garrett (2022), there are some endeavors to formalize the basic SuperHyperNotions about neutrosophic SuperHyperGraph and SuperHyperGraph.

Some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in **Ref.** [**HG39**] by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3230 readers in Scribd. It’s titled “Beyond Neutrosophic Graphs” and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory.

Also, some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in **Ref.** [**HG40**] by Henry Garrett (2022) which is indexed by Google Scholar and has more than 4117 readers in Scribd. It's titled "Neutrosophic Duality" and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and SuperHyperDominating in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It's smart to consider a set but acting on its complement that what's done in this research book which is popular in the terms of high readers in Scribd. See the seminal scientific researches [**HG1**; **HG2**; **HG3**]. The formalization of the notions on the framework of Extreme SuperHyperDominating theory, Neutrosophic SuperHyperDominating theory, and (Neutrosophic) SuperHyperGraphs theory at [**HG4**; **HG5**; **HG6**; **HG7**; **HG8**; **HG9**; **HG10**; **HG11**; **HG12**; **HG13**; **HG14**; **HG15**; **HG16**; **HG17**; **HG18**; **HG19**; **HG20**; **HG21**; **HG22**; **HG23**; **HG24**; **HG25**; **HG26**; **HG27**; **HG28**; **HG29**; **HG30**; **HG31**; **HG32**; **HG33**; **HG34**; **HG35**; **HG36**; **HG37**; **HG38**]. Two popular scientific research books in Scribd in the terms of high readers, 3230 and 4117 respectively, on neutrosophic science is on [**HG39**; **HG40**].

CHAPTER 8

Applied Notions Under The Scrutiny Of The Motivation Of This Scientific Research

In this scientific research, there are some ideas in the featured frameworks of motivations. I try to bring the motivations in the narrative ways. Some cells have been faced with some attacks from the situation which is caused by the cancer's attacks. In this case, there are some embedded analysis on the ongoing situations which in that, the cells could be labelled as some groups and some groups or individuals have excessive labels which all are raised from the behaviors to overcome the cancer's attacks. In the embedded situations, the individuals of cells and the groups of cells could be considered as "new groups". Thus it motivates us to find the proper SuperHyperModels for getting more proper analysis on this messy story. I've found the SuperHyperModels which are officially called "SuperHyperGraphs" and "Extreme SuperHyperGraphs". In this SuperHyperModel, the cells and the groups of cells are defined as "SuperHyperVertices" and the relations between the individuals of cells and the groups of cells are defined as "SuperHyperEdges". Thus it's another motivation for us to do research on this SuperHyperModel based on the "Cancer's Recognition". Sometimes, the situations get worst. The situation is passed from the certainty and precise style. Thus it's the beyond them. There are three descriptions, namely, the degrees of determinacy, indeterminacy and neutrality, for any object based on vague forms, namely, incomplete data, imprecise data, and uncertain analysis. The latter model could be considered on the previous SuperHyperModel. It's SuperHyperModel. It's SuperHyperGraph but it's officially called "Extreme SuperHyperGraphs". The cancer is the disease but the model is going to figure out what's going on this phenomenon. The special case of this disease is considered and as the consequences of the model, some parameters are used. The cells are under attack of this disease but the moves of the cancer in the special region are the matter of mind. The recognition of the cancer could help to find some treatments for this disease. The SuperHyperGraph and Extreme SuperHyperGraph are the SuperHyperModels on the "Cancer's Recognition" and both bases are the background of this research. Sometimes the cancer has been happened on the region, full of cells, groups of cells and embedded styles. In this segment, the SuperHyperModel proposes some SuperHyperNotions based on the connectivities of the moves of the cancer in the forms of alliances' styles with the formation of the design and the architecture are formally called " SuperHyperDominating" in the themes of jargons and buzzwords. The prefix "SuperHyper" refers to the theme of the embedded styles to figure out the background for the SuperHyperNotions. The recognition of the cancer in the long-term function. The specific region has been assigned by the model [it's called SuperHyperGraph] and the long cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be Extreme SuperHyperGraph] to have convenient perception on what's happened and what's done. There are some specific models, which are well-known and they've got the names, and some general models. The moves and the traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a Extreme SuperHyperPath (-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the optimal SuperHyperDominating or the Extreme SuperHyperDominating in those Extreme SuperHyperModels. Some general results are introduced. Beyond that in SuperHyperStar, all possible Extreme SuperHyperPath s have only two SuperHyperEdges but it's not enough since it's essential to have at least three SuperHyperEdges to form any style of a SuperHyperDominating. There isn't any formation of any SuperHyperDominating but literarily, it's the deformation of any SuperHyperDominating. It, literarily, deforms and it doesn't form.

Question 8.0.1. *How to define the SuperHyperNotions and to do research on them to find the " amount of SuperHyperDominating" of either individual of cells or the groups of cells based on the fixed cell or the fixed group of cells, extensively, the "amount of SuperHyperDominating" based on the fixed groups of cells or the fixed groups of group of cells?*

Question 8.0.2. *What are the best descriptions for the "Cancer's Recognition" in terms of these messy and dense SuperHyperModels where embedded notions are illustrated?*

It's motivation to find notions to use in this dense model is titled "SuperHyperGraphs". Thus it motivates us to define different types of " SuperHyperDominating" and "Extreme SuperHyperDominating" on "SuperHyperGraph" and "Extreme SuperHyperGraph". Then the research has taken more motivations to define SuperHyperClasses and to find some connections amid this SuperHyperNotion with other SuperHyperNotions. It motivates us to get some instances and examples to make clarifications about the framework of this research. The general results and some results about some connections are some avenues to make key point of this research, "Cancer's Recognition", more understandable and more clear.

The framework of this research is as follows. In the beginning, I introduce basic definitions to clarify about preliminaries. In the subsection "Preliminaries", initial definitions about SuperHyperGraphs and Extreme SuperHyperGraph are deeply-introduced and in-depth-discussed. The elementary concepts are clarified and illustrated completely and sometimes review literature are applied to make sense about what's going to figure out about the upcoming sections. The main definitions and their clarifications alongside some results about new notions, SuperHyperDominating and Extreme SuperHyperDominating, are figured out in sections " SuperHyperDominating" and "Extreme SuperHyperDominating". In the sense of tackling on getting results and in order to make sense about continuing the research, the ideas of SuperHyperUniform and Extreme SuperHyperUniform are introduced and as their consequences, corresponded SuperHyperClasses are figured out to debut what's done in this section, titled "Results on SuperHyperClasses" and "Results on Extreme SuperHyperClasses". As going back to origin of the notions, there are some smart steps toward the common notions to extend the new notions in new frameworks, SuperHyperGraph and Extreme SuperHyperGraph, in the sections "Results on SuperHyperClasses" and "Results on Extreme SuperHyperClasses". The starter research about the general SuperHyperRelations and as concluding and closing section of theoretical research are contained in the section "General Results". Some general SuperHyperRelations are fundamental and they are well-known as fundamental SuperHyperNotions as elicited and discussed in the sections, “General Results”, “ SuperHyperDominating”, “Extreme SuperHyperDominating”, “Results on SuperHyperClasses” and “Results on Extreme SuperHyperClasses”. There are curious questions about what’s done about the SuperHyperNotions to make sense about excellency of this research and going to figure out the word “best” as the description and adjective for this research as presented in section, “ SuperHyperDominating”. The keyword of this research debut in the section “Applications in Cancer’s Recognition” with two cases and subsections “Case 1: The Initial Steps Toward SuperHyperBipartite as SuperHyperModel” and “Case 2: The Increasing Steps Toward SuperHyperMultipartite as SuperHyperModel”. In the section, “Open Problems”, there are some scrutiny and discernment on what’s done and what’s happened in this research in the terms of “questions” and “problems” to make sense to figure out this research in featured style. The advantages and the limitations of this research alongside about what’s done in this research to make sense and to get sense about what’s figured out are included in the section, “Conclusion and Closing Remarks”.

CHAPTER 9

Extreme Preliminaries Of This Scientific Research On the Redeemed Ways

In this section, the basic material in this scientific research, is referred to [Single Valued Neutrosophic Set](**Ref.**[**HG38**],Definition 2.2,p.2), [Neutrosophic Set](**Ref.**[**HG38**],Definition 2.1,p.1), [Neutrosophic SuperHyperGraph (NSHG)](**Ref.**[**HG38**],Definition 2.5,p.2), [Characterization of the Neutrosophic SuperHyperGraph (NSHG)](**Ref.**[**HG38**],Definition 2.7,p.3), [t-norm](**Ref.**[**HG38**], Definition 2.7, p.3), and [Characterization of the Neutrosophic SuperHyperGraph (NSHG)](**Ref.**[**HG38**],Definition 2.7,p.3), [Neutrosophic Strength of the Neutrosophic SuperHyperPaths] (**Ref.**[**HG38**],Definition 5.3,p.7), and [Different Neutrosophic Types of Neutrosophic SuperHyperEdges (NSHE)] (**Ref.**[**HG38**],Definition 5.4,p.7). Also, the new ideas and their clarifications are addressed to **Ref.**[**HG38**].
In this subsection, the basic material which is used in this scientific research, is presented. Also, the new ideas and their clarifications are elicited.

Definition 9.0.1 (Neutrosophic Set)**.** (**Ref.**[**HG38**],Definition 2.1,p.1).
Let X be a space of points (objects) with generic elements in X denoted by x; then the **Neutrosophic set** A (NS A) is an object having the form

$$A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$$

where the functions $T, I, F : X \rightarrow]^{-}0, 1^{+}[$ define respectively the a **truth-membership function**, an **indeterminacy-membership function**, and a **falsity-membership function** of the element $x \in X$ to the set A with the condition

$$^{-}0 \leq T_A(x) + I_A(x) + F_A(x) \leq 3^{+}.$$

The functions $T_A(x), I_A(x)$ and $F_A(x)$ are real standard or nonstandard subsets of $]^{-}0, 1^{+}[$.

Definition 9.0.2 (Single Valued Neutrosophic Set)**.** (**Ref.**[**HG38**],Definition 2.2,p.2).
Let X be a space of points (objects) with generic elements in X denoted by x. A **single valued Neutrosophic set** A (SVNS A) is characterized by truth-membership function $T_A(x)$, an indeterminacy-membership function $I_A(x)$, and a falsity-membership function $F_A(x)$. For each point x in X, $T_A(x), I_A(x), F_A(x) \in [0, 1]$. A SVNS A can be written as

$$A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}.$$

Definition 9.0.3. The **degree of truth-membership**, **indeterminacy-membership** and **falsity-membership of the subset** $X \subset A$ of the single valued Neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$:

$$T_A(X) = \min[T_A(v_i), T_A(v_j)]_{v_i, v_j \in X},$$

$$I_A(X) = \min[I_A(v_i), I_A(v_j)]_{v_i, v_j \in X},$$

$$\text{and } F_A(X) = \min[F_A(v_i), F_A(v_j)]_{v_i, v_j \in X}.$$

Definition 9.0.4. The **support** of $X \subset A$ of the single valued Neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$:

$$supp(X) = \{x \in X : \ T_A(x), I_A(x), F_A(x) > 0\}.$$

Definition 9.0.5 (Neutrosophic SuperHyperGraph (NSHG))**.** (**Ref.**[**HG38**],Definition 2.5,p.2). Assume V' is a given set. a **Neutrosophic SuperHyperGraph** (NSHG) S is an ordered pair $S = (V, E)$, where

(i) $V = \{V_1, V_2, \ldots, V_n\}$ a finite set of finite single valued Neutrosophic subsets of V';

(ii) $V = \{(V_i, T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i)) : \ T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i) \geq 0\}, \ (i = 1, 2, \ldots, n)$;

(iii) $E = \{E_1, E_2, \ldots, E_{n'}\}$ a finite set of finite single valued Neutrosophic subsets of V;

(iv) $E = \{(E_{i'}, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'})) : \ T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}) \geq 0\}, \ (i' = 1, 2, \ldots, n')$;

(v) $V_i \neq \emptyset, \ (i = 1, 2, \ldots, n)$;

(vi) $E_{i'} \neq \emptyset, \ (i' = 1, 2, \ldots, n')$;

(vii) $\sum_i supp(V_i) = V, \ (i = 1, 2, \ldots, n)$;

(viii) $\sum_{i'} supp(E_{i'}) = V, \ (i' = 1, 2, \ldots, n')$;

(ix) and the following conditions hold:

$$T'_V(E_{i'}) \leq \min[T_{V'}(V_i), T_{V'}(V_j)]_{V_i, V_j \in E_{i'}},$$

$$I'_V(E_{i'}) \leq \min[I_{V'}(V_i), I_{V'}(V_j)]_{V_i, V_j \in E_{i'}},$$

$$\text{and } F'_V(E_{i'}) \leq \min[F_{V'}(V_i), F_{V'}(V_j)]_{V_i, V_j \in E_{i'}}$$

where $i' = 1, 2, \ldots, n'$.

Here the Neutrosophic SuperHyperEdges (NSHE) $E_{j'}$ and the Neutrosophic SuperHyperVertices (NSHV) V_j are single valued Neutrosophic sets. $T_{V'}(V_i), I_{V'}(V_i)$, and $F_{V'}(V_i)$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership the Neutrosophic SuperHyperVertex (NSHV) V_i to the Neutrosophic SuperHyperVertex (NSHV) V. $T'_V(E_{i'}), T'_V(E_{i'})$, and $T'_V(E_{i'})$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership of the Neutrosophic SuperHyperEdge (NSHE) $E_{i'}$ to the Neutrosophic SuperHyperEdge (NSHE) E. Thus, the ii'th element of the **incidence matrix** of Neutrosophic SuperHyperGraph (NSHG) are of the form $(V_i, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}))$, the sets V and E are crisp sets.

Definition 9.0.6 (Characterization of the Neutrosophic SuperHyperGraph (NSHG))**.** (**Ref.**[**HG38**],Definition 2.7,p.3).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. The Neutrosophic SuperHyperEdges (NSHE) $E_{i'}$ and the Neutrosophic SuperHyperVertices (NSHV) V_i of Neutrosophic SuperHyperGraph (NSHG) $S = (V, E)$ could be characterized as follow-up items.

(i) If $|V_i| = 1$, then V_i is called **vertex**;

(ii) if $|V_i| \geq 1$, then V_i is called **SuperVertex**;

(iii) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **edge**;

(iv) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **HyperEdge**;

(v) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **SuperEdge**;

(vi) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **SuperHyperEdge**.

If we choose different types of binary operations, then we could get hugely diverse types of general forms of Neutrosophic SuperHyperGraph (NSHG).

Definition 9.0.7 (t-norm)**.** (**Ref.**[**HG38**], Definition 2.7, p.3).
A binary operation $\otimes : [0, 1] \times [0, 1] \to [0, 1]$ is a ***t*-norm** if it satisfies the following for $x, y, z, w \in [0, 1]$:

(i) $1 \otimes x = x$;

(ii) $x \otimes y = y \otimes x$;

(iii) $x \otimes (y \otimes z) = (x \otimes y) \otimes z$;

(iv) If $w \leq x$ and $y \leq z$ then $w \otimes y \leq x \otimes z$.

Definition 9.0.8. The **degree of truth-membership**, **indeterminacy-membership** and **falsity-membership of the subset** $X \subset A$ of the single valued Neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$ (with respect to t-norm T_{norm}):

$$T_A(X) = T_{norm}[T_A(v_i), T_A(v_j)]_{v_i, v_j \in X},$$

$$I_A(X) = T_{norm}[I_A(v_i), I_A(v_j)]_{v_i, v_j \in X},$$

$$\text{and } F_A(X) = T_{norm}[F_A(v_i), F_A(v_j)]_{v_i, v_j \in X}.$$

Definition 9.0.9. The **support** of $X \subset A$ of the single valued Neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$:

$$supp(X) = \{x \in X : \; T_A(x), I_A(x), F_A(x) > 0\}.$$

Definition 9.0.10. (General Forms of Neutrosophic SuperHyperGraph (NSHG)).
Assume V' is a given set. a **Neutrosophic SuperHyperGraph** (NSHG) S is an ordered pair $S = (V, E)$, where

(i) $V = \{V_1, V_2, \ldots, V_n\}$ a finite set of finite single valued Neutrosophic subsets of V';

(ii) $V = \{(V_i, T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i)) : \ T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i) \geq 0\}, \ (i = 1, 2, \ldots, n)$;

(iii) $E = \{E_1, E_2, \ldots, E_{n'}\}$ a finite set of finite single valued Neutrosophic subsets of V;

(iv) $E = \{(E_{i'}, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'})) : \ T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}) \geq 0\}, \ (i' = 1, 2, \ldots, n')$;

(v) $V_i \neq \emptyset, \ (i = 1, 2, \ldots, n)$;

(vi) $E_{i'} \neq \emptyset, \ (i' = 1, 2, \ldots, n')$;

(vii) $\sum_i supp(V_i) = V, \ (i = 1, 2, \ldots, n)$;

(viii) $\sum_{i'} supp(E_{i'}) = V, \ (i' = 1, 2, \ldots, n')$.

Here the Neutrosophic SuperHyperEdges (NSHE) $E_{j'}$ and the Neutrosophic SuperHyperVertices (NSHV) V_j are single valued Neutrosophic sets. $T_{V'}(V_i), I_{V'}(V_i)$, and $F_{V'}(V_i)$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership the Neutrosophic SuperHyperVertex (NSHV) V_i to the Neutrosophic SuperHyperVertex (NSHV) V. $T'_V(E_{i'}), T'_V(E_{i'})$, and $T'_V(E_{i'})$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership of the Neutrosophic SuperHyperEdge (NSHE) $E_{i'}$ to the Neutrosophic SuperHyperEdge (NSHE) E. Thus, the ii'th element of the **incidence matrix** of Neutrosophic SuperHyperGraph (NSHG) are of the form $(V_i, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}))$, the sets V and E are crisp sets.

Definition 9.0.11 (Characterization of the Neutrosophic SuperHyperGraph (NSHG)). (**Ref.**[**HG38**],Definition 2.7,p.3).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. The Neutrosophic SuperHyperEdges (NSHE) $E_{i'}$ and the Neutrosophic SuperHyperVertices (NSHV) V_i of Neutrosophic SuperHyperGraph (NSHG) $S = (V, E)$ could be characterized as follow-up items.

(i) If $|V_i| = 1$, then V_i is called **vertex**;

(ii) if $|V_i| \geq 1$, then V_i is called **SuperVertex**;

(iii) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **edge**;

(iv) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **HyperEdge**;

(v) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **SuperEdge**;

(vi) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **SuperHyperEdge**.

This SuperHyperModel is too messy and too dense. Thus there's a need to have some restrictions and conditions on SuperHyperGraph. The special case of this SuperHyperGraph makes the patterns and regularities.

Definition 9.0.12. A graph is **SuperHyperUniform** if it's SuperHyperGraph and the number of elements of SuperHyperEdges are the same.

To get more visions on SuperHyperUniform, the some SuperHyperClasses are introduced. It makes to have SuperHyperUniform more understandable.

Definition 9.0.13. Assume a Neutrosophic SuperHyperGraph. There are some SuperHyperClasses as follows.

(i). It's **Neutrosophic SuperHyperPath** if it's only one SuperVertex as intersection amid two given SuperHyperEdges with two exceptions;

(ii). it's **SuperHyperCycle** if it's only one SuperVertex as intersection amid two given SuperHyperEdges;

(iii). it's **SuperHyperStar** it's only one SuperVertex as intersection amid all SuperHyperEdges;

(iv). it's **SuperHyperBipartite** it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming two separate sets, has no SuperHyperEdge in common;

(v). it's **SuperHyperMultiPartite** it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming multi separate sets, has no SuperHyperEdge in common;

(vi). it's **SuperHyperWheel** if it's only one SuperVertex as intersection amid two given SuperHyperEdges and one SuperVertex has one SuperHyperEdge with any common SuperVertex.

Definition 9.0.14. Let an ordered pair $S = (V, E)$ be a Neutrosophic SuperHyperGraph (NSHG) S. Then a sequence of Neutrosophic SuperHyperVertices (NSHV) and Neutrosophic SuperHyperEdges (NSHE)

$$V_1, E_1, V_2, E_2, V_3, \ldots, V_{s-1}, E_{s-1}, V_s$$

is called a **Neutrosophic SuperHyperPath** (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_1 to Neutrosophic SuperHyperVertex (NSHV) V_s if either of following conditions hold:

(i) $V_i, V_{i+1} \in E_{i'}$;

(ii) there's a vertex $v_i \in V_i$ such that $v_i, V_{i+1} \in E_{i'}$;

(iii) there's a SuperVertex $V'_i \in V_i$ such that $V'_i, V_{i+1} \in E_{i'}$;

(iv) there's a vertex $v_{i+1} \in V_{i+1}$ such that $V_i, v_{i+1} \in E_{i'}$;

(v) there's a SuperVertex $V'_{i+1} \in V_{i+1}$ such that $V_i, V'_{i+1} \in E_{i'}$;

(vi) there are a vertex $v_i \in V_i$ and a vertex $v_{i+1} \in V_{i+1}$ such that $v_i, v_{i+1} \in E_{i'}$;

(vii) there are a vertex $v_i \in V_i$ and a SuperVertex $V'_{i+1} \in V_{i+1}$ such that $v_i, V'_{i+1} \in E_{i'}$;

$(viii)$ there are a SuperVertex $V'_i \in V_i$ and a vertex $v_{i+1} \in V_{i+1}$ such that $V'_i, v_{i+1} \in E_{i'}$;

(ix) there are a SuperVertex $V'_i \in V_i$ and a SuperVertex $V'_{i+1} \in V_{i+1}$ such that $V'_i, V'_{i+1} \in E_{i'}$.

Definition 9.0.15. (Characterization of the Neutrosophic SuperHyperPaths).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. a Neutrosophic SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_1 to Neutrosophic SuperHyperVertex (NSHV) V_s is sequence of Neutrosophic SuperHyperVertices (NSHV) and Neutrosophic SuperHyperEdges (NSHE)

$$V_1, E_1, V_2, E_2, V_3, \dots, V_{s-1}, E_{s-1}, V_s,$$

could be characterized as follow-up items.

(i) If for all $V_i, E_{j'}$, $|V_i| = 1,\ |E_{j'}| = 2$, then NSHP is called **path**;

(ii) if for all $E_{j'}$, $|E_{j'}| = 2$, and there's V_i, $|V_i| \geq 1$, then NSHP is called **SuperPath**;

(iii) if for all $V_i, E_{j'}$, $|V_i| = 1,\ |E_{j'}| \geq 2$, then NSHP is called **HyperPath**;

(iv) if there are $V_i, E_{j'}$, $|V_i| \geq 1, |E_{j'}| \geq 2$, then NSHP is called **Neutrosophic SuperHyperPath** .

Definition 9.0.16 (Neutrosophic Strength of the Neutrosophic SuperHyperPaths). (**Ref.**[**HG38**],Definition 5.3,p.7).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. A Neutrosophic SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_1 to Neutrosophic SuperHyperVertex (NSHV) V_s is sequence of Neutrosophic SuperHyperVertices (NSHV) and Neutrosophic SuperHyperEdges (NSHE)

$$V_1, E_1, V_2, E_2, V_3, \dots, V_{s-1}, E_{s-1}, V_s,$$

have

(i) **Neutrosophic t-strength** $(\min\{T(V_i)\}, m, n)_{i=1}^{s}$;

(ii) **Neutrosophic i-strength** $(m, \min\{I(V_i)\}, n)_{i=1}^{s}$;

(iii) **Neutrosophic f-strength** $(m, n, \min\{F(V_i)\})_{i=1}^{s}$;

(iv) **Neutrosophic strength** $(\min\{T(V_i)\}, \min\{I(V_i)\}, \min\{F(V_i)\})_{i=1}^{s}$.

Definition 9.0.17 (Different Neutrosophic Types of Neutrosophic SuperHyperEdges (NSHE)). (**Ref.**[**HG38**],Definition 5.4,p.7).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \dots, V_s\}$. Then E is called

(ix) **Neutrosophic t-connective** if $T(E) \geq$ maximum number of Neutrosophic t-strength of SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_i to Neutrosophic SuperHyperVertex (NSHV) V_j where $1 \leq i, j \leq s$;

(x) **Neutrosophic i-connective** if $I(E) \geq$ maximum number of Neutrosophic i-strength of SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_i to Neutrosophic SuperHyperVertex (NSHV) V_j where $1 \leq i, j \leq s$;

(xi) **Neutrosophic f-connective** if $F(E) \geq$ maximum number of Neutrosophic f-strength of SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_i to Neutrosophic SuperHyperVertex (NSHV) V_j where $1 \leq i, j \leq s$;

(xii) **Neutrosophic connective** if $(T(E), I(E), F(E)) \geq$ maximum number of Neutrosophic strength of SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_i to Neutrosophic SuperHyperVertex (NSHV) V_j where $1 \leq i, j \leq s$.

Definition 9.0.18. (Different Neutrosophic Types of Neutrosophic SuperHyperDominating).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Neutrosophic e-SuperHyperDominating** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E', \ \exists E_j \in E'$, such that $V_a \in E_i, E_j$;

(ii) **Neutrosophic re-SuperHyperDominating** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E', \ \exists E_j \in E'$, such that $V_a \in E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Neutrosophic v-SuperHyperDominating** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V', \ \exists V_j \in V'$, such that $V_i, V_j \notin E_a$;

(iv) **Neutrosophic rv-SuperHyperDominating** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V', \ \exists V_j \in V'$, such that $V_i, V_j \in E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **Neutrosophic SuperHyperDominating** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating.

Definition 9.0.19. ((Neutrosophic) SuperHyperDominating).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperDominating** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating;

(ii) a **Neutrosophic SuperHyperDominating** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating;

(*iii*) an **Extreme SuperHyperDominating SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **Neutrosophic SuperHyperDominating SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; and the Neutrosophic power is corresponded to its Neutrosophic coefficient;

(*v*) an **Extreme V-SuperHyperDominating** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating;

(*vi*) a **Neutrosophic V-SuperHyperDominating** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating;

(*vii*) an **Extreme V-SuperHyperDominating SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating; and the Extreme power is corresponded to its Extreme coefficient;

(*viii*) a **Neutrosophic SuperHyperDominating SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; and the Neutrosophic power is corresponded to its Neutrosophic coefficient.

Definition 9.0.20. ((Extreme/Neutrosophic)$\delta-$SuperHyperDominating).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Then

(i) an $\delta-$**SuperHyperDominating** is a Neutrosophic kind of Neutrosophic SuperHyperDominating such that either of the following expressions hold for the Neutrosophic cardinalities of SuperHyperNeighbors of $s \in S$:

$$|S \cap N(s)| > |S \cap (V \setminus N(s))| + \delta; \quad \text{136EQN1}$$
$$|S \cap N(s)| < |S \cap (V \setminus N(s))| + \delta. \quad \text{136EQN2}$$

The Expression (28.1), holds if S is an $\delta-$**SuperHyperOffensive**. And the Expression (28.1), holds if S is an $\delta-$**SuperHyperDefensive**;

(ii) a **Neutrosophic $\delta-$SuperHyperDominating** is a Neutrosophic kind of Neutrosophic SuperHyperDominating such that either of the following Neutrosophic expressions hold for the Neutrosophic cardinalities of SuperHyperNeighbors of $s \in S$:

$$|S \cap N(s)|_{Neutrosophic} > |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta; \quad \text{136EQN3}$$
$$|S \cap N(s)|_{Neutrosophic} < |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta. \quad \text{136EQN4}$$

The Expression (28.1), holds if S is a **Neutrosophic $\delta-$SuperHyperOffensive**. And the Expression (28.1), holds if S is a **Neutrosophic $\delta-$SuperHyperDefensive**.

For the sake of having a Neutrosophic SuperHyperDominating, there's a need to "**redefine**" the notion of "Neutrosophic SuperHyperGraph". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values.

136DEF1 **Definition 9.0.21.** Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. It's redefined **Neutrosophic SuperHyperGraph** if the Table (28.1) holds.

It's useful to define a "Neutrosophic" version of SuperHyperClasses. Since there's more ways to get Neutrosophic type-results to make a Neutrosophic more understandable.

136DEF2 **Definition 9.0.22.** Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. There are some **Neutrosophic SuperHyperClasses** if the Table (28.2) holds. Thus Neutrosophic SuperHyperPath , SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultiPartite, and SuperHyperWheel, are **Neutrosophic SuperHyperPath**, **Neutrosophic SuperHyperCycle**, **Neutrosophic SuperHyperStar**, **Neutrosophic SuperHyperBipartite**, **Neutrosophic SuperHyperMultiPartite**, and **Neutrosophic SuperHyperWheel** if the Table (28.2) holds.

Table 9.1: The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph Mentioned in the Definition (28.0.23)

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

136TBL3

Table 9.2: The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph, Mentioned in the Definition (28.0.22)

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

136TBL4

Table 9.3: The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph Mentioned in the Definition (28.0.23)

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

136TBL1

It's useful to define a "Neutrosophic" version of a Neutrosophic SuperHyperDominating. Since there's more ways to get type-results to make a Neutrosophic SuperHyperDominating more Neutrosophicly understandable.

For the sake of having a Neutrosophic SuperHyperDominating, there's a need to "**redefine**" the Neutrosophic notion of "Neutrosophic SuperHyperDominating". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values.

136DEF1

Definition 9.0.23. Assume a SuperHyperDominating. It's redefined a **Neutrosophic SuperHyperDominating** if the Table (28.3) holds.

CHAPTER 10

Extreme SuperHyperDominating But As The Extensions Excerpt From Dense And Super Forms

136EXM1

Example 10.0.1. Assume a Extreme SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned Extreme Figures in every Extreme items.

- On the Figure (29.1), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward. E_1 and E_3 are some empty Extreme SuperHyperEdges but E_2 is a loop Extreme SuperHyperEdge and E_4 is a Extreme SuperHyperEdge. Thus in the terms of Extreme SuperHyperNeighbor, there's only one Extreme SuperHyperEdge, namely, E_4. The Extreme SuperHyperVertex, V_3 is Extreme isolated means that there's no Extreme SuperHyperEdge has it as a Extreme endpoint. Thus the Extreme SuperHyperVertex, V_3, **is** excluded in every given Extreme SuperHyperDominating.

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} = 3z.
\end{aligned}
$$

- On the Figure (29.2), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward. E_1, E_2 and E_3 are some empty Extreme SuperHyperEdges but E_4 is a Extreme SuperHyperEdge. Thus in the terms of Extreme SuperHyperNeighbor, there's only one Extreme SuperHyperEdge, namely, E_4. The Extreme SuperHyperVertex, V_3 is Extreme isolated means that there's no Extreme SuperHyperEdge has it as a Extreme endpoint. Thus the Extreme SuperHyperVertex, V_3,

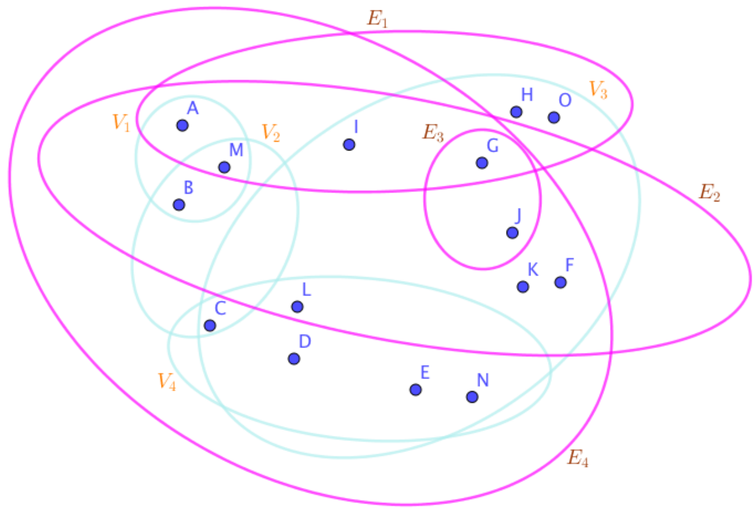


Figure 10.1: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG1

<u>is</u> excluded in every given Extreme SuperHyperDominating.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-Quasi-SuperHyperDominating SuperHyperPolynomial}} = 3z.
\end{aligned}$$

- On the Figure (29.3), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} = 3z.
\end{aligned}$$

- On the Figure (29.4), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_2, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = 2z^2.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_1, V_4\}.
\end{aligned}$$

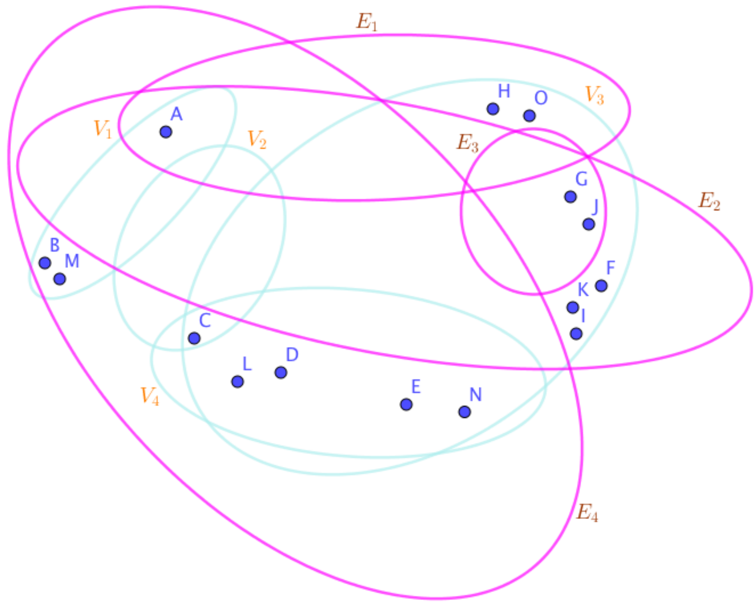


Figure 10.2: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG2

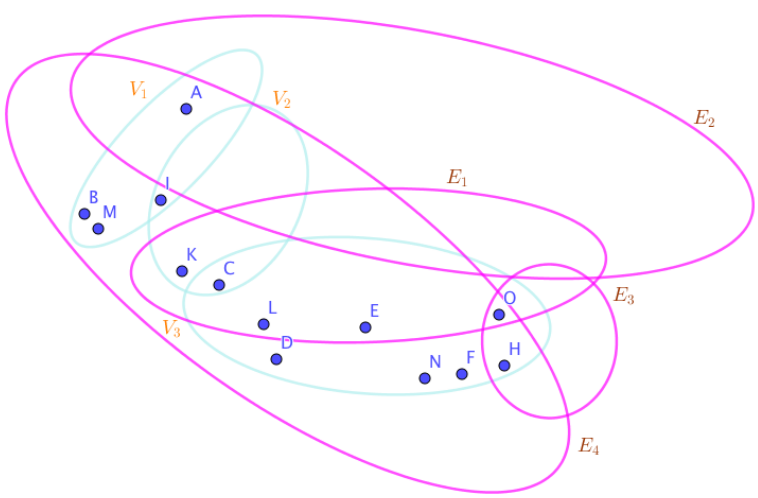


Figure 10.3: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG3

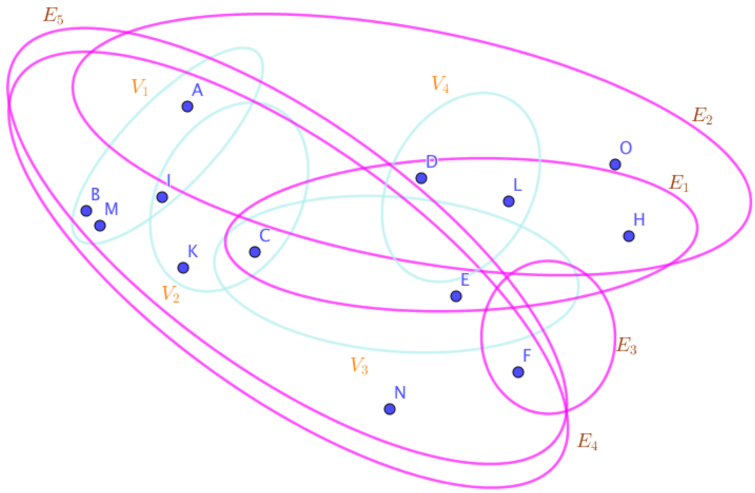


Figure 10.4: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG4

$$\begin{aligned}&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} =\\&5 \times 3z^2.\end{aligned}$$

- On the Figure (29.5), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_3\}.\\&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 4z.\\&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_5\}.\\&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} = z.\end{aligned}$$

- On the Figure (29.6), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}}\\&= \{E_{3i+1^{3}_{i=0}}, E_{3i+23^{3}_{i=0}}\}.\\&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}}\\&= 3 \times 3z^8.\\&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}}\\&= \{V_{3i+1^{3}_{i=0}}, V_{3i+11^{3}_{i=0}}\}.\\&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}}\end{aligned}$$

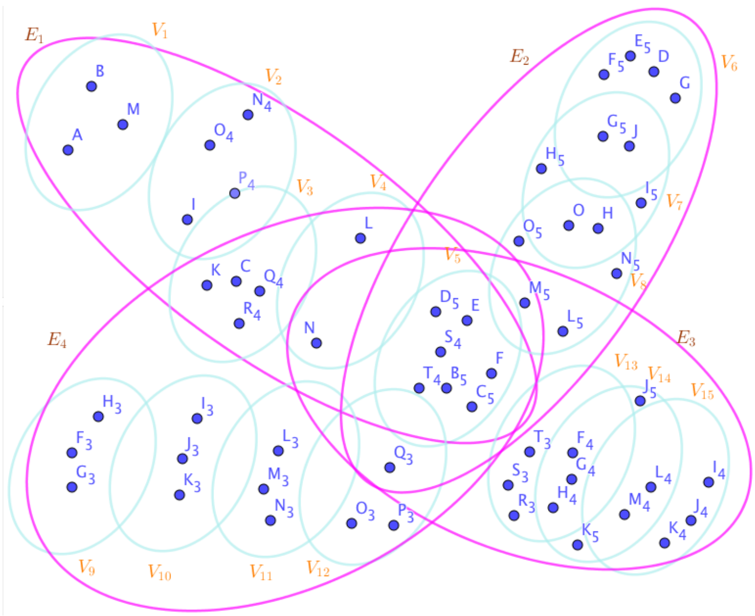


Figure 10.5: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG5

$$= 3 \times 3z^8.$$

- On the Figure (29.7), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_{15}, E_{16}, E_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}}$$
$$= 3 \times 3z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_3, V_6, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}}$$
$$= 4 \times 5 \times 5z^3.$$

- On the Figure (29.8), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_3, V_6, V_8\}.$$

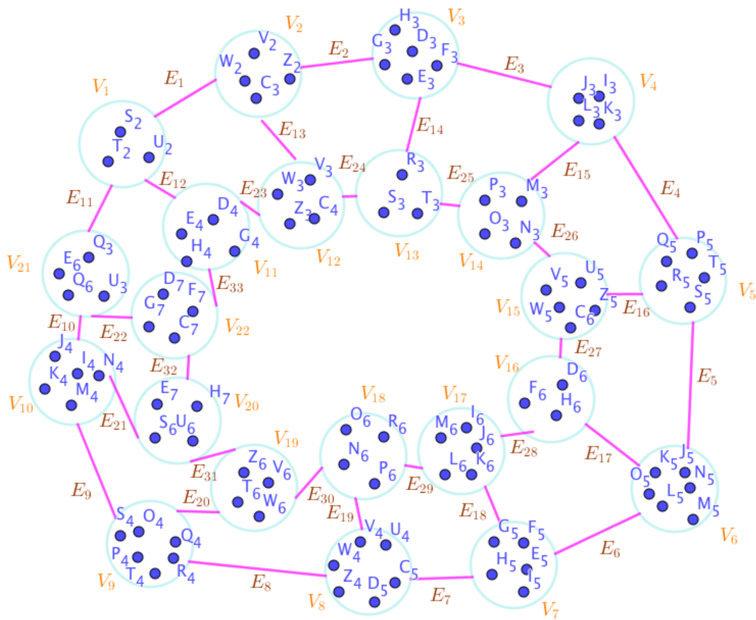


Figure 10.6: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3) 136NSHG6

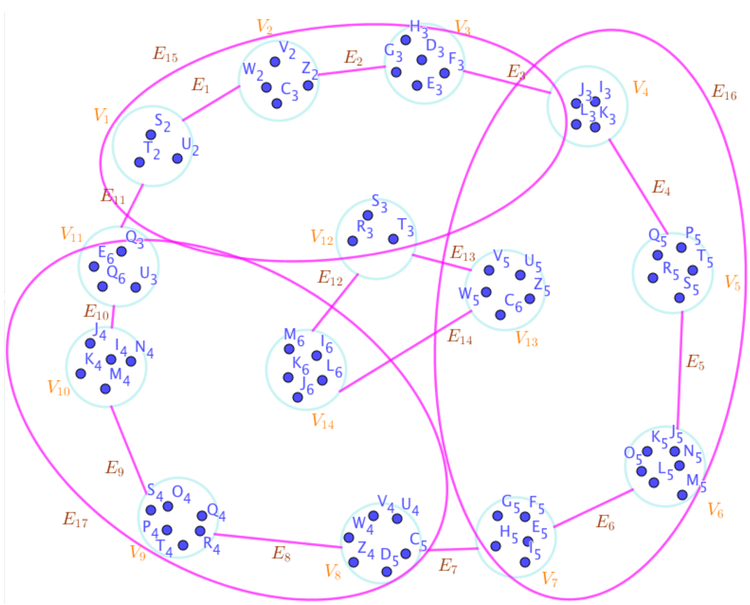


Figure 10.7: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3) 136NSHG7

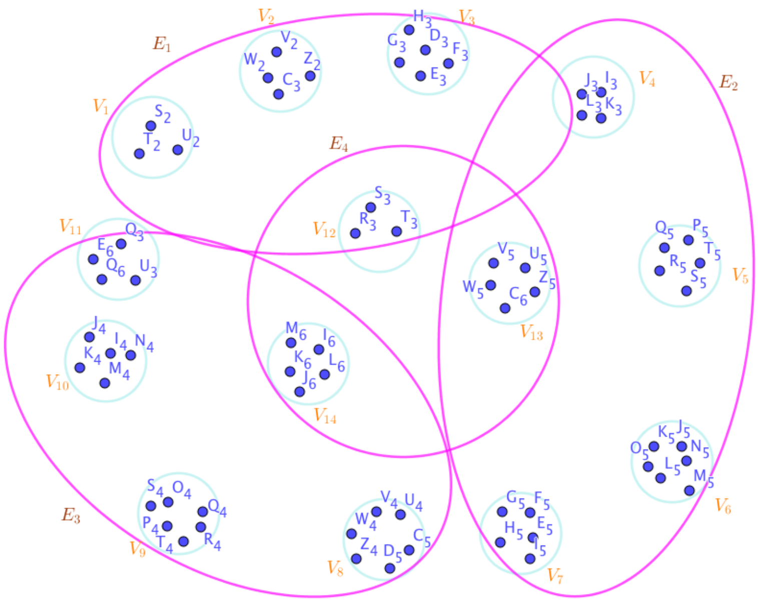


Figure 10.8: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG8

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} = \\
&= 4 \times 5 \times 5z^3.
\end{aligned}$$

- On the Figure (29.9), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} \\
&= \{E_{3i+1_{i=0}^{3}}, E_{23}\}. \\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} \\
&= 3z^5. \\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} \\
&= \{V_{3i+1_{i=0}^{3}}, V_{11}\}. \\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} \\
&= 3 \times 11z^5.
\end{aligned}$$

- On the Figure (29.10), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDom-

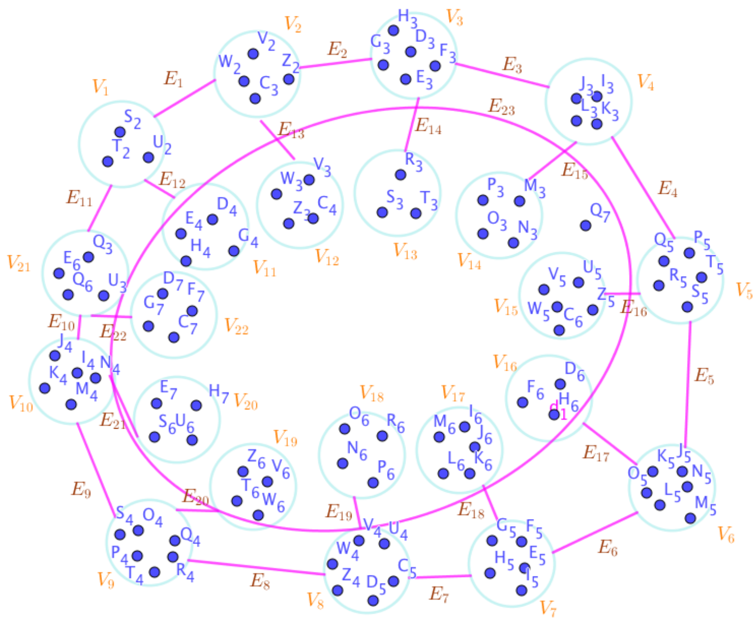


Figure 10.9: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3) 136NSHG9

inating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_3, V_6, V_8\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} =\\
&= 4 \times 5 \times 5z^3.
\end{aligned}$$

- On the Figure (29.11), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_1, E_3\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} z^2.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_1, V_6\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}}\\
&= 3 \times 3z^3.
\end{aligned}$$

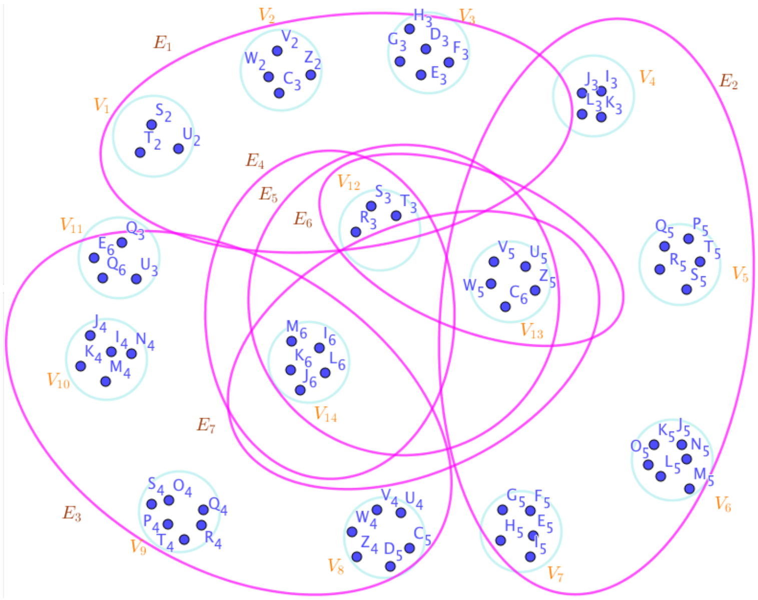


Figure 10.10: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG10

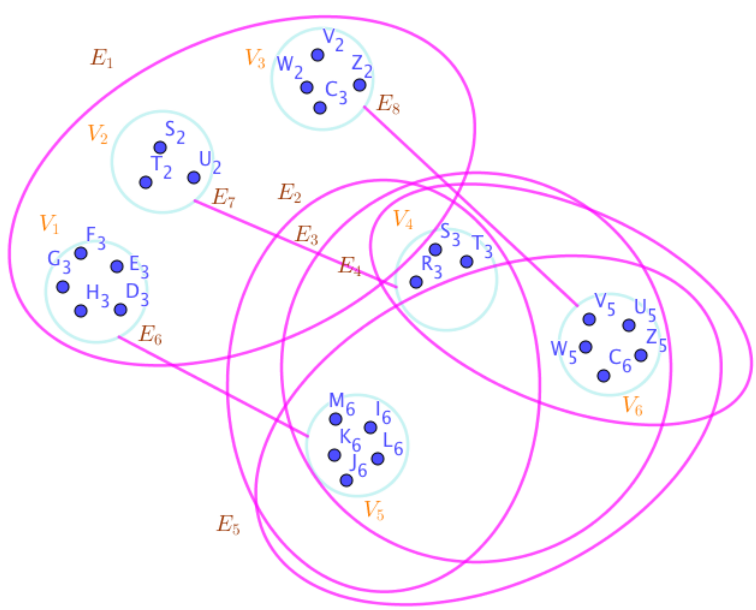


Figure 10.11: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG11

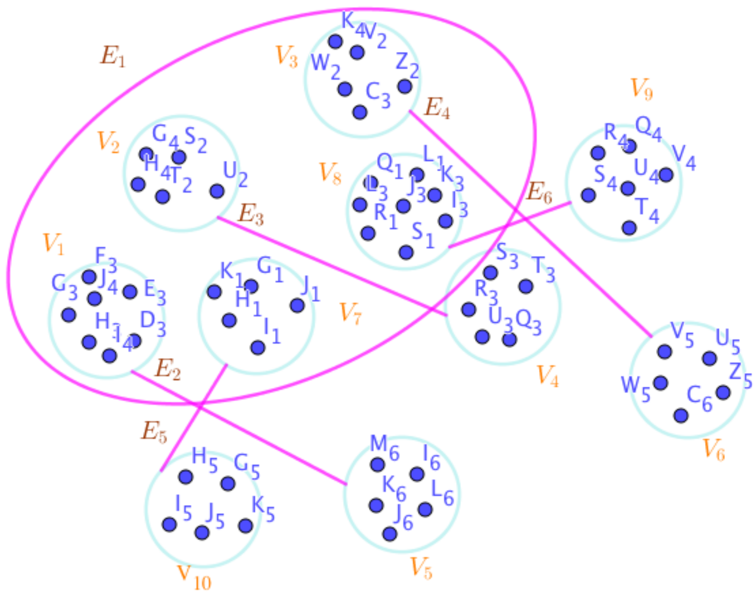


Figure 10.12: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG12

- On the Figure (29.12), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_1\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1, V^{i\neq 4,5,6}_{i^8_{i=1}}\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}}\\
&= 5 \times 5z^5.
\end{aligned}$$

- On the Figure (29.13), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominatingConnected}} = \{E_3, E_9\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z^2.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1, V_6\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}}\\
&= 3 \times 3z^2.
\end{aligned}$$

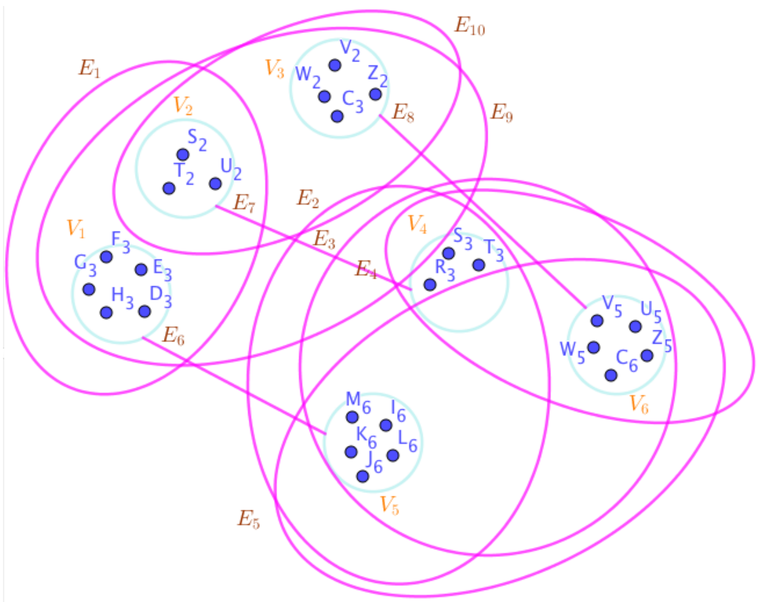


Figure 10.13: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG13

- On the Figure (29.14), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_2\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.15), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 4z^2.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} = z^2.
\end{aligned}$$

- On the Figure (29.16), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDom-

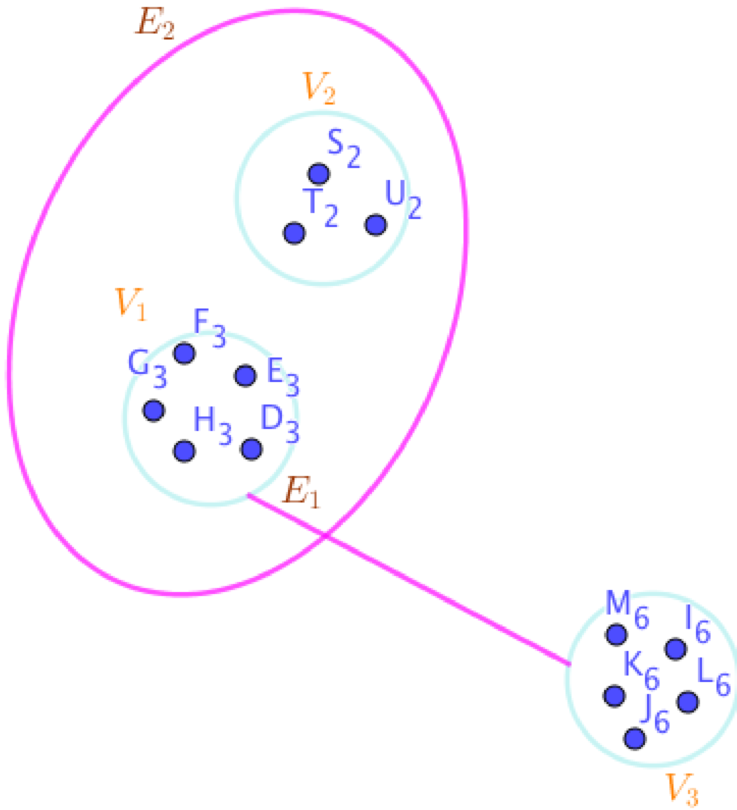


Figure 10.14: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG14

inating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_2, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 4z^2.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_2, V_7, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} =\\
&4 \times 3z^3.
\end{aligned}$$

- On the Figure (29.17), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_2, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 4z^2.
\end{aligned}$$

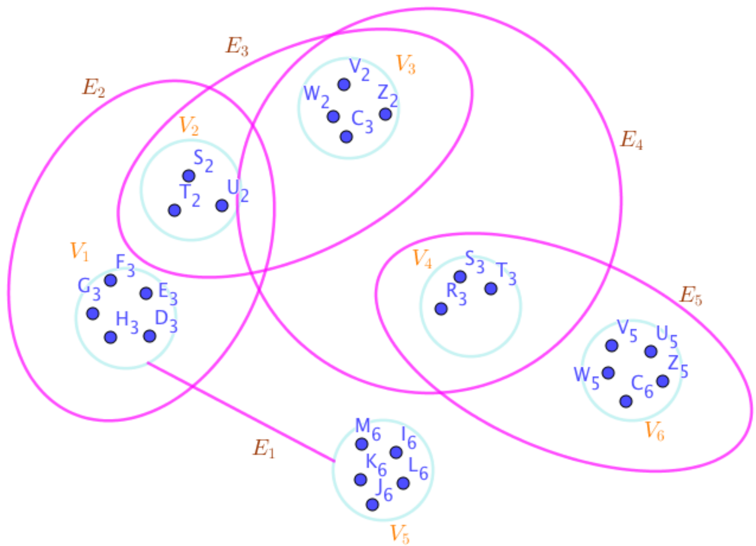


Figure 10.15: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG15

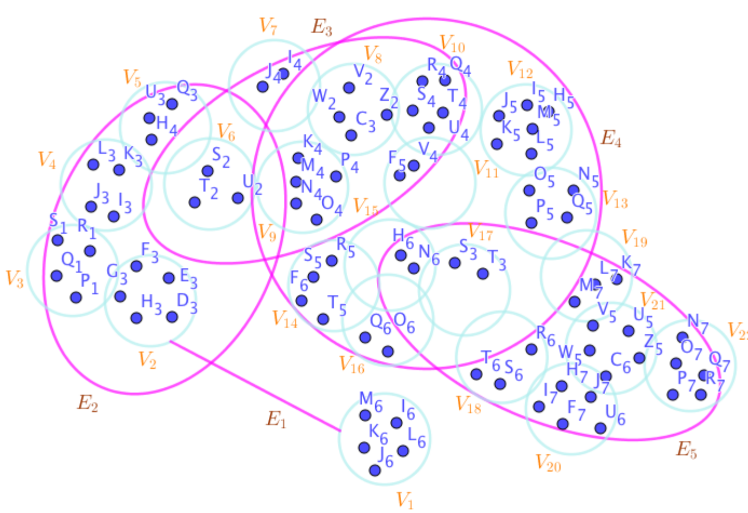


Figure 10.16: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG16

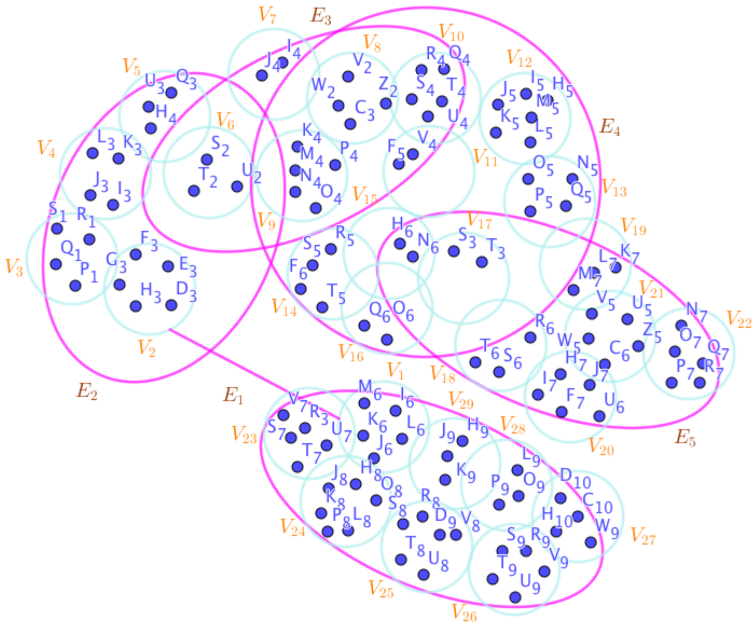


Figure 10.17: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG17

$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1, V_2, V_7, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} =$$
$$4 \times 3z^4.$$

- On the Figure (29.18), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1, V_2, V_6, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} =$$
$$2 \times 4 \times 3z^4.$$

- On the Figure (29.19), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_{3i+1_{i=0^3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = 3z^4.$$

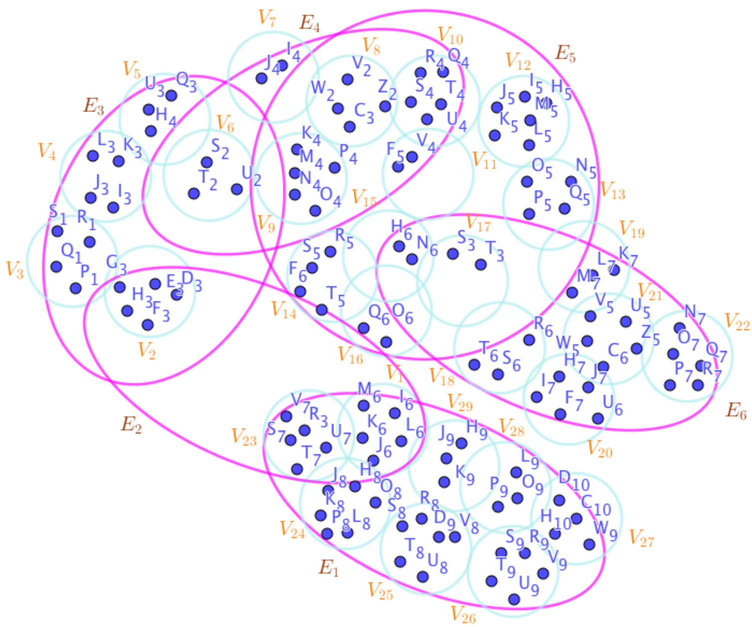


Figure 10.18: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG18

$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_{3i+1_{i=0^3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} = 3^4.$$

- On the Figure (29.20), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 10z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} = z.$$

- On the Figure (29.21), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} = 10z.$$

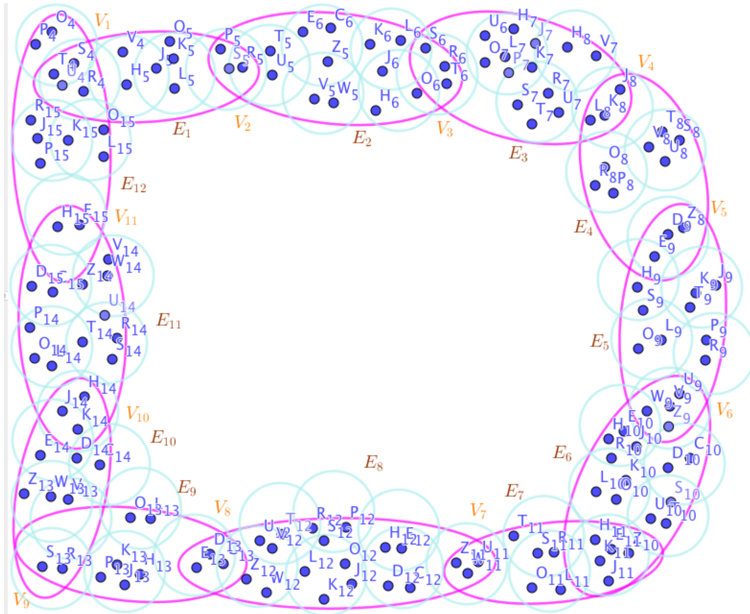


Figure 10.19: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3) 136NSHG19

- On the Figure (29.22), the Extreme SuperHyperNotion, namely, Extreme SuperHyperDominating, is up. The Extreme Algorithm is Extremely straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 4z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_3, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}}$$
$$= 5 \times 1z^2.$$

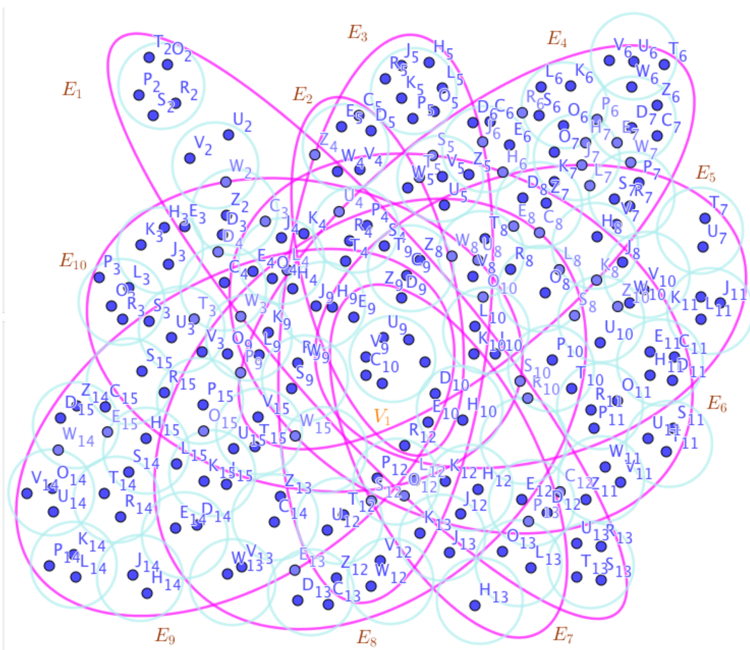


Figure 10.20: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

136NSHG20

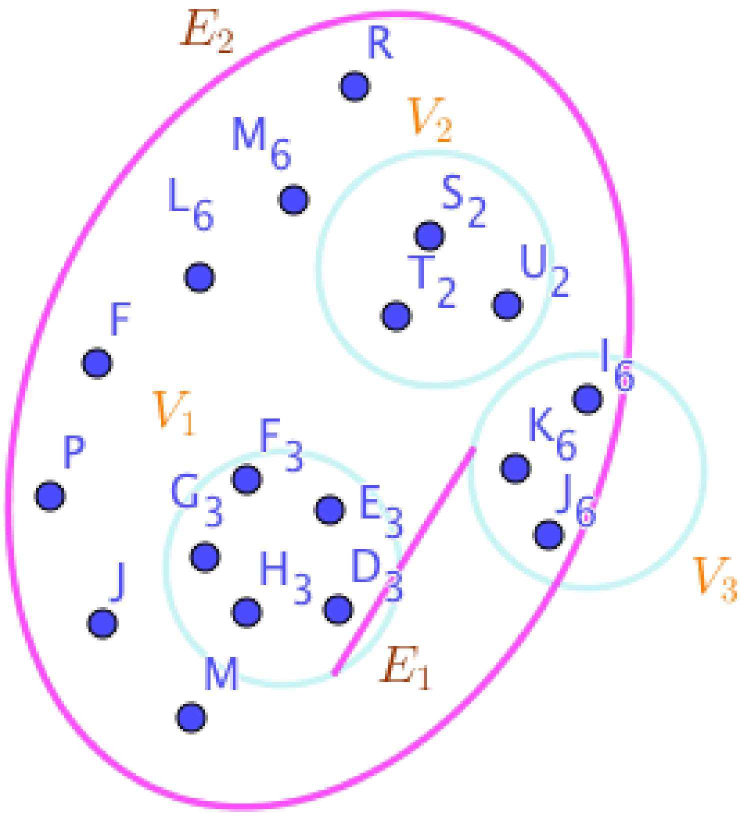


Figure 10.21: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

95NHG1

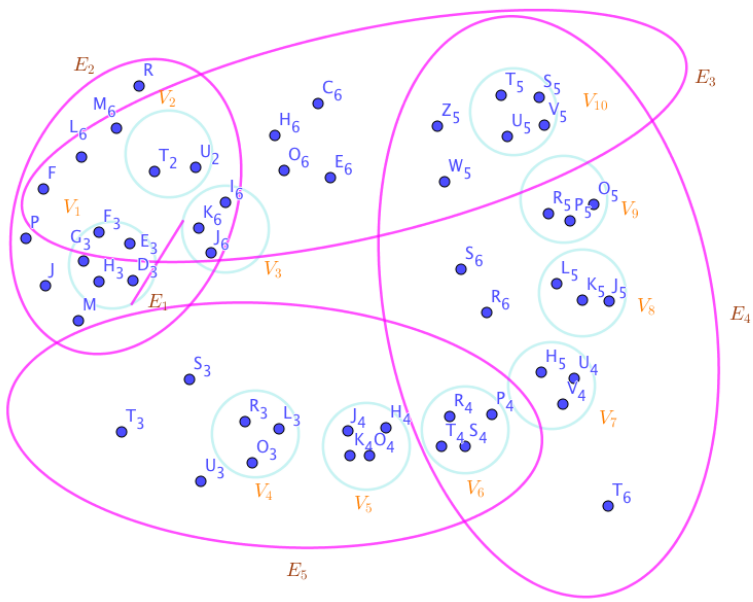


Figure 10.22: The Extreme SuperHyperGraphs Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.3)

95NHG2

CHAPTER 11

The Extreme Departures on The Theoretical Results Toward Theoretical Motivations

The previous Extreme approach apply on the upcoming Extreme results on Extreme SuperHyperClasses.

Proposition 11.0.1. *Assume a connected Extreme SuperHyperPath $ESHP : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating} = \\
&= \{E_{3i+1}\}_{i=0}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Extreme\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating\ SuperHyperPolynomial} \\
&= 3z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Extreme\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating} \\
&= \{V^{EXTERNAL}{}_{3i+1}\}_{i=0}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Extreme\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial} \\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Extreme\ Cardinality} 3z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Extreme\ Cardinality}}{3}}.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P : \\
&V_2^{EXTERNAL}, E_2, \\
&V_3^{EXTERNAL}, E_3, \\
&\ldots, \\
&E_{\lfloor \frac{|E_{ESHG:(V,E)}|_{\text{Extreme Cardinality}}}{3} - 1}, V^{EXTERNAL}{}_{\lfloor \frac{|E_{ESHG:(V,E)}|_{\text{Extreme Cardinality}}}{3}}
\end{aligned}$$

be a longest path taken from a connected Extreme SuperHyperPath $ESHP : (V, E)$. There's a

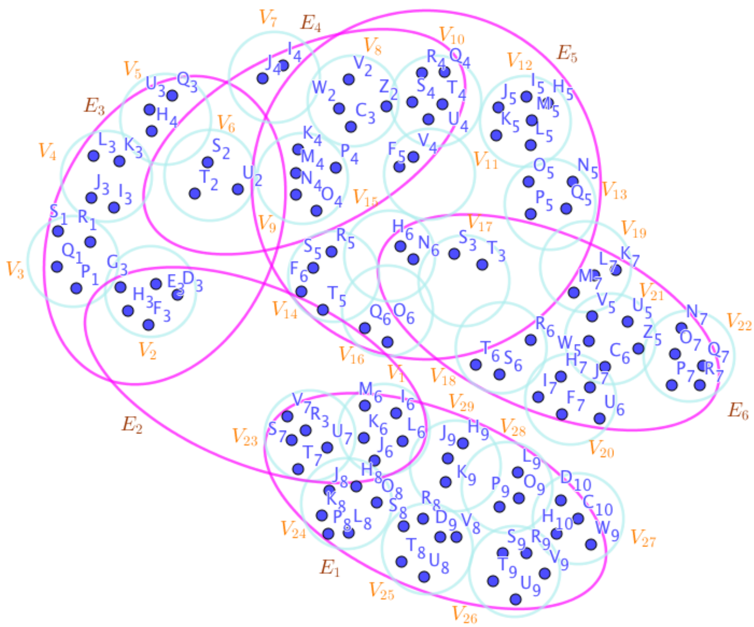


Figure 11.1: a Extreme SuperHyperPath Associated to the Notions of Extreme SuperHyperDominating in the Example (41.0.5) 136NSHG18a

new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. ■

136EXM18a **Example 11.0.2.** In the Figure (30.1), the connected Extreme SuperHyperPath $ESHP : (V, E)$, is highlighted and featured. The Extreme SuperHyperSet, in the Extreme SuperHyperModel (30.1), is the SuperHyperDominating.

Proposition 11.0.3. *Assume a connected Extreme SuperHyperCycle $ESHC : (V, E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating} = \\
&= \{E_{3i+1}\}_{i=0}^{\rfloor\frac{|E_{ESHG:(V,E)}|_{Extreme\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating\ SuperHyperPolynomial} \\
&= 3z^{\rfloor\frac{|E_{ESHG:(V,E)}|_{Extreme\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating}
\end{aligned}
$$

$$
\begin{aligned}
&= \{V^{EXTERNAL}{}_{3i+1}\}_{i=0}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Extreme\ Cardinality}}{3}}.\\
&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial}\\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Extreme\ Cardinality} 3z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Extreme\ Cardinality}}{3}}.
\end{aligned}
$$

Proof. Let

$$
\begin{aligned}
&P:\\
&V_2^{EXTERNAL}, E_2,\\
&V_3^{EXTERNAL}, E_3,\\
&\ldots,\\
&E_{\lfloor \frac{|E_{ESHG:(V,E)}|_{\text{Extreme Cardinality}}}{3} - 1}, V^{EXTERNAL}{}_{\lfloor \frac{|E_{ESHG:(V,E)}|_{\text{Extreme Cardinality}}}{3}}
\end{aligned}
$$

be a longest path taken from a connected Extreme SuperHyperCycle $ESHC : (V, E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. ■

136EXM19a

Example 11.0.4. In the Figure (30.2), the connected Extreme SuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained Extreme SuperHyperSet, in the Extreme SuperHyperModel (30.2), is the Extreme SuperHyperDominating.

Proposition 11.0.5. *Assume a connected Extreme SuperHyperStar $ESHS : (V, E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating} = \{E_i \in E_{ESHG:(V,E)}\}.\\
&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating\ SuperHyperPolynomial}\\
&= |i \mid E_i \in |E_{ESHG:(V,E)}|_{Extreme\ Cardinality}|z.\\
&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating} = \{CENTER \in V_{ESHG:(V,E)}\}.\\
&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial} = z.
\end{aligned}
$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, E_j.$$

be a longest path taken a connected Extreme SuperHyperStar $ESHS : (V, E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

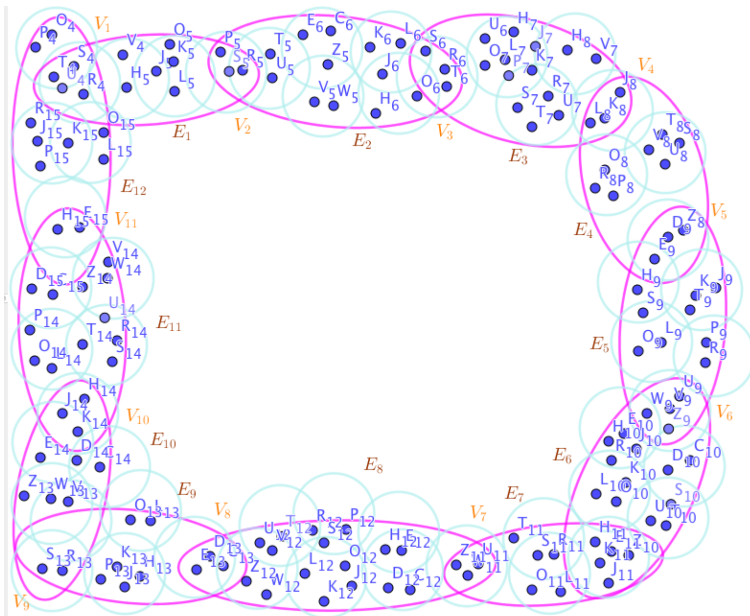


Figure 11.2: a Extreme SuperHyperCycle Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.7)

136NSHG19a

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. ■

136EXM20a

Example 11.0.6. In the Figure (30.3), the connected Extreme SuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained Extreme SuperHyperSet, by the Algorithm in previous Extreme result, of the Extreme SuperHyperVertices of the connected Extreme SuperHyperStar $ESHS : (V, E)$, in the Extreme SuperHyperModel (30.3), is the Extreme SuperHyperDominating.

Proposition 11.0.7. *Assume a connected Extreme SuperHyperBipartite $ESHB : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating} \\
&= \{E_a \in E_{P_i^{ESHG:(V,E)}}, \\
&\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| = \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}. \\
&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating\ SuperHyperPolynomial} \\
&= z^{\min |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|} \\
&\mathit{where}\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| \\
&= \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}. \\
&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating} \\
&= \{V_a^{EXTERNAL} \in V^{EXTERNAL}_{P_i^{ESHG:(V,E)}}, V_b^{EXTERNAL} \in V^{EXTERNAL}_{P_i^{ESHG:(V,E)}},\ i \neq j\}.
\end{aligned}$$

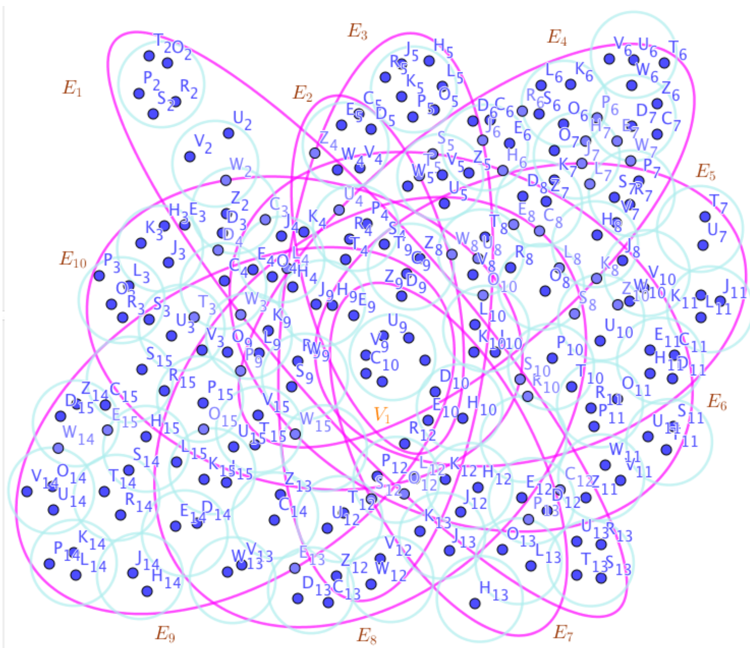


Figure 11.3: a Extreme SuperHyperStar Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.9)

136NSHG20a

$$\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial}$$
$$= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Extreme\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i^{ESHG:(V,E)}| choose\ 2) = z^2.$$

Proof. Let

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2$$

is a longest path taken from a connected Extreme SuperHyperBipartite $ESHB:(V,E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. Then there's no at least one SuperHyperDominating. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperDominating could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}&P :\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

is a longest SuperHyperDominating taken from a connected Extreme SuperHyperBipartite $ESHB : (V, E)$. Thus only some SuperHyperVertices and only minimum-Extreme-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}&P :\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2,\end{aligned}$$

The latter is straightforward. ■

136EXM21a

Example 11.0.8. In the Extreme Figure (30.4), the connected Extreme SuperHyperBipartite $ESHB : (V, E)$, is Extreme highlighted and Extreme featured. The obtained Extreme SuperHyperSet, by the Extreme Algorithm in previous Extreme result, of the Extreme SuperHyperVertices of the connected Extreme SuperHyperBipartite $ESHB : (V, E)$, in the Extreme SuperHyperModel (30.4), is the Extreme SuperHyperDominating.

Proposition 11.0.9. *Assume a connected Extreme SuperHyperMultipartite $ESHM : (V, E)$. Then*

$$\begin{aligned}&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating}\\&= \{E_a \in E_{{P_i}^{ESHG:(V,E)}},\\&\ \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| = \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating\ SuperHyperPolynomial}\\&= z^{\min |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\&where\ \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}|\\&= \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating}\\&= \{V_a^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}}, V_b^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}},\ i \neq j\}.\\&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial}\\&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Extreme\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|{P_i}^{ESHG:(V,E)}|choose\ 2) = z^2.\end{aligned}$$

Proof. Let

$$\begin{aligned}&P :\\&V_1^{EXTERNAL}, E_1,\end{aligned}$$

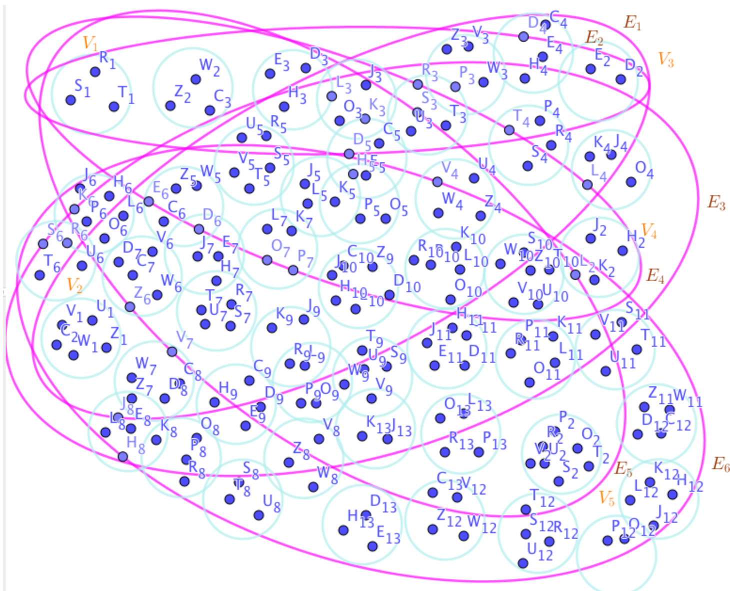


Figure 11.4: Extreme SuperHyperBipartite Extreme Associated to the Extreme Notions of Extreme SuperHyperDominating in the Example (41.0.11)

136NSHG21a

$$V_2^{EXTERNAL}, E_2$$

is a longest SuperHyperDominating taken from a connected Extreme SuperHyperMultipartite $ESHM : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. Then there's no at least one SuperHyperDominating. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperDominating could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2
\end{aligned}$$

is a longest path taken from a connected Extreme SuperHyperMultipartite $ESHM : (V, E)$. Thus only some SuperHyperVertices and only minimum-Extreme-of-SuperHyperPart SuperHyperEdges

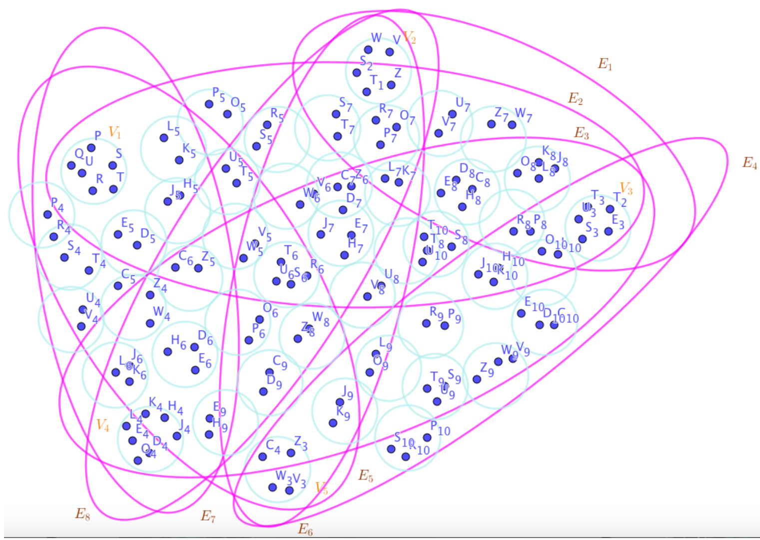


Figure 11.5: a Extreme SuperHyperMultipartite Associated to the Notions of Extreme SuperHyperDominating in the Example (41.0.13)

136NSHG22a

are attained in any solution

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

is a longest path taken from a connected Extreme SuperHyperMultipartite $ESHM:(V,E)$. The latter is straightforward. ∎

136EXM22a

Example 11.0.10. In the Figure (30.5), the connected Extreme SuperHyperMultipartite $ESHM:(V,E)$, is highlighted and Extreme featured. The obtained Extreme SuperHyperSet, by the Algorithm in previous Extreme result, of the Extreme SuperHyperVertices of the connected Extreme SuperHyperMultipartite $ESHM:(V,E)$, in the Extreme SuperHyperModel (30.5), is the Extreme SuperHyperDominating.

Proposition 11.0.11. *Assume a connected Extreme SuperHyperWheel $ESHW:(V,E)$. Then,*

$$\begin{aligned}&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating}=\{E_i\in E_{ESHG:(V,E)}\}.\\&\mathcal{C}(NSHG)_{Extreme\ SuperHyperDominating\ SuperHyperPolynomial}\\&=|i\mid E_i\in|E^*{}_{ESHG:(V,E)}|_{Extreme\ Cardinality}|z.\\&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating}=\{CENTER\in V_{ESHG:(V,E)}\}.\\&\mathcal{C}(NSHG)_{Extreme\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial}=z.\end{aligned}$$

Proof. Let

$$P:V^{EXTERNAL}{}_i,E^*{}_i,CENTER,E_j.$$

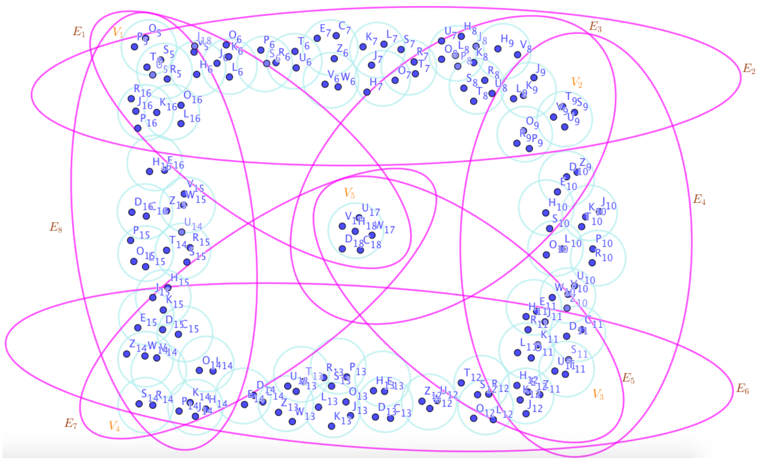


Figure 11.6: a Extreme SuperHyperWheel Extreme Associated to the Extreme Notions of Extreme SuperHyperDominating in the Extreme Example (41.0.15) 136NSHG23a

is a longest SuperHyperDominating taken from a connected Extreme SuperHyperWheel $ESHW : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. Then there's at least one SuperHyperDominating. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperDominating could be applied. The unique embedded SuperHyperDominating proposes some longest SuperHyperDominating excerpt from some representatives. The latter is straightforward. ■

136EXM23a **Example 11.0.12.** In the Extreme Figure (30.6), the connected Extreme SuperHyperWheel $NSHW : (V, E)$, is Extreme highlighted and featured. The obtained Extreme SuperHyperSet, by the Algorithm in previous result, of the Extreme SuperHyperVertices of the connected Extreme SuperHyperWheel $ESHW : (V, E)$, in the Extreme SuperHyperModel (30.6), is the Extreme SuperHyperDominating.

CHAPTER 12

The Surveys of Mathematical Sets On The Results But As The Initial Motivation

For the SuperHyperDominating, Extreme SuperHyperDominating, and the Extreme SuperHyperDominating, some general results are introduced.

Remark 12.0.1. Let remind that the Extreme SuperHyperDominating is "redefined" on the positions of the alphabets.

Corollary 12.0.2. *Assume Extreme SuperHyperDominating. Then*

$$\begin{aligned}
&Extreme\ SuperHyperDominating = \\
&\{theSuperHyperDominatingoftheSuperHyperVertices \mid \\
&\max |SuperHyperOffensive \\
&SuperHyperDominating \\
&|_{ExtremecardinalityamidthoseSuperHyperDominating.}\}
\end{aligned}$$

plus one Extreme SuperHypeNeighbor to one. Where σ_i is the unary operation on the SuperHyperVertices of the SuperHyperGraph to assign the determinacy, the indeterminacy and the neutrality, for $i = 1, 2, 3,$ respectively.

Corollary 12.0.3. *Assume a Extreme SuperHyperGraph on the same identical letter of the alphabet. Then the notion of Extreme SuperHyperDominating and SuperHyperDominating coincide.*

Corollary 12.0.4. *Assume a Extreme SuperHyperGraph on the same identical letter of the alphabet. Then a consecutive sequence of the SuperHyperVertices is a Extreme SuperHyperDominating if and only if it's a SuperHyperDominating.*

Corollary 12.0.5. *Assume a Extreme SuperHyperGraph on the same identical letter of the alphabet. Then a consecutive sequence of the SuperHyperVertices is a strongest SuperHyperDominating if and only if it's a longest SuperHyperDominating.*

Corollary 12.0.6. *Assume SuperHyperClasses of a Extreme SuperHyperGraph on the same identical letter of the alphabet. Then its Extreme SuperHyperDominating is its SuperHyperDominating and reversely.*

Corollary 12.0.7. *Assume a Extreme SuperHyperPath(-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel) on the same identical letter* *of the alphabet. Then its Extreme SuperHyperDominating is its SuperHyperDominating and reversely.*

Corollary 12.0.8. *Assume a Extreme SuperHyperGraph. Then its Extreme SuperHyperDominating isn't well-defined if and only if its SuperHyperDominating isn't well-defined.*

Corollary 12.0.9. *Assume SuperHyperClasses of a Extreme SuperHyperGraph. Then its Extreme SuperHyperDominating isn't well-defined if and only if its SuperHyperDominating isn't well-defined.*

Corollary 12.0.10. *Assume a Extreme SuperHyperPath(-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). Then its Extreme SuperHyperDominating isn't well-defined if and only if its SuperHyperDominating isn't well-defined.*

Corollary 12.0.11. *Assume a Extreme SuperHyperGraph. Then its Extreme SuperHyperDominating is well-defined if and only if its SuperHyperDominating is well-defined.*

Corollary 12.0.12. *Assume SuperHyperClasses of a Extreme SuperHyperGraph. Then its Extreme SuperHyperDominating is well-defined if and only if its SuperHyperDominating is well-defined.*

Corollary 12.0.13. *Assume a Extreme SuperHyperPath(-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). Then its Extreme SuperHyperDominating is well-defined if and only if its SuperHyperDominating is well-defined.*

Proposition 12.0.14. *Let $ESHG : (V, E)$ be a Extreme SuperHyperGraph. Then V is*

(i) : *the dual SuperHyperDefensive SuperHyperDominating;*

(ii) : *the strong dual SuperHyperDefensive SuperHyperDominating;*

(iii) : *the connected dual SuperHyperDefensive SuperHyperDominating;*

(iv) : *the δ-dual SuperHyperDefensive SuperHyperDominating;*

(v) : *the strong δ-dual SuperHyperDefensive SuperHyperDominating;*

(vi) : *the connected δ-dual SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.15. *Let $NTG : (V, E, \sigma, \mu)$ be a Extreme SuperHyperGraph. Then $\emptyset$ is*

(i) : *the SuperHyperDefensive SuperHyperDominating;*

(ii) : *the strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *the connected defensive SuperHyperDefensive SuperHyperDominating;*

(iv) : *the δ-SuperHyperDefensive SuperHyperDominating;*

(v) : *the strong δ-SuperHyperDefensive SuperHyperDominating;*

(vi) : *the connected δ-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.16. *Let $ESHG : (V, E)$ be a Extreme SuperHyperGraph. Then an independent SuperHyperSet is*

(i) : *the SuperHyperDefensive SuperHyperDominating;*

(ii) : *the strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *the connected SuperHyperDefensive SuperHyperDominating;*

(iv) : *the δ-SuperHyperDefensive SuperHyperDominating;*

(v) : *the strong δ-SuperHyperDefensive SuperHyperDominating;*

(vi) : *the connected δ-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.17. *Let $ESHG : (V, E)$ be a Extreme SuperHyperUniform SuperHyperGraph which is a SuperHyperDominating/SuperHyperPath. Then V is a maximal*

(i) : *SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected SuperHyperDefensive SuperHyperDominating;*

(iv) : *$\mathcal{O}(ESHG)$-SuperHyperDefensive SuperHyperDominating;*

(v) : *strong $\mathcal{O}(ESHG)$-SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected $\mathcal{O}(ESHG)$-SuperHyperDefensive SuperHyperDominating;*

Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 12.0.18. *Let $ESHG : (V, E)$ be a Extreme SuperHyperGraph which is a SuperHyperUniform SuperHyperWheel. Then V is a maximal*

(i) : *dual SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong dual SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected dual SuperHyperDefensive SuperHyperDominating;*

(iv) : *$\mathcal{O}(ESHG)$-dual SuperHyperDefensive SuperHyperDominating;*

(v) : *strong $\mathcal{O}(ESHG)$-dual SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected $\mathcal{O}(ESHG)$-dual SuperHyperDefensive SuperHyperDominating;*

Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 12.0.19. *Let $ESHG : (V, E)$ be a Extreme SuperHyperUniform SuperHyperGraph which is a SuperHyperDominating/SuperHyperPath. Then the number of*

(i) : *the SuperHyperDominating;*

(ii) : *the SuperHyperDominating;*

(iii) : *the connected SuperHyperDominating;*

(iv) : *the $\mathcal{O}(ESHG)$-SuperHyperDominating;*

(v) : *the strong* $\mathcal{O}(ESHG)$*-SuperHyperDominating;*

(vi) : *the connected* $\mathcal{O}(ESHG)$*-SuperHyperDominating.*

is one and it's only V*. Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.*

Proposition 12.0.20. *Let* $ESHG : (V, E)$ *be a Extreme SuperHyperUniform SuperHyperGraph which is a SuperHyperWheel. Then the number of*

(i) : *the dual SuperHyperDominating;*

(ii) : *the dual SuperHyperDominating;*

(iii) : *the dual connected SuperHyperDominating;*

(iv) : *the dual* $\mathcal{O}(ESHG)$*-SuperHyperDominating;*

(v) : *the strong dual* $\mathcal{O}(ESHG)$*-SuperHyperDominating;*

(vi) : *the connected dual* $\mathcal{O}(ESHG)$*-SuperHyperDominating.*

is one and it's only V*. Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.*

Proposition 12.0.21. *Let* $ESHG : (V, E)$ *be a Extreme SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then a SuperHyperSet contains [the SuperHyperCenter and] the half of multiplying* r *with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices is a*

(i) : *dual SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong dual SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected dual SuperHyperDefensive SuperHyperDominating;*

(iv) : $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperDominating;*

(v) : *strong* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.22. *Let* $ESHG : (V, E)$ *be a Extreme SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then a SuperHyperSet contains the half of multiplying* r *with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices in the biggest SuperHyperPart is a*

(i) : *SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected SuperHyperDefensive SuperHyperDominating;*

(iv) : *δ-SuperHyperDefensive SuperHyperDominating;*

(v) : *strong δ-SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected δ-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.23. *Let $ESHG : (V, E)$ be a Extreme SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then Then the number of*

(i) : *dual SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong dual SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected dual SuperHyperDefensive SuperHyperDominating;*

(iv) : $\frac{\mathcal{O}(ESHG)}{2}+1$*-dual SuperHyperDefensive SuperHyperDominating;*

(v) : *strong* $\frac{\mathcal{O}(ESHG)}{2}+1$*-dual SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected* $\frac{\mathcal{O}(ESHG)}{2}+1$*-dual SuperHyperDefensive SuperHyperDominating.*

is one and it's only S, a SuperHyperSet contains [the SuperHyperCenter and] the half of multiplying r with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices. Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 12.0.24. *Let $ESHG : (V, E)$ be a Extreme SuperHyperGraph. The number of connected component is $|V - S|$ if there's a SuperHyperSet which is a dual*

(i) : *SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected SuperHyperDefensive SuperHyperDominating;*

(iv) : *SuperHyperDominating;*

(v) : *strong 1-SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected 1-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.25. *Let $ESHG : (V, E)$ be a Extreme SuperHyperGraph. Then the number is at most $\mathcal{O}(ESHG)$ and the Extreme number is at most $\mathcal{O}_n(ESHG)$.*

Proposition 12.0.26. *Let $ESHG : (V, E)$ be a Extreme SuperHyperGraph which is SuperHyperComplete. The number is $\frac{\mathcal{O}(ESHG:(V,E))}{2}+1$ and the Extreme number is $\min \Sigma_{v\in\{v_1,v_2,\cdots,v_t\}_{t>\frac{\mathcal{O}(ESHG:(V,E))}{2}}\subseteq V}\sigma(v)$, in the setting of dual*

(i) : *SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong SuperHyperDefensive SuperHyperDominating;*

$(iii):$ *connected SuperHyperDefensive SuperHyperDominating;*

$(iv):$ $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$*-SuperHyperDefensive SuperHyperDominating;*

$(v):$ *strong* $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$*-SuperHyperDefensive SuperHyperDominating;*

$(vi):$ *connected* $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$*-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.27. *Let* $ESHG:(V,E)$ *be a Extreme SuperHyperGraph which is* $\emptyset$*. The number is* 0 *and the Extreme number is* 0*, for an independent SuperHyperSet in the setting of dual*

$(i):$ *SuperHyperDefensive SuperHyperDominating;*

$(ii):$ *strong SuperHyperDefensive SuperHyperDominating;*

$(iii):$ *connected SuperHyperDefensive SuperHyperDominating;*

$(iv):$ 0*-SuperHyperDefensive SuperHyperDominating;*

$(v):$ *strong* 0*-SuperHyperDefensive SuperHyperDominating;*

$(vi):$ *connected* 0*-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.28. *Let* $ESHG:(V,E)$ *be a Extreme SuperHyperGraph which is SuperHyperComplete. Then there's no independent SuperHyperSet.*

Proposition 12.0.29. *Let* $ESHG:(V,E)$ *be a Extreme SuperHyperGraph which is SuperHyperDominating/SuperHyperPath/SuperHyperWheel. The number is* $\mathcal{O}(ESHG:(V,E))$ *and the Extreme number is* $\mathcal{O}_n(ESHG:(V,E))$*, in the setting of a dual*

$(i):$ *SuperHyperDefensive SuperHyperDominating;*

$(ii):$ *strong SuperHyperDefensive SuperHyperDominating;*

$(iii):$ *connected SuperHyperDefensive SuperHyperDominating;*

$(iv):$ $\mathcal{O}(ESHG:(V,E))$*-SuperHyperDefensive SuperHyperDominating;*

$(v):$ *strong* $\mathcal{O}(ESHG:(V,E))$*-SuperHyperDefensive SuperHyperDominating;*

$(vi):$ *connected* $\mathcal{O}(ESHG:(V,E))$*-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.30. *Let* $ESHG:(V,E)$ *be a Extreme SuperHyperGraph which is SuperHyperStar/complete SuperHyperBipartite/complete SuperHyperMultiPartite. The number is* $\frac{\mathcal{O}(ESHG:(V,E))}{2}+1$ *and the Extreme number is* $\min \Sigma_{v\in\{v_1,v_2,\cdots,v_t\}_{t>\frac{\mathcal{O}(ESHG:(V,E))}{2}}\subseteq V}\sigma(v)$*, in the setting of a dual*

$(i):$ *SuperHyperDefensive SuperHyperDominating;*

$(ii):$ *strong SuperHyperDefensive SuperHyperDominating;*

$(iii):$ *connected SuperHyperDefensive SuperHyperDominating;*

(iv) : $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$-*SuperHyperDefensive SuperHyperDominating;*

(v) : *strong* $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$-*SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected* $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$-*SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.31. *Let $\mathcal{NSHF} : (V,E)$ be a SuperHyperFamily of the ESHGs : (V,E) Extreme SuperHyperGraphs which are from one-type SuperHyperClass which the result is obtained for the individuals. Then the results also hold for the SuperHyperFamily $\mathcal{NSHF} : (V,E)$ of these specific SuperHyperClasses of the Extreme SuperHyperGraphs.*

Proposition 12.0.32. *Let $ESHG : (V,E)$ be a strong Extreme SuperHyperGraph. If S is a dual SuperHyperDefensive SuperHyperDominating, then $\forall v \in V \setminus S,\ \exists x \in S$ such that*

(i) $v \in N_s(x)$;

(ii) $vx \in E$.

Proposition 12.0.33. *Let $ESHG : (V,E)$ be a strong Extreme SuperHyperGraph. If S is a dual SuperHyperDefensive SuperHyperDominating, then*

(i) *S is SuperHyperDominating set;*

(ii) *there's $S \subseteq S'$ such that $|S'|$ is SuperHyperChromatic number.*

Proposition 12.0.34. *Let $ESHG : (V,E)$ be a strong Extreme SuperHyperGraph. Then*

(i) $\Gamma \leq \mathcal{O}$;

(ii) $\Gamma_s \leq \mathcal{O}_n$.

Proposition 12.0.35. *Let $ESHG : (V,E)$ be a strong Extreme SuperHyperGraph which is connected. Then*

(i) $\Gamma \leq \mathcal{O} - 1$;

(ii) $\Gamma_s \leq \mathcal{O}_n - \Sigma_{i=1}^{3}\sigma_i(x)$.

Proposition 12.0.36. *Let $ESHG : (V,E)$ be an odd SuperHyperPath. Then*

(i) *the SuperHyperSet $S = \{v_2, v_4, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor + 1$ *and corresponded SuperHyperSet is* $S = \{v_2, v_4, \cdots, v_{n-1}\}$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S=\{v_2,v_4,\cdots,v_{n-1}\}}\Sigma_{i=1}^{3}\sigma_i(s), \Sigma_{s \in S=\{v_1,v_3,\cdots,v_{n-1}\}}\Sigma_{i=1}^{3}\sigma_i(s)\}$;

(iv) *the SuperHyperSets $S_1 = \{v_2, v_4, \cdots, v_{n-1}\}$ and $S_2 = \{v_1, v_3, \cdots, v_{n-1}\}$ are only a dual SuperHyperDominating.*

Proposition 12.0.37. *Let $ESHG : (V,E)$ be an even SuperHyperPath. Then*

(i) *the set $S = \{v_2, v_4, \cdots .v_n\}$ is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor$ *and corresponded SuperHyperSets are* $\{v_2, v_4, \cdots .v_n\}$ *and* $\{v_1, v_3, \cdots .v_{n-1}\}$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S=\{v_2,v_4,\cdots,v_n\}} \Sigma_{i=1}^{3} \sigma_i(s), \Sigma_{s \in S=\{v_1,v_3,\cdots .v_{n-1}\}} \Sigma_{i=1}^{3} \sigma_i(s)\}$;

(iv) *the SuperHyperSets* $S_1 = \{v_2, v_4, \cdots .v_n\}$ *and* $S_2 = \{v_1, v_3, \cdots .v_{n-1}\}$ *are only dual SuperHyperDominating.*

Proposition 12.0.38. *Let* $ESHG : (V, E)$ *be an even SuperHyperDominating. Then*

(i) *the SuperHyperSet* $S = \{v_2, v_4, \cdots, v_n\}$ *is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor$ *and corresponded SuperHyperSets are* $\{v_2, v_4, \cdots, v_n\}$ *and* $\{v_1, v_3, \cdots, v_{n-1}\}$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S=\{v_2,v_4,\cdots,v_n\}} \sigma(s), \Sigma_{s \in S=\{v_1,v_3,\cdots,v_{n-1}\}} \sigma(s)\}$;

(iv) *the SuperHyperSets* $S_1 = \{v_2, v_4, \cdots, v_n\}$ *and* $S_2 = \{v_1, v_3, \cdots, v_{n-1}\}$ *are only dual SuperHyperDominating.*

Proposition 12.0.39. *Let* $ESHG : (V, E)$ *be an odd SuperHyperDominating. Then*

(i) *the SuperHyperSet* $S = \{v_2, v_4, \cdots, v_{n-1}\}$ *is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor + 1$ *and corresponded SuperHyperSet is* $S = \{v_2, v_4, \cdots, v_{n-1}\}$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S=\{v_2,v_4,\cdots .v_{n-1}\}} \Sigma_{i=1}^{3} \sigma_i(s), \Sigma_{s \in S=\{v_1,v_3,\cdots .v_{n-1}\}} \Sigma_{i=1}^{3} \sigma_i(s)\}$;

(iv) *the SuperHyperSets* $S_1 = \{v_2, v_4, \cdots .v_{n-1}\}$ *and* $S_2 = \{v_1, v_3, \cdots .v_{n-1}\}$ *are only dual SuperHyperDominating.*

Proposition 12.0.40. *Let* $ESHG : (V, E)$ *be SuperHyperStar. Then*

(i) *the SuperHyperSet* $S = \{c\}$ *is a dual maximal SuperHyperDominating;*

(ii) $\Gamma = 1$;

(iii) $\Gamma_s = \Sigma_{i=1}^{3} \sigma_i(c)$;

(iv) *the SuperHyperSets* $S = \{c\}$ *and* $S \subset S'$ *are only dual SuperHyperDominating.*

Proposition 12.0.41. *Let* $ESHG : (V, E)$ *be SuperHyperWheel. Then*

(i) *the SuperHyperSet* $S = \{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}$ *is a dual maximal SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = |\{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}|$;

(iii) $\Gamma_s = \Sigma_{\{v_1,v_3\} \cup \{v_6,v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}} \Sigma_{i=1}^{3} \sigma_i(s)$;

(iv) *the SuperHyperSet* $\{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}$ *is only a dual maximal SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.42. *Let* $ESHG : (V, E)$ *be an odd SuperHyperComplete. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor + 1$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S=\{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}}$;

(iv) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *is only a dual SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.43. *Let* $ESHG : (V, E)$ *be an even SuperHyperComplete. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S=\{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}}$;

(iv) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *is only a dual maximal SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.44. *Let* $\mathcal{NSHF} : (V, E)$ *be a m-SuperHyperFamily of Extreme SuperHyperStars with common Extreme SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{c_1, c_2, \cdots, c_m\}$ *is a dual SuperHyperDefensive SuperHyperDominating for* $\mathcal{NSHF}$;

(ii) $\Gamma = m$ *for* $\mathcal{NSHF} : (V, E)$;

(iii) $\Gamma_s = \Sigma_{i=1}^{m} \Sigma_{j=1}^{3} \sigma_j(c_i)$ *for* $\mathcal{NSHF} : (V, E)$;

(iv) *the SuperHyperSets* $S = \{c_1, c_2, \cdots, c_m\}$ *and* $S \subset S'$ *are only dual SuperHyperDominating for* $\mathcal{NSHF} : (V, E)$.

Proposition 12.0.45. *Let* $\mathcal{NSHF} : (V, E)$ *be an m-SuperHyperFamily of odd SuperHyperComplete SuperHyperGraphs with common Extreme SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *is a dual maximal SuperHyperDefensive SuperHyperDominating for* $\mathcal{NSHF}$;

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor + 1$ *for* $\mathcal{NSHF} : (V, E)$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S=\{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}}$ *for* $\mathcal{NSHF} : (V, E)$;

(iv) *the SuperHyperSets* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *are only a dual maximal SuperHyperDominating for* $\mathcal{NSHF} : (V, E)$.

Proposition 12.0.46. *Let* $\mathcal{NSHF} : (V, E)$ *be a m-SuperHyperFamily of even SuperHyperComplete SuperHyperGraphs with common Extreme SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *is a dual SuperHyperDefensive SuperHyperDominating for* $\mathcal{NSHF} : (V, E)$;

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor$ *for* $\mathcal{NSHF} : (V, E)$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S=\{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}}$ *for* $\mathcal{NSHF} : (V, E)$;

(iv) *the SuperHyperSets* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *are only dual maximal SuperHyperDominating for* $\mathcal{NSHF} : (V, E)$.

Proposition 12.0.47. *Let $ESHG : (V, E)$ be a strong Extreme SuperHyperGraph. Then following statements hold;*

(i) *if $s \geq t$ and a SuperHyperSet S of SuperHyperVertices is an t-SuperHyperDefensive SuperHyperDominating, then S is an s-SuperHyperDefensive SuperHyperDominating;*

(ii) *if $s \leq t$ and a SuperHyperSet S of SuperHyperVertices is a dual t-SuperHyperDefensive SuperHyperDominating, then S is a dual s-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.48. *Let $ESHG : (V, E)$ be a strong Extreme SuperHyperGraph. Then following statements hold;*

(i) *if $s \geq t + 2$ and a SuperHyperSet S of SuperHyperVertices is an t-SuperHyperDefensive SuperHyperDominating, then S is an s-SuperHyperPowerful SuperHyperDominating;*

(ii) *if $s \leq t$ and a SuperHyperSet S of SuperHyperVertices is a dual t-SuperHyperDefensive SuperHyperDominating, then S is a dual s-SuperHyperPowerful SuperHyperDominating.*

Proposition 12.0.49. *Let $ESHG : (V, E)$ be a[an] [V-]SuperHyperUniform-strong-Extreme SuperHyperGraph. Then following statements hold;*

(i) *if $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{r}{2} \rfloor + 1$, then $ESHG : (V, E)$ is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) *if $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{r}{2} \rfloor + 1$, then $ESHG : (V, E)$ is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) *if $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$, then $ESHG : (V, E)$ is an V-SuperHyperDefensive SuperHyperDominating;*

(iv) *if $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$, then $ESHG : (V, E)$ is a dual V-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.50. *Let $ESHG : (V, E)$ is a[an] [V-]SuperHyperUniform-strong-Extreme SuperHyperGraph. Then following statements hold;*

(i) *$\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{r}{2} \rfloor + 1$ if $ESHG : (V, E)$ is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) *$\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{r}{2} \rfloor + 1$ if $ESHG : (V, E)$ is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) *$\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ if $ESHG : (V, E)$ is an V-SuperHyperDefensive SuperHyperDominating;*

(iv) $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is a dual V-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.51. *Let* $ESHG : (V, E)$ *is a[an] [V-]SuperHyperUniform-strong-Extreme SuperHyperGraph which is a SuperHyperComplete. Then following statements hold;*

(i) $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$ *if* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is an* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperDominating;*

(iv) $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is a dual* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.52. *Let* $ESHG : (V, E)$ *is a[an] [V-]SuperHyperUniform-strong-Extreme SuperHyperGraph which is a SuperHyperComplete. Then following statements hold;*

(i) *if* $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$*, then* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$*, then* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) *if* $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$*, then* $ESHG : (V, E)$ *is* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperDominating;*

(iv) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$*, then* $ESHG : (V, E)$ *is a dual* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.53. *Let* $ESHG : (V, E)$ *is a[an] [V-]SuperHyperUniform-strong-Extreme SuperHyperGraph which is SuperHyperDominating. Then following statements hold;*

(i) $\forall a \in S,\ |N_s(a) \cap S| < 2$ *if* $ESHG : (V, E))$ *is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) $\forall a \in V \setminus S,\ |N_s(a) \cap S| > 2$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperDominating;*

(iv) $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating.*

Proposition 12.0.54. *Let* $ESHG : (V, E)$ *is a[an] [V-]SuperHyperUniform-strong-Extreme SuperHyperGraph which is SuperHyperDominating. Then following statements hold;*

(i) *if* $\forall a \in S,\ |N_s(a) \cap S| < 2$*, then* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap S| > 2$, *then* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) *if* $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperDominating;*

(iv) *if* $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$, *then* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating.*

CHAPTER 13

Extreme Applications in Cancer's Extreme Recognition

The cancer is the Extreme disease but the Extreme model is going to figure out what's going on this Extreme phenomenon. The special Extreme case of this Extreme disease is considered and as the consequences of the model, some parameters are used. The cells are under attack of this disease but the moves of the cancer in the special region are the matter of mind. The Extreme recognition of the cancer could help to find some Extreme treatments for this Extreme disease. In the following, some Extreme steps are Extreme devised on this disease.

Step 1. (Extreme Definition) The Extreme recognition of the cancer in the long-term Extreme function.

Step 2. (Extreme Issue) The specific region has been assigned by the Extreme model [it's called Extreme SuperHyperGraph] and the long Extreme cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be Extreme SuperHyperGraph] to have convenient perception on what's happened and what's done.

Step 3. (Extreme Model) There are some specific Extreme models, which are well-known and they've got the names, and some general Extreme models. The moves and the Extreme traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a Extreme SuperHyperPath(-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the Extreme SuperHyperDominating or the Extreme SuperHyperDominating in those Extreme Extreme SuperHyperModels.

CHAPTER 14

Case 1: The Initial Extreme Steps Toward Extreme SuperHyperBipartite as Extreme SuperHyperModel

Step 4. (Extreme Solution) In the Extreme Figure (33.1), the Extreme SuperHyperBipartite is Extreme highlighted and Extreme featured.
By using the Extreme Figure (33.1) and the Table (33.1), the Extreme SuperHyperBipartite is obtained.
The obtained Extreme SuperHyperSet, by the Extreme Algorithm in previous Extreme result,

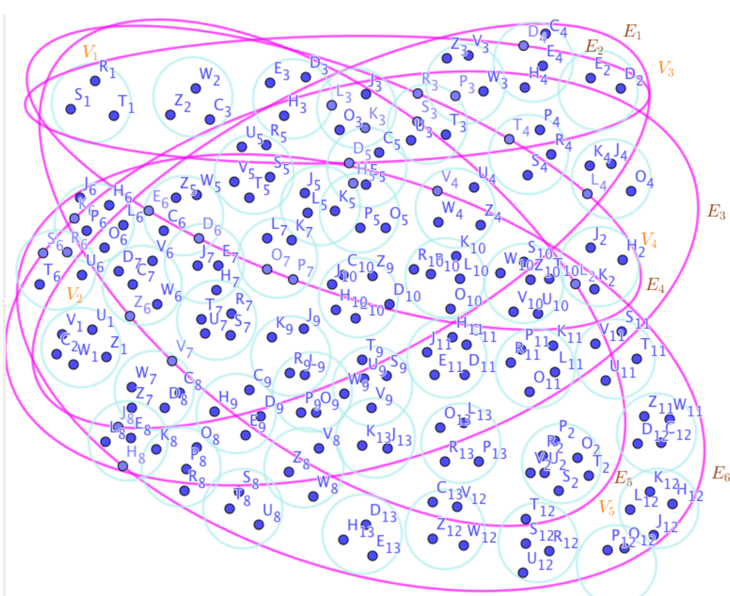


Figure 14.1: a Extreme SuperHyperBipartite Associated to the Notions of Extreme SuperHyper-Dominating

136NSHGaa21aa

Table 14.1: The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Extreme SuperHyperBipartite

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

136TBLaa21aa

of the Extreme SuperHyperVertices of the connected Extreme SuperHyperBipartite $ESHB:(V,E)$, in the Extreme SuperHyperModel (33.1), is the Extreme SuperHyperDominating.

CHAPTER 15

Case 2: The Increasing Extreme Steps Toward Extreme SuperHyperMultipartite as Extreme SuperHyperModel

Step 4. (Extreme Solution) In the Extreme Figure (34.1), the Extreme SuperHyperMultipartite is Extreme highlighted and Extreme featured.

By using the Extreme Figure (34.1) and the Table (34.1), the Extreme SuperHyperMultipartite is obtained.

The obtained Extreme SuperHyperSet, by the Extreme Algorithm in previous result,

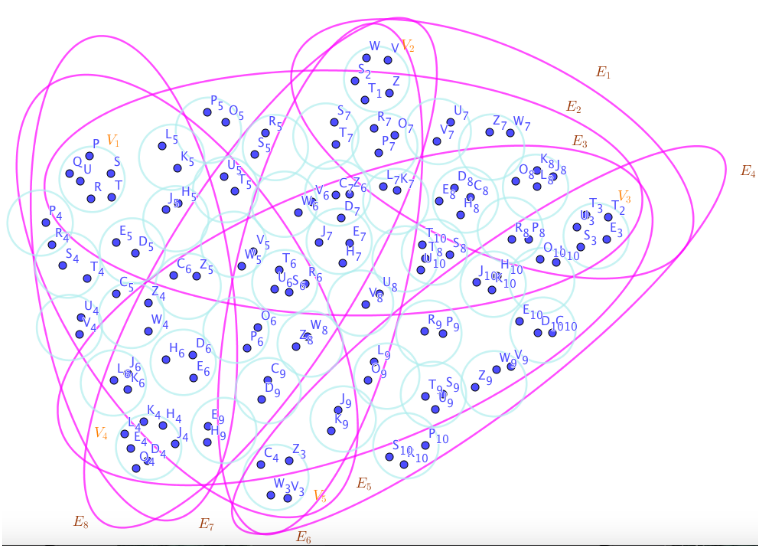


Figure 15.1: a Extreme SuperHyperMultipartite Associated to the Notions of Extreme SuperHyperDominating

136NSHGaa22aa

Table 15.1: The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Extreme SuperHyperMultipartite

136TBLaa22aa

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

of the Extreme SuperHyperVertices of the connected Extreme SuperHyperMultipartite $ESHM : (V, E)$, in the Extreme SuperHyperModel (34.1), is the Extreme SuperHyper-Dominating.

CHAPTER 16

Wondering Open Problems But As The Directions To Forming The Motivations

In what follows, some “problems” and some “questions” are proposed.
The SuperHyperDominating and the Extreme SuperHyperDominating are defined on a real-world application, titled “Cancer’s Recognitions”.

Question 16.0.1. *Which the else SuperHyperModels could be defined based on Cancer’s recognitions?*

Question 16.0.2. *Are there some SuperHyperNotions related to SuperHyperDominating and the Extreme SuperHyperDominating?*

Question 16.0.3. *Are there some Algorithms to be defined on the SuperHyperModels to compute them?*

Question 16.0.4. *Which the SuperHyperNotions are related to beyond the SuperHyperDominating and the Extreme SuperHyperDominating?*

Problem 16.0.5. *The SuperHyperDominating and the Extreme SuperHyperDominating do a SuperHyperModel for the Cancer’s recognitions and they’re based on SuperHyperDominating, are there else?*

Problem 16.0.6. *Which the fundamental SuperHyperNumbers are related to these SuperHyper-Numbers types-results?*

Problem 16.0.7. *What’s the independent research based on Cancer’s recognitions concerning the multiple types of SuperHyperNotions?*

CHAPTER 17

Conclusion and Closing Remarks

In this section, concluding remarks and closing remarks are represented. The drawbacks of this research are illustrated. Some benefits and some advantages of this research are highlighted. This research uses some approaches to make Extreme SuperHyperGraphs more understandable. In this endeavor, two SuperHyperNotions are defined on the SuperHyperDominating. For that sake in the second definition, the main definition of the Extreme SuperHyperGraph is redefined on the position of the alphabets. Based on the new definition for the Extreme SuperHyperGraph, the new SuperHyperNotion, Extreme SuperHyperDominating, finds the convenient background to implement some results based on that. Some SuperHyperClasses and some Extreme SuperHyperClasses are the cases of this research on the modeling of the regions where are under the attacks of the cancer to recognize this disease as it's mentioned on the title "Cancer's Recognitions". To formalize the instances on the SuperHyperNotion, SuperHyperDominating, the new SuperHyperClasses and SuperHyperClasses, are introduced. Some general results are gathered in the section on the SuperHyperDominating and the Extreme SuperHyperDominating. The clarifications, instances and literature reviews have taken the whole way through. In this research, the literature reviews have fulfilled the lines containing the notions and the results. The SuperHyperGraph and Extreme SuperHyperGraph are the SuperHyperModels on the "Cancer's Recognitions" and both bases are the background of this research. Sometimes the cancer has been happened on the region, full of cells, groups of cells and embedded styles. In this segment, the SuperHyperModel proposes some SuperHyperNotions based on the connectivities of the moves of the cancer in the longest and strongest styles with the formation of the design and the architecture are formally called " SuperHyperDominating" in the themes of jargons and buzzwords. The prefix "SuperHyper" refers to the theme of the embedded styles to figure out the background for the SuperHyperNotions. In the Table (36.1), benefits and avenues for this research are, figured out, pointed out and spoken out.

Table 17.1: An Overlook On This Research And Beyond

136TBLTBL

Advantages	Limitations
1. Redefining Extreme SuperHyperGraph	1. General Results
2. SuperHyperDominating	
3. Extreme SuperHyperDominating	2. Other SuperHyperNumbers
4. Modeling of Cancer's Recognitions	
5. SuperHyperClasses	3. SuperHyperFamilies

CHAPTER 18

ExtremeSuperHyperDuality But As The Extensions Excerpt From Dense And Super Forms

Definition 18.0.1. (Different ExtremeTypes of ExtremeSuperHyperDuality).
Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider an ExtremeSuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Extremee-SuperHyperDuality** if $\forall E_i \in E'$, $\exists E_j \in E_{ESHG:(V,E)} \setminus E'$ such that $V_a \in E_i, E_j$;

(ii) **Extremere-SuperHyperDuality** if $\forall E_i \in E'$, $\exists E_j \in E_{ESHG:(V,E)} \setminus E'$ such that $V_a \in E_i, E_j$ and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Extremev-SuperHyperDuality** if $\forall V_i \in V'$, $\exists V_j \in V_{ESHG:(V,E)} \setminus V'$ such that $V_i, V_j \in E_a$;

(iv) **Extremerv-SuperHyperDuality** if $\forall V_i \in V'$, $\exists V_j \in V_{ESHG:(V,E)} \setminus V'$ such that $V_i, V_j \in E_a$ and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **ExtremeSuperHyperDuality** if it's either of Extremee-SuperHyperDuality, Extremere-SuperHyperDuality, Extremev-SuperHyperDuality, and Extremerv-SuperHyperDuality.

Definition 18.0.2. ((Neutrosophic) SuperHyperDuality).
Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider an ExtremeSuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperDuality** if it's either of Extremee-SuperHyperDuality, Extremere-SuperHyperDuality, Extremev-SuperHyperDuality, and Extremerv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDuality;

(*ii*) a **ExtremeSuperHyperDuality** if it's either of Extremee-SuperHyperDuality, Extremere-SuperHyperDuality, Extremev-SuperHyperDuality, and Extremerv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for a ExtremeSuperHyperGraph $NSHG : (V, E)$ is the maximum Extremecardinality of the ExtremeSuperHyperEdges of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperDuality;

(*iii*) an **Extreme SuperHyperDuality SuperHyperPolynomial** if it's either of Extremee-SuperHyperDuality, Extremere-SuperHyperDuality, Extremev-SuperHyperDuality, and Extremerv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDuality; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **ExtremeSuperHyperDuality SuperHyperPolynomial** if it's either of Extremee-SuperHyperDuality, Extremere-SuperHyperDuality, Extremev-SuperHyperDuality, and Extremerv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the ExtremeSuperHyperPolynomial contains the Extremecoefficients defined as the Extremenumber of the maximum Extremecardinality of the ExtremeSuperHyperEdges of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperDuality; and the Extremepower is corresponded to its Extremecoefficient;

(*v*) an **Extreme R-SuperHyperDuality** if it's either of Extremee-SuperHyperDuality, Extremere-SuperHyperDuality, Extremev-SuperHyperDuality, and Extremerv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDuality;

(*vi*) a **ExtremeR-SuperHyperDuality** if it's either of Extremee-SuperHyperDuality, Extremere-SuperHyperDuality, Extremev-SuperHyperDuality, and Extremerv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the maximum Extremecardinality of the ExtremeSuperHyperVertices of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperDuality;

(*vii*) an **Extreme R-SuperHyperDuality SuperHyperPolynomial** if it's either of Extremee-SuperHyperDuality, Extremere-SuperHyperDuality, Extremev-SuperHyperDuality, and Extremerv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDuality; and the Extreme power is corresponded to its Extreme coefficient;

$(viii)$ a **ExtremeSuperHyperDuality SuperHyperPolynomial** if it's either of Extremee-SuperHyperDuality, Extremere-SuperHyperDuality, Extremev-SuperHyperDuality, and Extremerv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the ExtremeSuperHyperPolynomial contains the Extremecoefficients defined as the Extremenumber of the maximum Extremecardinality of the ExtremeSuperHyperVertices of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperDuality; and the Extremepower is corresponded to its Extremecoefficient.

136EXM1

Example 18.0.3. Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned ExtremeFigures in every Extremeitems.

- On the Figure (29.1), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Extreme SuperHyperEdges but E_2 is a loop ExtremeSuperHyperEdge and E_4 is an ExtremeSuperHyperEdge. Thus in the terms of ExtremeSuperHyperNeighbor, there's only one ExtremeSuperHyperEdge, namely, E_4. The ExtremeSuperHyperVertex, V_3 is Extremeisolated means that there's no ExtremeSuperHyperEdge has it as an Extremeendpoint. Thus the ExtremeSuperHyperVertex, V_3, **is** excluded in every given ExtremeSuperHyperDuality.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty ExtremeSuperHyperEdges but E_4 is an ExtremeSuperHyperEdge. Thus in the terms of ExtremeSuperHyperNeighbor, there's only one ExtremeSuperHyperEdge, namely, E_4. The ExtremeSuperHyperVertex, V_3 is Extremeisolated means that there's no ExtremeSuperHyperEdge has it as an Extremeendpoint. Thus the ExtremeSuperHyperVertex, V_3, **is** excluded in every given ExtremeSuperHyperDuality.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.3), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.4), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_4, E_2\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 2z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_1, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 15z^2.
\end{aligned}$$

- On the Figure (29.5), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_3\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 4z.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.6), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_{3i+1_{i=0}^{3}}, E_{3i+24_{i=0}^{3}}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} 6z^8.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_{3i+1_{i=0}^{7}}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 6z^8.
\end{aligned}$$

- On the Figure (29.7), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_{15}, E_{16}, E_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = z^3.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_3, V_{13}, V_8\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} =\\
&4 \times 5 \times 5z^3.
\end{aligned}$$

- On the Figure (29.8), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_3, V_{13}, V_8\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} =\\
&4 \times 5 \times 5z^3.
\end{aligned}$$

- On the Figure (29.9), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_{3i+1_{i=0}^{3}}, E_{23}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 3z^5.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_{3i+1_{i=0}^{3}}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 3z^5.$$

- On the Figure (29.10), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_3, V_{13}, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 4 \times 5 \times 5z^3.$$

- On the Figure (29.11), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_1, E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_6, V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 3 \times 3z^2.$$

- On the Figure (29.12), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_1, V_{i_{i=4}^{10}}^{i\neq 5,7,8}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 5z^5.$$

- On the Figure (29.13), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_5, E_9\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_1, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 3 \times 3z^2.$$

- On the Figure (29.14), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_1\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 2z.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_1\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.15), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_1, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.16), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_1, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} =\\
&(2 \times 1 \times 2) + (2 \times 4 \times 5)z.
\end{aligned}$$

- On the Figure (29.17), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_1, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} =\\
&(1 \times 1 \times 2)z.
\end{aligned}$$

- On the Figure (29.18), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_1, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} =\\
&(2 \times 2 \times 2)z.
\end{aligned}$$

- On the Figure (29.19), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_{3i+1_{i=0^3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 3z^4.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_{2i+1_{i=0^5}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 2z^6.$$

- On the Figure (29.20), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_6\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 10z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = z.$$

- On the Figure (29.21), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 2z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}} = 10z.$$

- On the Figure (29.22), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperDuality, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality}} = \{E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperDuality SuperHyperPolynomial}} = 4z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality}} = \{V_3, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperDuality SuperHyperPolynomial}}$$
$$= 10 \times 9 + 10 \times 6 + 12 \times 9 + 12 \times 6z^2.$$

The previous Extremeapproach apply on the upcoming Extremeresults on ExtremeSuperHyperClasses.

Proposition 18.0.4. *Assume a connected ExtremeSuperHyperPath $ESHP : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperDuality} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperDuality\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperDuality} \\
&= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperDuality\ SuperHyperPolynomial} \\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}.
\end{aligned}$$

be a longest path taken from a connected ExtremeSuperHyperPath $ESHP : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. ■

136EXM18a

Example 18.0.5. In the Figure (30.1), the connected ExtremeSuperHyperPath $ESHP : (V, E)$, is highlighted and featured. The ExtremeSuperHyperSet, in the ExtremeSuperHyperModel (30.1), is the SuperHyperDuality.

Proposition 18.0.6. *Assume a connected ExtremeSuperHyperCycle $ESHC : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperDuality} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperDuality\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperDuality}
\end{aligned}$$

$$= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperDuality\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.$$

Proof. Let

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}.$$

be a longest path taken from a connected ExtremeSuperHyperCycle $ESHC : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. ∎

136EXM19a

Example 18.0.7. In the Figure (30.2), the connected ExtremeSuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained ExtremeSuperHyperSet, in the ExtremeSuperHyperModel (30.2), is the Extreme SuperHyperDuality.

Proposition 18.0.8. *Assume a connected ExtremeSuperHyperStar $ESHS : (V, E)$. Then*

$$\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperDuality} = \{E \in E_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}$$
$$= |i \mid E_i \in E_{ESHG:(V,E)|_{ExtremeCardinality}}| z.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}Quasi\text{-}SuperHyperDuality} = \{CENTER \in V_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial} = z.$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, V_j^{EXTERNAL}.$$

be a longest path taken a connected ExtremeSuperHyperStar $ESHS : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. ∎

136EXM20a

Example 18.0.9. In the Figure (30.3), the connected ExtremeSuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperStar $ESHS : (V, E)$, in the ExtremeSuperHyperModel (30.3), is the ExtremeSuperHyperDuality.

Proposition 18.0.10. *Assume a connected ExtremeSuperHyperBipartite $ESHB : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperDuality}\\
&= \{E_i \in E_{P_i^{ESHG:(V,E)}},\ |P_i^{ESHG:(V,E)}| = \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}\\
&= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|) choose |P_i^{ESHG:(V,E)}|)\\
&z^{\min |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperDuality}\\
&= \{V_i^{EXTERNAL} \in V_{P_i^{ESHG:(V,E)}}^{EXTERNAL}, V_i^{EXTERNAL} \in V_{P_i^{ESHG:(V,E)}}^{EXTERNAL},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}\\
&= \sum_{|V_{ESHG:(V,E)}^{EXTERNAL}|_{ExtremeCardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i^{ESHG:(V,E)}| choose\ 2) = z^2.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P :\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest path taken from a connected ExtremeSuperHyperBipartite $ESHB : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. Then there's at least one SuperHyperDuality. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperDuality could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P :\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,
\end{aligned}$$

$$\ldots,$$
$$E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}$$

is a longest SuperHyperDuality taken from a connected ExtremeSuperHyperBipartite $ESHB : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$P :$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}$$

The latter is straightforward. ■

136EXM21a

Example 18.0.11. In the ExtremeFigure (30.4), the connected ExtremeSuperHyperBipartite $ESHB : (V, E)$, is Extremehighlighted and Extremefeatured. The obtained ExtremeSuperHyperSet, by the ExtremeAlgorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperBipartite $ESHB : (V, E)$, in the ExtremeSuperHyperModel (30.4), is the Extreme SuperHyperDuality.

Proposition 18.0.12. *Assume a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. Then*

$$\mathcal{C}(NSHG)_{Extreme Quasi\text{-}SuperHyperDuality}$$
$$= \{E_i \in E_{P_i{}^{ESHG:(V,E)}},\ |P_i{}^{ESHG:(V,E)}| = \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.$$
$$\mathcal{C}(NSHG)_{Extreme Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}$$
$$= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|) choose |P_i{}^{ESHG:(V,E)}|)$$
$$z^{\min |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}$$
$$\mathcal{C}(NSHG)_{Extreme Quasi\text{-}SuperHyperDuality}$$
$$= \{V_i^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}}, V_i^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}},\ i \neq j\}.$$
$$\mathcal{C}(NSHG)_{Extreme Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}$$
$$= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Extreme Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i{}^{ESHG:(V,E)}| choose\ 2) = z^2.$$

Proof. Let

$$P :$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}$$

is a longest SuperHyperDuality taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. Then there's at least one SuperHyperDuality. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperDuality could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest path taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest path taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. The latter is straightforward. ■

136EXM22a **Example 18.0.13.** In the Figure (30.5), the connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$, is highlighted and Extremefeatured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$, in the ExtremeSuperHyperModel (30.5), is the ExtremeSuperHyperDuality.

Proposition 18.0.14. *Assume a connected ExtremeSuperHyperWheel $ESHW : (V, E)$. Then,*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperDuality} = \{E^* \in E^*_{ESHG:(V,E)}\}. \\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperDuality\ SuperHyperPolynomial} \\
&= |i \mid E_i^* \in E^*_{ESHG:(V,E)|_{ExtremeCardinality}}| z. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}Quasi\text{-}SuperHyperDuality} = \{CENTER \in V_{ESHG:(V,E)}\}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial} = z.
\end{aligned}$$

Proof. Let

$$
\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1^*,\\
&V_2^{EXTERNAL}, E_2^*,\\
&\ldots,\\
&E^*_{|E^*_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}, V^{EXTERNAL}_{|E^*_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}+1}
\end{aligned}
$$

is a longest SuperHyperDuality taken from a connected ExtremeSuperHyperWheel $ESHW : (V,E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z^* \in E^*_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z^* \equiv\\
&\exists! E_z^* \in E^*_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z^*.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. Then there's at least one SuperHyperDuality. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperDuality could be applied. The unique embedded SuperHyperDuality proposes some longest SuperHyperDuality excerpt from some representatives. The latter is straightforward. ■

136EXM23a **Example 18.0.15.** In the ExtremeFigure (30.6), the connected ExtremeSuperHyperWheel $NSHW : (V,E)$, is Extremehighlighted and featured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous result, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperWheel $ESHW : (V,E)$, in the ExtremeSuperHyperModel (30.6), is the ExtremeSuperHyperDuality.

CHAPTER 19

ExtremeSuperHyperJoin But As The Extensions Excerpt From Dense And Super Forms

Definition 19.0.1. (Different ExtremeTypes of ExtremeSuperHyperJoin).
Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider an ExtremeSuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Extremee-SuperHyperJoin** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists E_j \in E'$, such that $V_a \in E_i, E_j$; and $\forall E_i, E_j \in E'$, such that $V_a \notin E_i, E_j$;

(ii) **Extremere-SuperHyperJoin** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists E_j \in E'$, such that $V_a \in E_i, E_j$; $\forall E_i, E_j \in E'$, such that $V_a \notin E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Extremev-SuperHyperJoin** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V'$, $\exists V_j \in V'$, such that $V_i, V_j \notin E_a$; and $\forall V_i, V_j \in V'$, such that $V_i, V_j \notin E_a$;

(iv) **Extremerv-SuperHyperJoin** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V'$, $\exists V_j \in V'$, such that $V_i, V_j \in E_a$; $\forall V_i, V_j \in V'$, such that $V_i, V_j \notin E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **ExtremeSuperHyperJoin** if it's either of Extremee-SuperHyperJoin, Extremere-SuperHyperJoin, Extremev-SuperHyperJoin, and Extremerv-SuperHyperJoin.

Definition 19.0.2. ((Neutrosophic) SuperHyperJoin).
Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider an ExtremeSuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperJoin** if it's either of Extremee-SuperHyperJoin, Extremere-SuperHyperJoin, Extremev-SuperHyperJoin, and Extremerv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperJoin;

(*ii*) a **ExtremeSuperHyperJoin** if it's either of Extremee-SuperHyperJoin, Extremere-SuperHyperJoin, Extremev-SuperHyperJoin, and Extremerv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for a ExtremeSuperHyperGraph $NSHG:(V,E)$ is the maximum Extremecardinality of the ExtremeSuperHyperEdges of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperJoin;

(*iii*) an **Extreme SuperHyperJoin SuperHyperPolynomial** if it's either of Extremee-SuperHyperJoin, Extremere-SuperHyperJoin, Extremev-SuperHyperJoin, and Extremerv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG:(V,E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperJoin; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **ExtremeSuperHyperJoin SuperHyperPolynomial** if it's either of Extremee-SuperHyperJoin, Extremere-SuperHyperJoin, Extremev-SuperHyperJoin, and Extremerv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG:(V,E)$ is the ExtremeSuperHyperPolynomial contains the Extremecoefficients defined as the Extremenumber of the maximum Extremecardinality of the ExtremeSuperHyperEdges of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperJoin; and the Extremepower is corresponded to its Extremecoefficient;

(*v*) an **Extreme R-SuperHyperJoin** if it's either of Extremee-SuperHyperJoin, Extremere-SuperHyperJoin, Extremev-SuperHyperJoin, and Extremerv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG:(V,E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperJoin;

(*vi*) a **ExtremeR-SuperHyperJoin** if it's either of Extremee-SuperHyperJoin, Extremere-SuperHyperJoin, Extremev-SuperHyperJoin, and Extremerv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG:(V,E)$ is the maximum Extremecardinality of the ExtremeSuperHyperVertices of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperJoin;

(*vii*) an **Extreme R-SuperHyperJoin SuperHyperPolynomial** if it's either of Extremee-SuperHyperJoin, Extremere-SuperHyperJoin, Extremev-SuperHyperJoin, and Extremerv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG:(V,E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperJoin; and the Extreme power is corresponded to its Extreme coefficient;

$(viii)$ a **ExtremeSuperHyperJoin SuperHyperPolynomial** if it's either of Extremee-SuperHyperJoin, Extremere-SuperHyperJoin, Extremev-SuperHyperJoin, and Extremerv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the ExtremeSuperHyperPolynomial contains the Extremecoefficients defined as the Extremenumber of the maximum Extremecardinality of the ExtremeSuperHyperVertices of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperJoin; and the Extremepower is corresponded to its Extremecoefficient.

136EXM1 **Example 19.0.3.** Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned ExtremeFigures in every Extremeitems.

- On the Figure (29.1), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Extreme SuperHyperEdges but E_2 is a loop ExtremeSuperHyperEdge and E_4 is an ExtremeSuperHyperEdge. Thus in the terms of ExtremeSuperHyperNeighbor, there's only one ExtremeSuperHyperEdge, namely, E_4. The ExtremeSuperHyperVertex, V_3 is Extremeisolated means that there's no ExtremeSuperHyperEdge has it as an Extremeendpoint. Thus the ExtremeSuperHyperVertex, V_3, <u>**is**</u> excluded in every given ExtremeSuperHyperJoin.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty ExtremeSuperHyperEdges but E_4 is an ExtremeSuperHyperEdge. Thus in the terms of ExtremeSuperHyperNeighbor, there's only one ExtremeSuperHyperEdge, namely, E_4. The ExtremeSuperHyperVertex, V_3 is Extremeisolated means that there's no ExtremeSuperHyperEdge has it as an Extremeendpoint. Thus the ExtremeSuperHyperVertex, V_3, <u>**is**</u> excluded in every given ExtremeSuperHyperJoin.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.3), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.4), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_4, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 2z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 15z^2.$$

- On the Figure (29.5), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 4z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = z.$$

- On the Figure (29.6), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_{3i+1_{i=0}^{3}}, E_{3i+24_{i=0}^{3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} 6z^8.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_{3i+1_{i=0}^{7}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 6z^8.$$

- On the Figure (29.7), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_{15}, E_{16}, E_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_3, V_{13}, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 4 \times 5 \times 5z^3.$$

- On the Figure (29.8), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_3, V_{13}, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 4 \times 5 \times 5z^3.$$

- On the Figure (29.9), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_{3i+1_{i=0}^{3}}, E_{23}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 3z^5.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_{3i+1_{i=0}^{3}}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 3z^5.$$

- On the Figure (29.10), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_3, V_{13}, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 4 \times 5 \times 5z^3.$$

- On the Figure (29.11), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_1, E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_6, V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 3 \times 3z^2.$$

- On the Figure (29.12), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_1, V_{i_{i=4}^{10}}^{i\neq 5,7,8}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 5z^5.$$

- On the Figure (29.13), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_3, E_9\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_1, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 3 \times 3z^2.$$

- On the Figure (29.14), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2326 2327

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_1\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 2z.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_1\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.15), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2328 2329

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_1, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.16), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2330 2331

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_2, V_7, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} =\\
&(1 \times 5 \times 5) + (1 \times 2 + 1)z^3.
\end{aligned}$$

- On the Figure (29.17), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2332 2333

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_{27}, V_2, V_7, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} =\\
&(1 \times 1 \times 2 + 1)z^4.
\end{aligned}$$

- On the Figure (29.18), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2334 2335

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_{27}, V_2, V_7, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} =\\
&(1 \times 1 \times 2 + 1)z^4.
\end{aligned}$$

- On the Figure (29.19), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2336 2337

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_{3i+1_{i=0^3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 3z^4.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_{2i+1_{i=0^5}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 2z^6.$$

- On the Figure (29.20), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2338 2339

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_6\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 10z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = z.$$

- On the Figure (29.21), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2340 2341

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 2z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}} = 10z.$$

- On the Figure (29.22), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperJoin, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2342 2343

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin}} = \{E_2, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperJoin SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin}} = \{V_3, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperJoin SuperHyperPolynomial}}$$
$$= 10 \times 6 + 10 \times 6 + 12 \times 6 + 12 \times 6z^2.$$

The previous Extremeapproach apply on the upcoming Extremeresults on ExtremeSuperHyperClasses. 2344 2345

Proposition 19.0.4. *Assume a connected ExtremeSuperHyperPath $ESHP:(V,E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperJoin}=\\
&=\{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperJoin\ SuperHyperPolynomial}\\
&=3z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.\\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperJoin}\\
&=\{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.\\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperJoin\ SuperHyperPolynomial}\\
&=\prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.
\end{aligned}
$$

Proof. Let

$$
\begin{aligned}
&P:\\
&V_1^{EXTERNAL},E_1,\\
&V_2^{EXTERNAL},E_2,\\
&\ldots,\\
&E_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}},V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}.
\end{aligned}
$$

be a longest path taken from a connected ExtremeSuperHyperPath $ESHP:(V,E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL}\sim V_j^{EXTERNAL}\equiv\\
&\exists! E_z\in E_{ESHG:(V,E)},\ V_i^{EXTERNAL},V_j^{EXTERNAL}\in E_z\equiv\\
&\exists! E_z\in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL},V_j^{EXTERNAL}\}\subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})|\geq|N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. ■

136EXM18a

Example 19.0.5. In the Figure (30.1), the connected ExtremeSuperHyperPath $ESHP:(V,E)$, is highlighted and featured. The ExtremeSuperHyperSet, in the ExtremeSuperHyperModel (30.1), is the SuperHyperJoin.

Proposition 19.0.6. *Assume a connected ExtremeSuperHyperCycle $ESHC:(V,E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperJoin}=\\
&=\{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperJoin\ SuperHyperPolynomial}\\
&=3z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.\\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperJoin}
\end{aligned}
$$

$$= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperJoin\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.$$

Proof. Let

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}.$$

be a longest path taken from a connected ExtremeSuperHyperCycle $ESHC:(V,E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. ■

136EXM19a

Example 19.0.7. In the Figure (30.2), the connected ExtremeSuperHyperCycle $NSHC:(V,E)$, is highlighted and featured. The obtained ExtremeSuperHyperSet, in the ExtremeSuperHyperModel (30.2), is the Extreme SuperHyperJoin.

Proposition 19.0.8. *Assume a connected ExtremeSuperHyperStar $ESHS:(V,E)$. Then*

$$\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperJoin} = \{E \in E_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperJoin\ SuperHyperPolynomial}$$
$$= |i \mid E_i \in E_{ESHG:(V,E)|_{ExtremeCardinality}}|z.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}Quasi\text{-}SuperHyperJoin} = \{CENTER \in V_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}Quasi\text{-}SuperHyperJoin\ SuperHyperPolynomial} = z.$$

Proof. Let

$$P: V_i^{EXTERNAL}, E_i, CENTER, V_j^{EXTERNAL}.$$

be a longest path taken a connected ExtremeSuperHyperStar $ESHS:(V,E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. ■

136EXM20a

Example 19.0.9. In the Figure (30.3), the connected ExtremeSuperHyperStar $ESHS:(V,E)$, is highlighted and featured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperStar $ESHS:(V,E)$, in the ExtremeSuperHyperModel (30.3), is the ExtremeSuperHyperJoin.

Proposition 19.0.10. *Assume a connected ExtremeSuperHyperBipartite $ESHB:(V,E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperJoin}\\
&= (PERFECT\ MATCHING).\\
&\{E_i \in E_{{P_i}^{ESHG:(V,E)}},\\
&\ \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| = \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperJoin}\\
&= (OTHERWISE).\\
&\{\},\\
&If\ \exists {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| \neq \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperJoin\ SuperHyperPolynomial}\\
&= (PERFECT\ MATCHING).\\
&= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|)\, choose |{P_i}^{ESHG:(V,E)}|)\\
&z^{\min |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&where\ \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}|\\
&= \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperJoin\ SuperHyperPolynomial}\\
&= (OTHERWISE)0.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperJoin}\\
&= \{V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}}, V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperJoin\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{ExtremeCardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|{P_i}^{ESHG:(V,E)}|\, choose\ 2) = z^2.
\end{aligned}
$$

Proof. Let

$$
\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}
$$

is a longest path taken from a connected ExtremeSuperHyperBipartite $ESHB:(V,E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. Then there's no at least one SuperHyperJoin. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperJoin could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest SuperHyperJoin taken from a connected ExtremeSuperHyperBipartite $ESHB : (V,E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

The latter is straightforward. ■

136EXM21a

Example 19.0.11. In the ExtremeFigure (30.4), the connected ExtremeSuperHyperBipartite $ESHB : (V,E)$, is Extremehighlighted and Extremefeatured. The obtained ExtremeSuperHyperSet, by the ExtremeAlgorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperBipartite $ESHB : (V,E)$, in the ExtremeSuperHyperModel (30.4), is the Extreme SuperHyperJoin.

Proposition 19.0.12. *Assume a connected ExtremeSuperHyperMultipartite $ESHM : (V,E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperJoin} \\
&= \text{(PERFECT MATCHING)}. \\
&\{E_i \in E_{P_i^{ESHG:(V,E)}}, \\
&\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| = \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}. \\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperJoin}
\end{aligned}$$

$$= (OTHERWISE).$$
$$\{\},$$
$$If\ \exists P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}| \neq \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|.$$
$$\mathcal{C}(NSHG)_{ExtremeSuperHyperJoin\ SuperHyperPolynomial}$$
$$= (PERFECT\ MATCHING).$$
$$= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|) choose |P_i{}^{ESHG:(V,E)}|)$$
$$z^{\min |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}$$
$$where\ \forall P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}|$$
$$= \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.$$
$$\mathcal{C}(NSHG)_{ExtremeSuperHyperJoin\ SuperHyperPolynomial}$$
$$= (OTHERWISE)0.$$
$$\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperJoin}$$
$$= \{V_i^{EXTERNAL} \in V_{P_i{}^{ESHG:(V,E)}}^{EXTERNAL}, V_i^{EXTERNAL} \in V_{P_i{}^{ESHG:(V,E)}}^{EXTERNAL},\ i \neq j\}.$$
$$\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperJoin\ SuperHyperPolynomial}$$
$$= \sum_{|V_{ESHG:(V,E)}^{EXTERNAL}|_{ExtremeCardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i{}^{ESHG:(V,E)}| choose\ 2) = z^2.$$

Proof. Let

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}^{EXTERNAL}$$

is a longest SuperHyperJoin taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. Then there's no at least one SuperHyperJoin. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperJoin could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$P:$$

$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}$$

is a longest path taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}$$

is a longest path taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. The latter is straightforward. ∎

136EXM22a

Example 19.0.13. In the Figure (30.5), the connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$, is highlighted and Extremefeatured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$, in the ExtremeSuperHyperModel (30.5), is the ExtremeSuperHyperJoin.

Proposition 19.0.14. *Assume a connected ExtremeSuperHyperWheel $ESHW : (V, E)$. Then,*

$$\mathcal{C}(NSHG)_{ExtremeSuperHyperJoin} =$$
$$= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.$$
$$\mathcal{C}(NSHG)_{ExtremeSuperHyperJoin\ SuperHyperPolynomial}$$
$$= 3z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperJoin}$$
$$= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperJoin\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.$$

Proof. Let

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}.$$

is a longest SuperHyperJoin taken from a connected ExtremeSuperHyperWheel $ESHW : (V, E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. Then there's at least one SuperHyperJoin. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperJoin could be applied. The unique embedded SuperHyperJoin proposes some longest SuperHyperJoin excerpt from some representatives. The latter is straightforward. ■

136EXM23a

Example 19.0.15. In the ExtremeFigure (30.6), the connected ExtremeSuperHyperWheel $NSHW : (V, E)$, is Extremehighlighted and featured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous result, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperWheel $ESHW : (V, E)$, in the ExtremeSuperHyperModel (30.6), is the ExtremeSuperHyperJoin.

CHAPTER 20

ExtremeSuperHyperPerfect But As The Extensions Excerpt From Dense And Super Forms

Definition 20.0.1. (Different ExtremeTypes of ExtremeSuperHyperPerfect).
Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider an ExtremeSuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Extremee-SuperHyperPerfect** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists! E_j \in E'$, such that $V_a \in E_i, E_j$;

(ii) **Extremere-SuperHyperPerfect** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists! E_j \in E'$, such that $V_a \in E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Extremev-SuperHyperPerfect** if $\forall V_i \in V_{ESHG:(V,E)} \setminus V'$, $\exists! V_j \in V'$, such that $V_i, V_j \in E_a$;

(iv) **Extremerv-SuperHyperPerfect** if $\forall V_i \in V_{ESHG:(V,E)} \setminus V'$, $\exists! V_j \in V'$, such that $V_i, V_j \in E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **ExtremeSuperHyperPerfect** if it's either of Extremee-SuperHyperPerfect, Extremere-SuperHyperPerfect, Extremev-SuperHyperPerfect, and Extremerv-SuperHyperPerfect.

Definition 20.0.2. ((Neutrosophic) SuperHyperPerfect).
Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider an ExtremeSuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperPerfect** if it's either of Extremee-SuperHyperPerfect, Extremere-SuperHyperPerfect, Extremev-SuperHyperPerfect, and Extremerv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperPerfect;

(*ii*) a **ExtremeSuperHyperPerfect** if it's either of Extremee-SuperHyperPerfect, Extremere-SuperHyperPerfect, Extremev-SuperHyperPerfect, and Extremerv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for a ExtremeSuperHyperGraph $NSHG : (V, E)$ is the maximum Extremecardinality of the ExtremeSuperHyperEdges of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperPerfect;

(*iii*) an **Extreme SuperHyperPerfect SuperHyperPolynomial** if it's either of Extremee-SuperHyperPerfect, Extremere-SuperHyperPerfect, Extremev-SuperHyperPerfect, and Extremerv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperPerfect; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **ExtremeSuperHyperPerfect SuperHyperPolynomial** if it's either of Extremee-SuperHyperPerfect, Extremere-SuperHyperPerfect, Extremev-SuperHyperPerfect, and Extremerv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the ExtremeSuperHyperPolynomial contains the Extremecoefficients defined as the Extremenumber of the maximum Extremecardinality of the ExtremeSuperHyperEdges of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperPerfect; and the Extremepower is corresponded to its Extremecoefficient;

(*v*) an **Extreme R-SuperHyperPerfect** if it's either of Extremee-SuperHyperPerfect, Extremere-SuperHyperPerfect, Extremev-SuperHyperPerfect, and Extremerv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperPerfect;

(*vi*) a **ExtremeR-SuperHyperPerfect** if it's either of Extremee-SuperHyperPerfect, Extremere-SuperHyperPerfect, Extremev-SuperHyperPerfect, and Extremerv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the maximum Extremecardinality of the ExtremeSuperHyperVertices of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperPerfect;

(*vii*) an **Extreme R-SuperHyperPerfect SuperHyperPolynomial** if it's either of Extremee-SuperHyperPerfect, Extremere-SuperHyperPerfect, Extremev-SuperHyperPerfect, and Extremerv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperPerfect; and the Extreme power is corresponded to its Extreme coefficient;

$(viii)$ a **ExtremeSuperHyperPerfect SuperHyperPolynomial** if it's either of Extremee-SuperHyperPerfect, Extremere-SuperHyperPerfect, Extremev-SuperHyperPerfect, and Extremerv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the ExtremeSuperHyperPolynomial contains the Extremecoefficients defined as the Extremenumber of the maximum Extremecardinality of the ExtremeSuperHyperVertices of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperPerfect; and the Extremepower is corresponded to its Extremecoefficient.

136EXM1

Example 20.0.3. Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned ExtremeFigures in every Extremeitems.

- On the Figure (29.1), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Extreme SuperHyperEdges but E_2 is a loop ExtremeSuperHyperEdge and E_4 is an ExtremeSuperHyperEdge. Thus in the terms of ExtremeSuperHyperNeighbor, there's only one ExtremeSuperHyperEdge, namely, E_4. The ExtremeSuperHyperVertex, V_3 is Extremeisolated means that there's no ExtremeSuperHyperEdge has it as an Extremeendpoint. Thus the ExtremeSuperHyperVertex, V_3, **is** excluded in every given ExtremeSuperHyperPerfect.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty ExtremeSuperHyperEdges but E_4 is an ExtremeSuperHyperEdge. Thus in the terms of ExtremeSuperHyperNeighbor, there's only one ExtremeSuperHyperEdge, namely, E_4. The ExtremeSuperHyperVertex, V_3 is Extremeisolated means that there's no ExtremeSuperHyperEdge has it as an Extremeendpoint. Thus the ExtremeSuperHyperVertex, V_3, **is** excluded in every given ExtremeSuperHyperPerfect.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.3), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.4), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_4, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = 2z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = 15z^2.$$

- On the Figure (29.5), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = 4z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = z.$$

- On the Figure (29.6), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_{3i+1_{i=0}^{3}}, E_{3i+24_{i=0}^{3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} 6z^8.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_{3i+1_{i=0}^{7}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = 6z^8.$$

- On the Figure (29.7), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_{15}, E_{16}, E_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_3, V_6, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = 3 \times 4 \times 4z^3.$$

- On the Figure (29.8), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_3, V_6, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = 3 \times 4 \times 4z^3.$$

- On the Figure (29.9), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperPerfect}} = \{E_{3i+1_{i=0}^{3}}, E_{23}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperPerfect SuperHyperPolynomial}} = 3z^5.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect}} = \{V_{3i+1_{i=0}^{3}}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect SuperHyperPolynomial}} = 3z^5.$$

- On the Figure (29.10), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_3, V_6, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} =$$
$$3 \times 4 \times 4z^3.$$

- On the Figure (29.11), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_1, E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_6, V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} =$$
$$3 \times 2z^2.$$

- On the Figure (29.12), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_1, V_{i_{i=4}^{10}}^{i \neq 5,7,8}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = 5z^5.$$

- On the Figure (29.13), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_3, E_9\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_1, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} =$$
$$3 \times 3z^2.$$

- On the Figure (29.14), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_1\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = 2z.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_1\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.15), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_1, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.16), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect}} = \{V_2, V_7, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect SuperHyperPolynomial}} =\\
&(1 \times 5 \times 5) + (1 \times 2 + 1)z^3.
\end{aligned}$$

- On the Figure (29.17), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect}} = \{V_{27}, V_2, V_7, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect SuperHyperPolynomial}} =\\
&(1 \times 1 \times 2 + 1)z^4.
\end{aligned}$$

- On the Figure (29.18), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_2, E_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = 3z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect}} = \{V_{27}, V_2, V_7, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect SuperHyperPolynomial}} =\\
&(1 \times 1 \times 2 + 1)z^4.
\end{aligned}$$

- On the Figure (29.19), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_{3i+1_{i=0^3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = 3z^4.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect}} = \{V_{2i+1_{i=0^5}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect SuperHyperPolynomial}} = 2z^6.$$

- On the Figure (29.20), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_6\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = 10z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = z.$$

- On the Figure (29.21), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = 2z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperPerfect SuperHyperPolynomial}} = 10z.$$

- On the Figure (29.22), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperPerfect, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperPerfect SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect}} = \{V_3, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperPerfect SuperHyperPolynomial}}$$
$$= 10 \times 6 + 10 \times 6 + 12 \times 6 + 12 \times 6z^2.$$

The previous Extremeapproach apply on the upcoming Extremeresults on ExtremeSuperHyperClasses.

Proposition 20.0.4. *Assume a connected ExtremeSuperHyperPath $ESHP : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperPerfect} \\
&= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperPerfect\ SuperHyperPolynomial} \\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}.
\end{aligned}$$

be a longest path taken from a connected ExtremeSuperHyperPath $ESHP : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. ∎

136EXM18a

Example 20.0.5. In the Figure (30.1), the connected ExtremeSuperHyperPath $ESHP : (V, E)$, is highlighted and featured. The ExtremeSuperHyperSet, in the ExtremeSuperHyperModel (30.1), is the SuperHyperPerfect.

Proposition 20.0.6. *Assume a connected ExtremeSuperHyperCycle $ESHC : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperPerfect}
\end{aligned}$$

$$= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperPerfect\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{\frac{|E_{ESHG:(V,E)}|_{ExtremeCardinality}}{3}}.$$

Proof. Let

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}}{3}}.$$

be a longest path taken from a connected ExtremeSuperHyperCycle $ESHC:(V,E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. ■

136EXM19a

Example 20.0.7. In the Figure (30.2), the connected ExtremeSuperHyperCycle $NSHC:(V,E)$, is highlighted and featured. The obtained ExtremeSuperHyperSet, in the ExtremeSuperHyperModel (30.2), is the Extreme SuperHyperPerfect.

Proposition 20.0.8. *Assume a connected ExtremeSuperHyperStar $ESHS:(V,E)$. Then*

$$\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect} = \{E \in E_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect\ SuperHyperPolynomial}$$
$$= |i \mid E_i \in E_{ESHG:(V,E)|_{ExtremeCardinality}}|z.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperPerfect} = \{CENTER \in V_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperPerfect\ SuperHyperPolynomial} = z.$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, V_j^{EXTERNAL}.$$

be a longest path taken a connected ExtremeSuperHyperStar $ESHS:(V,E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. ■

136EXM20a

Example 20.0.9. In the Figure (30.3), the connected ExtremeSuperHyperStar $ESHS:(V,E)$, is highlighted and featured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperStar $ESHS:(V,E)$, in the ExtremeSuperHyperModel (30.3), is the ExtremeSuperHyperPerfect.

Proposition 20.0.10. *Assume a connected ExtremeSuperHyperBipartite $ESHB:(V,E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperPerfect}\\
&= \textit{(PERFECT MATCHING)}.\\
&\{E_i \in E_{{P_i}^{ESHG:(V,E)}},\\
&\ \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| = \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperPerfect}\\
&= \textit{(OTHERWISE)}.\\
&\{\},\\
&\textit{If } \exists {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| \neq \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect\ SuperHyperPolynomial}\\
&= \textit{(PERFECT MATCHING)}.\\
&= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|)\, choose |{P_i}^{ESHG:(V,E)}|)\\
&z^{\min |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&\textit{where } \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}|\\
&= \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect\ SuperHyperPolynomial}\\
&= \textit{(OTHERWISE)}0.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperPerfect}\\
&= \{V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}}, V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperPerfect\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{ExtremeCardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|{P_i}^{ESHG:(V,E)}|\, choose\ 2) = z^2.
\end{aligned}
$$

Proof. Let

$$
\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}
$$

is a longest path taken from a connected ExtremeSuperHyperBipartite $ESHB:(V,E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. Then there's no at least one SuperHyperPerfect. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperPerfect could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$
\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}
$$

is a longest SuperHyperPerfect taken from a connected ExtremeSuperHyperBipartite $ESHB : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$
\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}
$$

The latter is straightforward. ■

136EXM21a

Example 20.0.11. In the ExtremeFigure (30.4), the connected ExtremeSuperHyperBipartite $ESHB : (V, E)$, is Extremehighlighted and Extremefeatured. The obtained ExtremeSuperHyperSet, by the ExtremeAlgorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperBipartite $ESHB : (V, E)$, in the ExtremeSuperHyperModel (30.4), is the Extreme SuperHyperPerfect.

Proposition 20.0.12. *Assume a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperPerfect} \\
&= (PERFECT\ MATCHING). \\
&\{E_i \in E_{P_i{}^{ESHG:(V,E)}}, \\
&\ \forall P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}| = \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}. \\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperPerfect}
\end{aligned}
$$

$= (OTHERWISE).$
$\{\},$
$If\ \exists P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| \neq \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|.$
$\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect\ SuperHyperPolynomial}$
$= (PERFECT\ MATCHING).$
$= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|) choose |P_i^{ESHG:(V,E)}|)$
$z^{\min |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}$
$where\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}|$
$= \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.$
$\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect\ SuperHyperPolynomial}$
$= (OTHERWISE)0.$
$\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperPerfect}$
$= \{V_i^{EXTERNAL} \in V_{P_i^{ESHG:(V,E)}}^{EXTERNAL}, V_i^{EXTERNAL} \in V_{P_i^{ESHG:(V,E)}}^{EXTERNAL},\ i \neq j\}.$
$\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperPerfect\ SuperHyperPolynomial}$
$= \sum_{|V_{ESHG:(V,E)}^{EXTERNAL}|_{ExtremeCardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i^{ESHG:(V,E)}| choose\ 2) = z^2.$

Proof. Let 2611

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2,\\&\ldots,\\&E_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}^{EXTERNAL}\end{aligned}$$

is a longest SuperHyperPerfect taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. There's a new way to redefine as 2612 2613

$$\begin{aligned}&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. Then there's no at least one SuperHyperPerfect. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperPerfect could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the 2614 2615 2616 2617 2618

$$P:$$

$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}$$

is a longest path taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$P :$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}$$

is a longest path taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. The latter is straightforward. ■

136EXM22a

Example 20.0.13. In the Figure (30.5), the connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$, is highlighted and Extremefeatured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$, in the ExtremeSuperHyperModel (30.5), is the ExtremeSuperHyperPerfect.

Proposition 20.0.14. *Assume a connected ExtremeSuperHyperWheel $ESHW : (V, E)$. Then,*

$$\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect} = \{E \in E_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{ExtremeSuperHyperPerfect\ SuperHyperPolynomial}$$
$$= |i \mid E_i \in E_{ESHG:(V,E)|_{ExtremeCardinality}}|z.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperPerfect} = \{CENTER \in V_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperPerfect\ SuperHyperPolynomial} = z.$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, V_j^{EXTERNAL}.$$

is a longest SuperHyperPerfect taken from a connected ExtremeSuperHyperWheel $ESHW : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists ! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists ! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. Then there's at least one SuperHyperPerfect. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperPerfect could be applied. The unique embedded SuperHyperPerfect proposes some longest SuperHyperPerfect excerpt from some representatives. The latter is straightforward. ■

136EXM23a

Example 20.0.15. In the ExtremeFigure (30.6), the connected ExtremeSuperHyperWheel $NSHW : (V, E)$, is Extremehighlighted and featured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous result, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperWheel $ESHW : (V, E)$, in the ExtremeSuperHyperModel (30.6), is the ExtremeSuperHyperPerfect.

CHAPTER 21

ExtremeSuperHyperTotal But As The Extensions Excerpt From Dense And Super Forms

Definition 21.0.1. (Different ExtremeTypes of ExtremeSuperHyperTotal).
Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider an ExtremeSuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Extremee-SuperHyperTotal** if $\forall E_i \in E_{ESHG:(V,E)},\ \exists! E_j \in E'$, such that $V_a \in E_i, E_j$;

(ii) **Extremere-SuperHyperTotal** if $\forall E_i \in E_{ESHG:(V,E)},\ \exists! E_j \in E'$, such that $V_a \in E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Extremev-SuperHyperTotal** if $\forall V_i \in V_{ESHG:(V,E)},\ \exists! V_j \in V'$, such that $V_i, V_j \in E_a$;

(iv) **Extremerv-SuperHyperTotal** if $\forall V_i \in V_{ESHG:(V,E)},\ \exists! V_j \in V'$, such that $V_i, V_j \in E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **ExtremeSuperHyperTotal** if it's either of Extremee-SuperHyperTotal, Extremere-SuperHyperTotal, Extremev-SuperHyperTotal, and Extremerv-SuperHyperTotal.

Definition 21.0.2. ((Neutrosophic) SuperHyperTotal).
Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider an ExtremeSuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperTotal** if it's either of Extremee-SuperHyperTotal, Extremere-SuperHyperTotal, Extremev-SuperHyperTotal, and Extremerv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperTotal;

(ii) a **ExtremeSuperHyperTotal** if it's either of Extremee-SuperHyperTotal, Extremere-SuperHyperTotal, Extremev-SuperHyperTotal, and Extremerv-SuperHyperTotal and

$\mathcal{C}(NSHG)$ for a ExtremeSuperHyperGraph $NSHG:(V,E)$ is the maximum Extremecardinality of the ExtremeSuperHyperEdges of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperTotal;

(*iii*) an **Extreme SuperHyperTotal SuperHyperPolynomial** if it's either of Extremee-SuperHyperTotal, Extremere-SuperHyperTotal, Extremev-SuperHyperTotal, and Extremerv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG:(V,E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperTotal; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **ExtremeSuperHyperTotal SuperHyperPolynomial** if it's either of Extremee-SuperHyperTotal, Extremere-SuperHyperTotal, Extremev-SuperHyperTotal, and Extremerv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG:(V,E)$ is the ExtremeSuperHyperPolynomial contains the Extremecoefficients defined as the Extremenumber of the maximum Extremecardinality of the ExtremeSuperHyperEdges of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperTotal; and the Extremepower is corresponded to its Extremecoefficient;

(*v*) an **Extreme R-SuperHyperTotal** if it's either of Extremee-SuperHyperTotal, Extremere-SuperHyperTotal, Extremev-SuperHyperTotal, and Extremerv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG:(V,E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperTotal;

(*vi*) a **ExtremeR-SuperHyperTotal** if it's either of Extremee-SuperHyperTotal, Extremere-SuperHyperTotal, Extremev-SuperHyperTotal, and Extremerv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG:(V,E)$ is the maximum Extremecardinality of the ExtremeSuperHyperVertices of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperTotal;

(*vii*) an **Extreme R-SuperHyperTotal SuperHyperPolynomial** if it's either of Extremee-SuperHyperTotal, Extremere-SuperHyperTotal, Extremev-SuperHyperTotal, and Extremerv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG:(V,E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperTotal; and the Extreme power is corresponded to its Extreme coefficient;

(*viii*) a **ExtremeSuperHyperTotal SuperHyperPolynomial** if it's either of Extremee-SuperHyperTotal, Extremere-SuperHyperTotal, Extremev-SuperHyperTotal, and

Extremerv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the ExtremeSuperHyperPolynomial contains the Extremecoefficients defined as the Extremenumber of the maximum Extremecardinality of the ExtremeSuperHyperVertices of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperTotal; and the Extremepower is corresponded to its Extremecoefficient.

136EXM1

Example 21.0.3. Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned ExtremeFigures in every Extremeitems.

- On the Figure (29.1), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Extreme SuperHyperEdges but E_2 is a loop ExtremeSuperHyperEdge and E_4 is an ExtremeSuperHyperEdge. Thus in the terms of ExtremeSuperHyperNeighbor, there's only one ExtremeSuperHyperEdge, namely, E_4. The ExtremeSuperHyperVertex, V_3 is Extremeisolated means that there's no ExtremeSuperHyperEdge has it as an Extremeendpoint. Thus the ExtremeSuperHyperVertex, V_3, **is** excluded in every given ExtremeSuperHyperTotal.

$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperTotal}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperTotal SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty ExtremeSuperHyperEdges but E_4 is an ExtremeSuperHyperEdge. Thus in the terms of ExtremeSuperHyperNeighbor, there's only one ExtremeSuperHyperEdge, namely, E_4. The ExtremeSuperHyperVertex, V_3 is Extremeisolated means that there's no ExtremeSuperHyperEdge has it as an Extremeendpoint. Thus the ExtremeSuperHyperVertex, V_3, **is** excluded in every given ExtremeSuperHyperTotal.

$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperTotal}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperTotal SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.3), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperTotal}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperTotal SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.4), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2739 2740

$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-}} = \{E_4, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperTotal SuperHyperPolynomial}} = 2z^2.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal SuperHyperPolynomial}} = 15z^2.$$

- On the Figure (29.5), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2741 2742

$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperTotal}} = \{E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperTotal SuperHyperPolynomial}} = 4z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal}} = \{V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal SuperHyperPolynomial}} = z.$$

- On the Figure (29.6), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2743 2744

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperTotal}} = \{E_{i+1_{i=0}^{9}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperTotal SuperHyperPolynomial}} 20z^{10}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperTotal}} = \{V_{i+1_{i=0}^{9}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperTotal SuperHyperPolynomial}} = 20z^{10}.$$

- On the Figure (29.7), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2745 2746

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_{12}, E_{13}, E_{14}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_{12}, V_{13}, V_{14}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = z^3.$$

- On the Figure (29.8), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2747 2748

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperTotal}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperTotal SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_{12}, V_{13}, V_{14}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 3 \times 4 \times 4z^3.$$

- On the Figure (29.9), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2749 2750

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperTotal}} = \{E_{i+1_{i=0}^{9}}\}.$$

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperTotal SuperHyperPolynomial}}10z^{10}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperTotal}} = \{V_{i+1_{i=0}^{9}}\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperTotal SuperHyperPolynomial}} = 20z^{10}.$$

- On the Figure (29.10), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2751 2752

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperTotal}} = \{E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperTotal SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_{12}, V_{13}, V_{14}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 3 \times 4 \times 4z^3.$$

- On the Figure (29.11), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2753 2754

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_1, E_6, E_7, E_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = 2z^4.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 3z^2.$$

- On the Figure (29.12), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2755 2756

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_1, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = 5z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_{i_{i=1}^{8}}^{i\neq 4,5,6}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = z^5.$$

- On the Figure (29.13), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2757 2758

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_3, E_9, E_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = 3z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 3z^2.$$

- On the Figure (29.14), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2759 2760

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_1, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_3\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 2z^2.$$

- On the Figure (29.15), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_2, E_3, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^3.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_2, V_3, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = z^3.
\end{aligned}$$

- On the Figure (29.16), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_2, E_3, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^3.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_2, V_6, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} =\\
&4 \times 3z^3.
\end{aligned}$$

- On the Figure (29.17), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_2, E_3, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^3.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_2, V_6, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} =\\
&4 \times 3z^4.
\end{aligned}$$

- On the Figure (29.18), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_2, E_3, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^3.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_2, V_6, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} =\\
&2 \times 4 \times 3z^4.
\end{aligned}$$

- On the Figure (29.19), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperTotal}} = \{E_{i+2_{i=0}11}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperTotal SuperHyperPolynomial}} = 11z^{10}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal}} = \{V_{i+2_{i=0}11}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperTotal SuperHyperPolynomial}} = 11z^{10}.
\end{aligned}$$

- On the Figure (29.20), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_6, E_{10}\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = 9z^2.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}}\\
&= |(|V| - 1)z^2.
\end{aligned}$$

- On the Figure (29.21), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperTotal}} = \{E_1, E_2\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperTotal SuperHyperPolynomial}} = 2z^2.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperTotal}} = \{V_1, V_2\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperTotal SuperHyperPolynomial}} = 9z^2.
\end{aligned}$$

- On the Figure (29.22), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperTotal, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_3, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^2.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperTotal}} = \{V_3, V_{10}, V_6\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperTotal SuperHyperPolynomial}}\\
&= 3 \times 6z^3.
\end{aligned}$$

The previous Extremeapproach apply on the upcoming Extremeresults on ExtremeSuperHyperClasses.

Proposition 21.0.4. *Assume a connected ExtremeSuperHyperPath $ESHP : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal} =\\
&= \{E_i\}_{i=1}^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal\ SuperHyperPolynomial}\\
&= z^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}.\\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperTotal}\\
&= \{V_i^{EXTERNAL}\}_{i=1}^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}.\\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperTotal\ SuperHyperPolynomial}\\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}
\end{aligned}$$

Proof. Let 2780

$$P:$$
$$V_2^{EXTERNAL}, E_2,$$
$$V_3^{EXTERNAL}, E_3,$$
$$\ldots,$$
$$E_{|E^{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}-1}, V^{EXTERNAL}_{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}-1}}.$$

be a longest path taken from a connected ExtremeSuperHyperPath $ESHP:(V,E)$. There's a new way to redefine as 2781 2782

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. ■ 2783 2784

136EXM18a

Example 21.0.5. In the Figure (30.1), the connected ExtremeSuperHyperPath $ESHP:(V,E)$, is highlighted and featured. The ExtremeSuperHyperSet, in the ExtremeSuperHyperModel (30.1), is the SuperHyperTotal. 2785 2786 2787

Proposition 21.0.6. *Assume a connected ExtremeSuperHyperCycle $ESHC:(V,E)$. Then* 2788

$$\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal} =$$
$$= \{E_i\}_{i=1}^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}.$$
$$\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal\ SuperHyperPolynomial}$$
$$= (|E_{ESHG:(V,E)}|_{ExtremeCardinality} - 1)$$
$$z^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperTotal}$$
$$= \{V_i^{EXTERNAL}\}_{i=1}^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperTotal\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}$$

Proof. Let 2789

$$P:$$
$$V_2^{EXTERNAL}, E_2,$$
$$V_3^{EXTERNAL}, E_3,$$
$$\ldots,$$
$$E_{\frac{|E_{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}-1}}{,} V^{EXTERNAL}_{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}-1}}.$$

be a longest path taken from a connected ExtremeSuperHyperCycle $ESHC : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. ■

136EXM19a **Example 21.0.7.** In the Figure (30.2), the connected ExtremeSuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained ExtremeSuperHyperSet, in the ExtremeSuperHyperModel (30.2), is the Extreme SuperHyperTotal.

Proposition 21.0.8. *Assume a connected ExtremeSuperHyperStar $ESHS : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal} = \{E_i, E_j \in E_{ESHG:(V,E)}\}. \\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal\ SuperHyperPolynomial} \\
&= |i(i-1) \mid E_i \in E_{ESHG:(V,E)|_{ExtremeCardinality}}| z^2. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperTotal} = \{CENTER, V_j \in V_{ESHG:(V,E)}\}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperTotal\ SuperHyperPolynomial} = \\
&(|V_{ESHG:(V,E)|_{ExtremeCardinality}}|)\ choose\ (|V_{ESHG:(V,E)|_{ExtremeCardinality}}| - 1) \\
&z^2.
\end{aligned}$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, E_j.$$

be a longest path taken a connected ExtremeSuperHyperStar $ESHS : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. ■

136EXM20a **Example 21.0.9.** In the Figure (30.3), the connected ExtremeSuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperStar $ESHS : (V, E)$, in the ExtremeSuperHyperModel (30.3), is the ExtremeSuperHyperTotal.

Proposition 21.0.10. *Assume a connected ExtremeSuperHyperBipartite $ESHB : (V, E)$. Then* 2807

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal}\\
&= \{E_a \in E_{P_i{}^{ESHG:(V,E)}},\\
&\ \forall P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}| = \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal}\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal\ SuperHyperPolynomial}\\
&= z^{\min |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&where\ \forall P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}|\\
&= \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal}\\
&= \{V_a^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}}, V_b^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperTotal\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{ExtremeCardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i{}^{ESHG:(V,E)}|choose\ 2) = z^2.
\end{aligned}$$

Proof. Let 2808

$$\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2
\end{aligned}$$

is a longest path taken from a connected ExtremeSuperHyperBipartite $ESHB : (V, E)$. There's 2809
a new way to redefine as 2810

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to 2811
$V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. Then there's 2812
no at least one SuperHyperTotal. Thus the notion of quasi may be up but the SuperHyperNotions 2813
based on SuperHyperTotal could be applied. There are only two SuperHyperParts. Thus every 2814
SuperHyperPart could have one SuperHyperVertex as the representative in the 2815

$$\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2
\end{aligned}$$

is a longest SuperHyperTotal taken from a connected ExtremeSuperHyperBipartite $ESHB :$ 2816
(V, E). Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart 2817
SuperHyperEdges are attained in any solution 2818

$$P:$$

$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2$$

The latter is straightforward. ■

136EXM21a

Example 21.0.11. In the ExtremeFigure (30.4), the connected ExtremeSuperHyperBipartite $ESHB : (V, E)$, is Extremehighlighted and Extremefeatured. The obtained ExtremeSuperHyperSet, by the ExtremeAlgorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperBipartite $ESHB : (V, E)$, in the ExtremeSuperHyperModel (30.4), is the Extreme SuperHyperTotal.

Proposition 21.0.12. *Assume a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal}\\
&= \{E_a \in E_{P_i{}^{ESHG:(V,E)}},\\
&\ \forall P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}| = \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal}\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal\ SuperHyperPolynomial}\\
&= z^{\min |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&where\ \forall P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}|\\
&= \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal}\\
&= \{V_a^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}}, V_b^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperTotal\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{ExtremeCardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i{}^{ESHG:(V,E)}|\, choose\ 2) = z^2.
\end{aligned}$$

Proof. Let

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2$$

is a longest SuperHyperTotal taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. Then there's no at least one SuperHyperTotal. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperTotal could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

is a longest path taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

is a longest path taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. The latter is straightforward. ■

136EXM22a

Example 21.0.13. In the Figure (30.5), the connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$, is highlighted and Extremefeatured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$, in the ExtremeSuperHyperModel (30.5), is the ExtremeSuperHyperTotal.

Proposition 21.0.14. *Assume a connected ExtremeSuperHyperWheel $ESHW : (V, E)$. Then,*

$$\begin{aligned}&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal} = \{E_i, E_j \in E^*_{ESHG:(V,E)}\}.\\&\mathcal{C}(NSHG)_{ExtremeSuperHyperTotal\ SuperHyperPolynomial}\\&= |i(i-1) \mid E_i \in E^*_{ESHG:(V,E)|_{ExtremeCardinality}}|z^2.\\&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperTotal} = \{CENTER, V_j \in V_{ESHG:(V,E)}\}.\\&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperTotal\ SuperHyperPolynomial} =\\&(|V_{ESHG:(V,E)|_{ExtremeCardinality}}|)\ choose\ (|V_{ESHG:(V,E)|_{ExtremeCardinality}}| - 1)\\&z^2.\end{aligned}$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i^*, CENTER, E_j.$$

is a longest SuperHyperTotal taken from a connected ExtremeSuperHyperWheel $ESHW : (V, E)$. There's a new way to redefine as

$$\begin{aligned}&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. Then there's at least one SuperHyperTotal. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperTotal could be applied. The unique embedded SuperHyperTotal proposes some longest SuperHyperTotal excerpt from some representatives. The latter is straightforward. ■

136EXM23a **Example 21.0.15.** In the ExtremeFigure (30.6), the connected ExtremeSuperHyperWheel $NSHW : (V, E)$, is Extremehighlighted and featured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous result, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperWheel $ESHW : (V, E)$, in the ExtremeSuperHyperModel (30.6), is the ExtremeSuperHyperTotal.

CHAPTER 22

ExtremeSuperHyperConnected But As The Extensions Excerpt From Dense And Super Forms

Definition 22.0.1. (Different ExtremeTypes of ExtremeSuperHyperConnected).
Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider an ExtremeSuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Extremee-SuperHyperConnected** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists E_j \in E'$, such that $V_a \in E_i, E_j$; and $\forall E_i, E_j \in E'$, such that $V_a \notin E_i, E_j$;

(ii) **Extremere-SuperHyperConnected** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists E_j \in E'$, such that $V_a \in E_i, E_j$; $\forall E_i, E_j \in E'$, such that $V_a \notin E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Extremev-SuperHyperConnected** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V'$, $\exists V_j \in V'$, such that $V_i, V_j \notin E_a$; and $\forall V_i, V_j \in V'$, such that $V_i, V_j \notin E_a$;

(iv) **Extremerv-SuperHyperConnected** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V'$, $\exists V_j \in V'$, such that $V_i, V_j \in E_a$; $\forall V_i, V_j \in V'$, such that $V_i, V_j \notin E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **ExtremeSuperHyperConnected** if it's either of Extremee-SuperHyperConnected, Extremere-SuperHyperConnected, Extremev-SuperHyperConnected, and Extremerv-SuperHyperConnected.

Definition 22.0.2. ((Neutrosophic) SuperHyperConnected).
Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider an ExtremeSuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperConnected** if it's either of Extremee-SuperHyperConnected, Extremere-SuperHyperConnected, Extremev-SuperHyperConnected, and Extremerv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperConnected;

(*ii*) a **ExtremeSuperHyperConnected** if it's either of Extremee-SuperHyperConnected, Extremere-SuperHyperConnected, Extremev-SuperHyperConnected, and Extremerv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for a ExtremeSuperHyperGraph $NSHG : (V, E)$ is the maximum Extremecardinality of the ExtremeSuperHyperEdges of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperConnected;

(*iii*) an **Extreme SuperHyperConnected SuperHyperPolynomial** if it's either of Extremee-SuperHyperConnected, Extremere-SuperHyperConnected, Extremev-SuperHyperConnected, and Extremerv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperConnected; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **ExtremeSuperHyperConnected SuperHyperPolynomial** if it's either of Extremee-SuperHyperConnected, Extremere-SuperHyperConnected, Extremev-SuperHyperConnected, and Extremerv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the ExtremeSuperHyperPolynomial contains the Extremecoefficients defined as the Extremenumber of the maximum Extremecardinality of the ExtremeSuperHyperEdges of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperConnected; and the Extremepower is corresponded to its Extremecoefficient;

(*v*) an **Extreme R-SuperHyperConnected** if it's either of Extremee-SuperHyperConnected, Extremere-SuperHyperConnected, Extremev-SuperHyperConnected, and Extremerv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperConnected;

(*vi*) a **ExtremeR-SuperHyperConnected** if it's either of Extremee-SuperHyperConnected, Extremere-SuperHyperConnected, Extremev-SuperHyperConnected, and Extremerv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the maximum Extremecardinality of the ExtremeSuperHyperVertices of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperConnected;

(*vii*) an **Extreme R-SuperHyperConnected SuperHyperPolynomial** if it's either of Extremee-SuperHyperConnected, Extremere-SuperHyperConnected, Extremev-SuperHyperConnected, and Extremerv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an

Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperConnected; and the Extreme power is corresponded to its Extreme coefficient;

$(viii)$ a **ExtremeSuperHyperConnected SuperHyperPolynomial** if it's either of Extremee-SuperHyperConnected, Extremere-SuperHyperConnected, Extremev-SuperHyperConnected, and Extremerv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an ExtremeSuperHyperGraph $NSHG : (V, E)$ is the ExtremeSuperHyperPolynomial contains the Extremecoefficients defined as the Extremenumber of the maximum Extremecardinality of the ExtremeSuperHyperVertices of an ExtremeSuperHyperSet S of high Extremecardinality consecutive ExtremeSuperHyperEdges and ExtremeSuperHyperVertices such that they form the ExtremeSuperHyperConnected; and the Extremepower is corresponded to its Extremecoefficient.

136EXM1 **Example 22.0.3.** Assume an ExtremeSuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned ExtremeFigures in every Extremeitems.

- On the Figure (29.1), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Extreme SuperHyperEdges but E_2 is a loop ExtremeSuperHyperEdge and E_4 is an ExtremeSuperHyperEdge. Thus in the terms of ExtremeSuperHyperNeighbor, there's only one ExtremeSuperHyperEdge, namely, E_4. The ExtremeSuperHyperVertex, V_3 is Extremeisolated means that there's no ExtremeSuperHyperEdge has it as an Extremeendpoint. Thus the ExtremeSuperHyperVertex, V_3, **is** excluded in every given ExtremeSuperHyperConnected.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty ExtremeSuperHyperEdges but E_4 is an ExtremeSuperHyperEdge. Thus in the terms of ExtremeSuperHyperNeighbor, there's only one ExtremeSuperHyperEdge, namely, E_4. The ExtremeSuperHyperVertex, V_3 is Extremeisolated means that there's no ExtremeSuperHyperEdge has it as an Extremeendpoint. Thus the ExtremeSuperHyperVertex, V_3, **is** excluded in every given ExtremeSuperHyperConnected.

$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.3), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected}} = \{V_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected SuperHyperPolynomial}} = 3z.
\end{aligned}$$

- On the Figure (29.4), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected}} = \{E_1, E_2, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected SuperHyperPolynomial}} = z^3.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperConnected}} = \{V_1, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 15z^2.
\end{aligned}$$

- On the Figure (29.5), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected}} = \{E_3\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected SuperHyperPolynomial}} = 4z.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected}} = \{V_5\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.6), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperConnected}} = \{E_{i+1_{i=0}^{9}}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperConnected SuperHyperPolynomial}} 20z^{10}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperConnected}} = \{V_{i+1_{i=0}^{9}}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 20z^{10}.
\end{aligned}$$

- On the Figure (29.7), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_{12}, E_{13}, E_{14}\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = z^3.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_{12}, V_{13}, V_{14}\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = z^3.
\end{aligned}$$

- On the Figure (29.8), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_4\}.$$

$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = z.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_{12}, V_{13}, V_{14}\}.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} =$
$3 \times 4 \times 4z^3.$

- On the Figure (29.9), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperConnected}} = \{E_{i+1_{i=0}^{9}}\}.$
$\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperConnected SuperHyperPolynomial}} 10z^{10}.$
$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected}} = \{V_{i+1_{i=11}^{19}}, V_{22}\}.$
$\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected SuperHyperPolynomial}} = 20z^{10}.$

- On the Figure (29.10), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_5\}.$
$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = z.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_{12}, V_{13}, V_{14}\}.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} =$
$3 \times 4 \times 4z^3.$

- On the Figure (29.11), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_1, E_6, E_7, E_8\}.$
$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = 2z^4.$
$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_1, V_5\}.$
$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 3z^2.$

- On the Figure (29.12), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_1, E_2\}.$
$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = 5z^2.$
$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_1, V_{i_{i=1}^{8}}^{i \neq 4,5,6}\}.$
$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^5.$

- On the Figure (29.13), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_3, E_9, E_6\}.$
$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = 3z^3.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_1, V_5\}.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = 3z^2.$

- On the Figure (29.14), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = z.$$

- On the Figure (29.15), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_2, V_3, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^3.$$

- On the Figure (29.16), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_2, V_6, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = 4 \times 3z^3.$$

- On the Figure (29.17), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_1, V_2, V_6, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 4 \times 3z^4.$$

- On the Figure (29.18), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_1, V_2, V_6, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 2 \times 4 \times 3z^4.$$

- On the Figure (29.19), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2994 2995

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperConnected}} = \{E_{i+2_{i=0^{11}}}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeQuasi-SuperHyperConnected SuperHyperPolynomial}} = 11z^{10}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperConnected}} = \{V_{i+2_{i=0^{11}}}\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 11z^{10}.
\end{aligned}$$

- On the Figure (29.20), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2996 2997

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_6\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = 10z.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_1\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.21), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 2998 2999

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected}} = \{E_2\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeSuperHyperConnected SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected}} = \{V_1\}.\\
&\mathcal{C}(NSHG)_{\text{ExtremeR-SuperHyperConnected SuperHyperPolynomial}} = 10z.
\end{aligned}$$

- On the Figure (29.22), the ExtremeSuperHyperNotion, namely, ExtremeSuperHyperConnected, is up. The ExtremeAlgorithm is Neutrosophicly straightforward. 3000 3001

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_3, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^2.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_3, V_{10}, V_6\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}}\\
&= 3 \times 6z^3.
\end{aligned}$$

The previous Extremeapproach apply on the upcoming Extremeresults on ExtremeSuperHyperClasses. 3002 3003

Proposition 22.0.4. *Assume a connected ExtremeSuperHyperPath $ESHP : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperConnected} = \\
&= \{E_i\}_{i=1}^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}. \\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperConnected\ SuperHyperPolynomial} \\
&= z^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}Quasi\text{-}SuperHyperConnected} \\
&= \{V_i^{EXTERNAL}\}_{i=1}^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}Quasi\text{-}SuperHyperConnected\ SuperHyperPolynomial} \\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P : \\
&V_2^{EXTERNAL}, E_2, \\
&V_3^{EXTERNAL}, E_3, \\
&\ldots, \\
&E_{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}-1}, V^{EXTERNAL}{}_{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}-1}.
\end{aligned}$$

be a longest path taken from a connected ExtremeSuperHyperPath $ESHP : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. ∎

136EXM18a

Example 22.0.5. In the Figure (30.1), the connected ExtremeSuperHyperPath $ESHP : (V, E)$, is highlighted and featured. The ExtremeSuperHyperSet, in the ExtremeSuperHyperModel (30.1), is the SuperHyperConnected.

Proposition 22.0.6. *Assume a connected ExtremeSuperHyperCycle $ESHC : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperConnected} = \\
&= \{E_i\}_{i=1}^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}. \\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperConnected\ SuperHyperPolynomial} \\
&= (|E_{ESHG:(V,E)}|_{ExtremeCardinality} - 1) \\
&z^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}. \\
&\mathcal{C}(NSHG)_{ExtremeR\text{-}Quasi\text{-}SuperHyperConnected}
\end{aligned}$$

$$= \{V_i^{EXTERNAL}\}_{i=1}^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}.$$
$$\mathcal{C}(NSHG)_{ExtremeR\text{-}Quasi\text{-}SuperHyperConnected\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{ExtremeCardinality} z^{|E_{ESHG:(V,E)}|_{ExtremeCardinality}-2}$$

Proof. Let

$$\begin{aligned}&P:\\&V_2^{EXTERNAL}, E_2,\\&V_3^{EXTERNAL}, E_3,\\&\ldots,\\&E_{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}-1}, V^{EXTERNAL}{}_{|E_{ESHG:(V,E)}|_{\text{ExtremeCardinality}}-1}.\end{aligned}$$

be a longest path taken from a connected ExtremeSuperHyperCycle $ESHC : (V, E)$. There's a new way to redefine as

$$\begin{aligned}&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. ∎

136EXM19a

Example 22.0.7. In the Figure (30.2), the connected ExtremeSuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained ExtremeSuperHyperSet, in the ExtremeSuperHyperModel (30.2), is the Extreme SuperHyperConnected.

Proposition 22.0.8. *Assume a connected ExtremeSuperHyperStar $ESHS : (V, E)$. Then*

$$\begin{aligned}&\mathcal{C}(NSHG)_{ExtremeSuperHyperConnected} = \{E_i \in E_{ESHG:(V,E)}\}.\\&\mathcal{C}(NSHG)_{ExtremeSuperHyperConnected\ SuperHyperPolynomial}\\&= |i \mid E_i \in |E_{ESHG:(V,E)}|_{ExtremeCardinality} z.\\&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperConnected} = \{CENTER \in V_{ESHG:(V,E)}\}.\\&\mathcal{C}(NSHG)_{ExtremeR\text{-}SuperHyperConnected\ SuperHyperPolynomial} = z.\end{aligned}$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, E_j.$$

be a longest path taken a connected ExtremeSuperHyperStar $ESHS : (V, E)$. There's a new way to redefine as

$$\begin{aligned}&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. ∎

136EXM20a

Example 22.0.9. In the Figure (30.3), the connected ExtremeSuperHyperStar $ESHS:(V,E)$, is highlighted and featured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperStar $ESHS:(V,E)$, in the ExtremeSuperHyperModel (30.3), is the ExtremeSuperHyperConnected.

Proposition 22.0.10. *Assume a connected ExtremeSuperHyperBipartite $ESHB:(V,E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperConnected}\\
&=\{E_a \in E_{P_i^{ESHG:(V,E)}},\\
&\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| = \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\
&= z^{\min |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&where\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}|\\
&= \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{ExtremeV\text{-}SuperHyperConnected}\\
&=\{V_a^{EXTERNAL} \in V^{EXTERNAL}_{P_i^{ESHG:(V,E)}}, V_b^{EXTERNAL} \in V^{EXTERNAL}_{P_i^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{ExtremeV\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{ExtremeCardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i^{ESHG:(V,E)}| choose\ 2) = z^2.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2
\end{aligned}$$

is a longest path taken from a connected ExtremeSuperHyperBipartite $ESHB:(V,E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists ! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists ! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. Then there's no at least one SuperHyperConnected. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperConnected could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2
\end{aligned}$$

is a longest SuperHyperConnected taken from a connected ExtremeSuperHyperBipartite $ESHB : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

The latter is straightforward. ■

136EXM21a **Example 22.0.11.** In the ExtremeFigure (30.4), the connected ExtremeSuperHyperBipartite $ESHB : (V, E)$, is Extremehighlighted and Extremefeatured. The obtained ExtremeSuperHyperSet, by the ExtremeAlgorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperBipartite $ESHB : (V, E)$, in the ExtremeSuperHyperModel (30.4), is the Extreme SuperHyperConnected.

Proposition 22.0.12. *Assume a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. Then*

$$\begin{aligned}&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperConnected}\\&= \{E_a \in E_{P_i^{ESHG:(V,E)}},\\&\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| = \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\&\mathcal{C}(NSHG)_{ExtremeQuasi\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\&= z^{\min |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\&\textit{where } \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}|\\&= \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\&\mathcal{C}(NSHG)_{ExtremeV\text{-}SuperHyperConnected}\\&= \{V_a^{EXTERNAL} \in V^{EXTERNAL}_{P_i^{ESHG:(V,E)}}, V_b^{EXTERNAL} \in V^{EXTERNAL}_{P_i^{ESHG:(V,E)}},\ i \neq j\}.\\&\mathcal{C}(NSHG)_{ExtremeV\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{ExtremeCardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i^{ESHG:(V,E)}| choose\ 2) = z^2.\end{aligned}$$

Proof. Let

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

is a longest SuperHyperConnected taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. There's a new way to redefine as

$$\begin{aligned}&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. Then there's no at least one SuperHyperConnected. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperConnected could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P: \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2
\end{aligned}$$

is a longest path taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}
&P: \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2
\end{aligned}$$

is a longest path taken from a connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$. The latter is straightforward. ■

136EXM22a

Example 22.0.13. In the Figure (30.5), the connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$, is highlighted and Extremefeatured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous Extremeresult, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperMultipartite $ESHM : (V, E)$, in the ExtremeSuperHyperModel (30.5), is the ExtremeSuperHyperConnected.

Proposition 22.0.14. *Assume a connected ExtremeSuperHyperWheel $ESHW : (V, E)$. Then,*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{ExtremeSuperHyperConnected} = \{E_i \in E^*_{ESHG:(V,E)}\}. \\
&\mathcal{C}(NSHG)_{ExtremeSuperHyperConnected\ SuperHyperPolynomial} \\
&= |i \mid E_i \in |E^*{}_{ESHG:(V,E)}|_{ExtremeCardinality}|z. \\
&\mathcal{C}(NSHG)_{ExtremeV\text{-}SuperHyperConnected} = \{CENTER \in V_{ESHG:(V,E)}\}. \\
&\mathcal{C}(NSHG)_{ExtremeV\text{-}SuperHyperConnected\ SuperHyperPolynomial} = z.
\end{aligned}$$

Proof. Let

$$P : V^{EXTERNAL}{}_i, E^*{}_i, CENTER, E_j.$$

is a longest SuperHyperConnected taken from a connected ExtremeSuperHyperWheel $ESHW : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. Then there's at least one SuperHyperConnected. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperConnected could be applied. The unique embedded SuperHyperConnected proposes some longest SuperHyperConnected excerpt from some representatives. The latter is straightforward. ■

136EXM23a

Example 22.0.15. In the ExtremeFigure (30.6), the connected ExtremeSuperHyperWheel $NSHW : (V, E)$, is Extremehighlighted and featured. The obtained ExtremeSuperHyperSet, by the Algorithm in previous result, of the ExtremeSuperHyperVertices of the connected ExtremeSuperHyperWheel $ESHW : (V, E)$, in the ExtremeSuperHyperModel (30.6), is the ExtremeSuperHyperConnected.

Bibliography

HG1 [1] Henry Garrett, "*Properties of SuperHyperGraph and Extreme SuperHyperGraph*", Extreme Sets and Systems 49 (2022) 531-561 (doi: 10.5281/zenodo.6456413). (http://fs.unm.edu/NSS/ExtremeSuperHyperGraph34.pdf). (https://digitalrepository.unm.edu/nss_journal/vol49/iss1/34).

HG2 [2] Henry Garrett, "*Extreme Co-degree and Extreme Degree alongside Chromatic Numbers in the Setting of Some Classes Related to Extreme Hypergraphs*", J Curr Trends Comp Sci Res 1(1) (2022) 06-14.

HG3 [3] Henry Garrett, "*Super Hyper Dominating and Super Hyper Resolving on Extreme Super Hyper Graphs and Their Directions in Game Theory and Extreme Super Hyper Classes*", J Math Techniques Comput Math 1(3) (2022) 242-263.

HG4 [4] Garrett, Henry. "*0039 | Closing Numbers and SupeV-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Extreme)n-SuperHyperGraph.*" CERN European Organization for Nuclear Research - Zenodo, Nov. 2022. CERN European Organization for Nuclear Research, https://doi.org/10.5281/zenodo.6319942. https://oa.mg/work/10.5281/zenodo.6319942

HG5 [5] Garrett, Henry. "*0049 | (Failed)1-Zero-Forcing Number in Extreme Graphs.*" CERN European Organization for Nuclear Research - Zenodo, Feb. 2022. CERN European Organization for Nuclear Research, https://doi.org/10.13140/rg.2.2.35241.26724. https://oa.mg/work/10.13140/rg.2.2.35241.26724

HG6 [6] Henry Garrett, "*Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer's Recognition as the Model in The Setting of (Extreme) SuperHyperGraphs*", Preprints 2023, 2023010308 (doi: 10.20944/preprints202301.0308.v1).

HG7 [7] Henry Garrett, "*Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Extreme Failed SuperHyperClique inside Extreme SuperHyperGraphs Titled Cancer's Recognition*", Preprints 2023, 2023010282 (doi: 10.20944/preprints202301.0282.v1).

HG8 [8] Henry Garrett, "*Extreme Version Of Separates Groups Of Cells In Cancer's Recognition On Extreme SuperHyperGraphs*", Preprints 2023, 2023010267 (doi: 10.20944/preprints202301.0267.v1).

HG9 [9] Henry Garrett, "*The Shift Paradigm To Classify Separately The Cells and Affected Cells Toward The Totality Under Cancer's Recognition By New Multiple Definitions On the Sets Polynomials Alongside Numbers In The (Extreme) SuperHyperMatching Theory Based on SuperHyperGraph and Extreme SuperHyperGraph*", Preprints 2023, 2023010265 (doi: 10.20944/preprints202301.0265.v1).

HG10 [10] Henry Garrett, "*Breaking the Continuity and Uniformity of Cancer In The Worst Case of Full Connections With Extreme Failed SuperHyperClique In Cancer's Recognition Applied in (Extreme) SuperHyperGraphs*", Preprints 2023, 2023010262,(doi: 10.20944/preprints202301.0262.v1).

HG11 [11] Henry Garrett, "*Extreme Failed SuperHyperStable as the Survivors on the Cancer's Extreme Recognition Based on Uncertainty to All Modes in Extreme SuperHyperGraphs*", Preprints 2023, 2023010240 (doi: 10.20944/preprints202301.0240.v1).

HG12 [12] Henry Garrett, "*Extremism of the Attacked Body Under the Cancer's Circumstances Where Cancer's Recognition Titled (Extreme) SuperHyperGraphs*", Preprints 2023, 2023010224, (doi: 10.20944/preprints202301.0224.v1).

HG13 [13] Henry Garrett, "*(Extreme) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Extreme) SuperHyperGraphs*", Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1).

HG14 [14] Henry Garrett, "*Extreme Messy-Style SuperHyperGraphs To Form Extreme SuperHyperStable To Act on Cancer's Extreme Recognitions In Special ViewPoints*", Preprints 2023, 2023010088 (doi: 10.20944/preprints202301.0088.v1).

HG15 [15] Henry Garrett, "*Extreme 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Extreme SuperHyperGraphs on Cancer's Extreme Recognition And Beyond*", Preprints 2023, 2023010044

HG16 [16] Henry Garrett, "*(Extreme) SuperHyperStable on Cancer's Recognition by Well- SuperHyperModelled (Extreme) SuperHyperGraphs*", Preprints 2023, 2023010043 (doi: 10.20944/preprints202301.0043.v1).

HG17 [17] Henry Garrett, *"Basic Notions on (Extreme) SuperHyperForcing And (Extreme) SuperHyperModeling in Cancer's Recognitions And (Extreme) SuperHyperGraphs"*, Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1).

HG18 [18] Henry Garrett, *"Extreme Messy-Style SuperHyperGraphs To Form Extreme SuperHyperStable To Act on Cancer's Extreme Recognitions In Special ViewPoints"*, Preprints 2023, 2023010088 (doi: 10.20944/preprints202301.0088.v1).

HG19 [19] Henry Garrett, *"(Extreme) SuperHyperModeling of Cancer's Recognitions Featuring (Extreme) SuperHyperDefensive SuperHyperAlliances"*, Preprints 2022, 2022120549 (doi: 10.20944/preprints202212.0549.v1).

HG20 [20] Henry Garrett, "*(Extreme) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Extreme) SuperHyperGraph With (Extreme) SuperHyperModeling of Cancer's Recognitions And Related (Extreme) SuperHyperClasses*", Preprints 2022, 2022120540 (doi: 10.20944/preprints202212.0540.v1).

HG21 [21] Henry Garrett, "*SuperHyperGirth on SuperHyperGraph and Extreme SuperHyperGraph With SuperHyperModeling of Cancer's Recognitions*", Preprints 2022, 2022120500 (doi: 10.20944/preprints202212.0500.v1).

HG22 [22] Henry Garrett, "*Some SuperHyperDegrees and Co-SuperHyperDegrees on Extreme SuperHyperGraphs and SuperHyperGraphs Alongside Applications in Cancer's Treatments*", Preprints 2022, 2022120324 (doi: 10.20944/preprints202212.0324.v1).

HG23 [23] Henry Garrett, "*SuperHyperDominating and SuperHyperResolving on Extreme SuperHyperGraphs And Their Directions in Game Theory and Extreme SuperHyperClasses*", Preprints 2022, 2022110576 (doi: 10.20944/preprints202211.0576.v1).

HG24 [24] Henry Garrett,"*SuperHyperMatching By (V-)Definitions And Polynomials To Monitor Cancer's Recognition In Extreme SuperHyperGraphs*", ResearchGate 2023,(doi: 10.13140/RG.2.2.35061.65767).

HG25 [25] Henry Garrett,"*The Focus on The Partitions Obtained By Parallel Moves In The Cancer's Extreme Recognition With Different Types of Extreme SuperHyperMatching Set and Polynomial on (Extreme) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.18494.15680).

HG26 [26] Henry Garrett,"*Extreme Failed SuperHyperClique Decides the Failures on the Cancer's Recognition in the Perfect Connections of Cancer's Attacks By SuperHyperModels Named (Extreme) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.32530.73922).

HG27 [27] Henry Garrett,"*Indeterminacy On The All Possible Connections of Cells In Front of Cancer's Attacks In The Terms of Extreme Failed SuperHyperClique on Cancer's Recognition called Extreme SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.15897.70243).

HG28 [28] Henry Garrett,"*Perfect Directions Toward Idealism in Cancer's Extreme Recognition Forwarding Extreme SuperHyperClique on Extreme SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.30092.80004).

HG29 [29] Henry Garrett,"*Demonstrating Complete Connections in Every Embedded Regions and Sub-Regions in the Terms of Cancer's Recognition and (Extreme) SuperHyperGraphs With (Extreme) SuperHyperClique*", ResearchGate 2023, (doi: 10.13140/RG.2.2.23172.19849).

HG30 [30] Henry Garrett,"*Different Extreme Types of Extreme Regions titled Extreme Failed SuperHyperStable in Cancer's Extreme Recognition modeled in the Form of Extreme SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.17385.36968).

HG31 [31] Henry Garrett, "*Using the Tool As (Extreme) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Extreme) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.28945.92007).

HG32 [32] Henry Garrett, "*Extreme Messy-Style SuperHyperGraphs To Form Extreme SuperHyperStable To Act on Cancer's Extreme Recognitions In Special ViewPoints*", ResearchGate 2023, (doi: 10.13140/RG.2.2.11447.80803).

HG33 [33] Henry Garrett, "*(Extreme) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Extreme) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.35774.77123).

HG34 [34] Henry Garrett, "*Extreme 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Extreme SuperHyperGraphs on Cancer's Extreme Recognition And Beyond*", ResearchGate 2022, (doi: 10.13140/RG.2.2.36141.77287).

HG35 [35] Henry Garrett, "*(Extreme) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Extreme) SuperHyperGraphs*", ResearchGate 2022, (doi: 10.13140/RG.2.2.29430.88642).

HG36 [36] Henry Garrett, "*Basic Notions on (Extreme) SuperHyperForcing And (Extreme) SuperHyperModeling in Cancer's Recognitions And (Extreme) SuperHyperGraphs*", ResearchGate 2022, (doi: 10.13140/RG.2.2.11369.16487).

HG37 [37] Henry Garrett, *"Basic Extreme Notions Concerning SuperHyperDominating and Extreme SuperHyperResolving in SuperHyperGraph"*, ResearchGate 2022 (doi: 10.13140/RG.2.2.29173.86244).

HG38 [38] Henry Garrett, "*Initial Material of Extreme Preliminaries to Study Some Extreme Notions Based on Extreme SuperHyperEdge (NSHE) in Extreme SuperHyperGraph (NSHG)*", ResearchGate 2022 (doi: 10.13140/RG.2.2.25385.88160).

HG39 [39] Henry Garrett, (2022). "*Beyond Extreme Graphs*", Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 979-1-59973-725-6 (http://fs.unm.edu/BeyondExtremeGraphs.pdf).

HG40 [40] Henry Garrett, (2022). "*Extreme Duality*", Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (http://fs.unm.edu/ExtremeDuality.pdf).

CHAPTER 23

Neutrosophic SuperHyperDominating

Henry Garrett, “New Ideas On Super Mixed-Devastations By Hyper Decisions Of SuperHyperDuality In Cancer’s Neutrosophic Recognition and Neutrosophic SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.34953.52320).

Henry Garrett, “New Ideas In Cancer’s Recognition As (Neutrosophic) SuperHyperGraph By SuperHyperDuality As Hyper Imaginations On Super Mixed-Illustrations”, ResearchGate 2023, (doi: 10.13140/RG.2.2.33275.80161).

Henry Garrett, “New Ideas In Cancer’s Recognition And Neutrosophic SuperHyperGraph By SuperHyperJoin As Hyper Separations On Super Sorts”, ResearchGate 2023, (doi: 10.13140/RG.2.2.11050.90569).

Henry Garrett, “New Ideas On Super connections By Hyper disconnections Of SuperHyperJoin In Cancer’s Recognition with (Neutrosophic) SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.17761.79206).

Henry Garrett, “New Ideas In Cancer’s Recognition And Neutrosophic SuperHyperGraph By SuperHyperPerfect As Hyper Idealism On Super Vacancy”, ResearchGate 2023, (doi: 10.13140/RG.2.2.19911.37285).

Henry Garrett, “New Ideas On Super Isolation By Hyper Perfectness Of SuperHyperPerfect In Cancer’s Recognition with (Neutrosophic) SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.23266.81602).

Henry Garrett, “New Ideas In Cancer’s Recognition And Neutrosophic SuperHyperGraph By SuperHyperTotal As Hyper Covering On Super Infections”, ResearchGate 2023, (doi: 10.13140/RG.2.2.19360.87048).

Henry Garrett, “New Ideas On Super Extremism By Hyper Treatments Of SuperHyperTotal In Cancer’s Recognition with (Neutrosophic) SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.32363.21286).

Henry Garrett, “New Ideas In Cancer’s Recognition And Neutrosophic SuperHyperGraph By SuperHyperConnected As Hyper Group On Super Surge”, ResearchGate 2023, (doi: 10.13140/RG.2.2.11758.69441).

Henry Garrett, “New Ideas On Super Outbreak By Hyper Collections Of SuperHyperConnected In Cancer’s Recognition With (Neutrosophic) SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.31891.35367).

Henry Garrett, “New Ideas In Cancer’s Recognition And Neutrosophic SuperHyperGraph By SuperHyperDominating As Hyper Closing On Super Messy”, ResearchGate 2023, (doi: 10.13140/RG.2.2.21510.45125).

Henry Garrett, “New Ideas On Super Missing By Hyper Searching Of SuperHyperDominating In Cancer’s Recognition With (Neutrosophic) SuperHyperGraph”, ResearchGate 2023, (doi: 10.13140/RG.2.2.13121.84321).

CHAPTER 24

New Ideas In Cancer's Recognition And Neutrosophic SuperHyperGraph By SuperHyperDominating As Hyper Closing On Super Messy

CHAPTER 25

ABSTRACT

In this scientific research, (Different Neutrosophic Types of Neutrosophic SuperHyperDominating). Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called Neutrosophic e-SuperHyperDominating if $\forall E_i \in E_{ESHG:(V,E)} \setminus E',\ \exists E_j \in E'$, such that $V_a \in E_i, E_j$; Neutrosophic re-SuperHyperDominating if $\forall E_i \in E_{ESHG:(V,E)} \setminus E',\ \exists E_j \in E'$, such that $V_a \in E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$; Neutrosophic v-SuperHyperDominating if $\forall V_i \in V_{ESHG:(V,E)} \setminus V',\ \exists V_j \in V'$, such that $V_i, V_j \in E_a$; and Neutrosophic rv-SuperHyperDominating if $\forall V_i \in V_{ESHG:(V,E)} \setminus V',\ \exists V_j \in V'$, such that $V_i, V_j \in E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$; Neutrosophic SuperHyperDominating if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating. ((Neutrosophic) SuperHyperDominating). Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called an Extreme SuperHyperDominating if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating; a Neutrosophic SuperHyperDominating if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; an Extreme SuperHyperDominating SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating;

and the Extreme power is corresponded to its Extreme coefficient; a Neutrosophic SuperHyperDominating SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; and the Neutrosophic power is corresponded to its Neutrosophic coefficient; an Extreme V-SuperHyperDominating if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating; a Neutrosophic V-SuperHyperDominating if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; an Extreme V-SuperHyperDominating SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating; and the Extreme power is corresponded to its Extreme coefficient; a Neutrosophic SuperHyperDominating SuperHyperPolynomial if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; and the Neutrosophic power is corresponded to its Neutrosophic coefficient. In this scientific research, new setting is introduced for new SuperHyperNotions, namely, a SuperHyperDominating and Neutrosophic SuperHyperDominating. Two different types of SuperHyperDefinitions are debut for them but the research goes further and the SuperHyperNotion, SuperHyperUniform, and SuperHyperClass based on that are well-defined and well-reviewed. The literature review is implemented in the whole of this research. For shining the elegancy and the significancy of this research, the comparison between this SuperHyperNotion with other SuperHyperNotions and fundamental SuperHyperNumbers are featured. The definitions are followed by the examples and the instances thus the clarifications are driven with different tools. The applications are figured out to make sense about the theoretical aspect of this ongoing research. The "Cancer's Recognition" are the under research to figure out the challenges make sense about ongoing and upcoming research. The special case is up. The cells are viewed in the deemed ways. There are different types of them. Some of them are individuals and some of them are well-modeled by the group of cells. These types are all officially called "SuperHyperVertex" but the relations amid them all officially called "SuperHyperEdge". The frameworks "SuperHyperGraph" and "Neutrosophic SuperHyperGraph" are chosen and elected to research about "Cancer's Recognition". Thus these complex and dense SuperHyperModels open up some avenues to research on theoretical segments and "Cancer's Recognition". Some avenues are posed to pursue this research. It's also officially collected in the form of some questions and some problems. Assume a SuperHyperGraph. Assume a SuperHyperGraph. Then $\delta-$SuperHyperDominating is a maximal of SuperHyperVertices with a maximum cardinality such that either of the following expressions hold for the (Neutrosophic) cardinalities of SuperHyperNeighbors of $s \in S$: there are $|S \cap N(s)| > |S \cap (V \setminus N(s))| + \delta$; and $|S \cap N(s)| < |S \cap (V \setminus N(s))| + \delta$. The first Expression, holds if S is an $\delta-$SuperHyperOffensive. And the second Expression, holds if S is an $\delta-$SuperHyperDefensive; a Neutrosophic $\delta-$SuperHyperDominating is a maximal Neutrosophic of SuperHyperVertices with maximum Neutrosophic cardinality such that either of the following expressions hold for the Neutrosophic cardinalities of SuperHyperNeighbors of $s \in S$ there are: $|S \cap N(s)|_{Neutrosophic} > |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta$; and $|S \cap N(s)|_{Neutrosophic} < |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta$. The first Expression, holds if S is a Neutrosophic $\delta-$SuperHyperOffensive. And the second Expression, holds if S is a Neutrosophic $\delta-$SuperHyperDefensive It's useful to define a "Neutrosophic" version of a SuperHyperDominating . Since there's more ways to get type-results to make a SuperHyperDominating more understandable. For the sake of having Neutrosophic SuperHyperDominating, there's a need to "redefine" the notion of a "SuperHyperDominating ". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values. Assume a SuperHyperDominating . It's redefined a Neutrosophic SuperHyperDominating if the mentioned Table holds, concerning, "The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph" with the key points, "The Values of The Vertices & The Number of Position in Alphabet", "The Values of The SuperVertices&The maximum Values of Its Vertices", "The Values of The Edges&The maximum Values of Its Vertices", "The Values of The HyperEdges&The maximum Values of Its Vertices", "The Values of The SuperHyperEdges&The maximum Values of Its Endpoints". To get structural examples and instances, I'm going to introduce the next SuperHyperClass of SuperHyperGraph based on a SuperHyperDominating . It's the main. It'll be disciplinary to have the foundation of previous definition in the kind of SuperHyperClass. If there's a need to have all SuperHyperDominating until the SuperHyperDominating, then it's officially called a "SuperHyperDominating" but otherwise, it isn't a SuperHyperDominating . There are some instances about the clarifications for the main definition titled a "SuperHyperDominating ". These two examples get more scrutiny and discernment since there are characterized in the disciplinary ways of the SuperHyperClass based on a SuperHyperDominating . For the sake of having a Neutrosophic SuperHyperDominating, there's a need to "redefine" the notion of a "Neutrosophic SuperHyperDominating" and a "Neutrosophic SuperHyperDominating ". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values. Assume a Neutrosophic SuperHyperGraph. It's redefined "Neutrosophic SuperHyperGraph" if the intended Table holds. And a SuperHyperDominating are redefined to a "Neutrosophic SuperHyperDominating" if the intended Table holds. It's useful to define "Neutrosophic" version of SuperHyperClasses. Since there's more ways to get Neutrosophic type-results to make a Neutrosophic SuperHyperDominating more understandable. Assume a Neutrosophic SuperHyperGraph. There are some Neutrosophic SuperHyperClasses if the intended Table holds. Thus SuperHyperPath, SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultiPartite, and SuperHyperWheel, are "Neutrosophic SuperHyperPath", "Neutrosophic SuperHyperDominating", "Neutrosophic SuperHyperStar", "Neutrosophic SuperHyperBipartite", "Neutrosophic SuperHyperMultiPartite", and "Neutrosophic SuperHyperWheel" if the intended Table holds. A SuperHyperGraph has a "Neutrosophic SuperHyperDominating" where it's the strongest [the maximum Neutrosophic value from all the SuperHyperDominating amid the maximum value amid all SuperHyperVertices from a SuperHyperDominating .] SuperHyperDominating . A graph is a SuperHyperUniform if it's a SuperHyperGraph and the number of elements of SuperHyperEdges are the same. Assume a Neutrosophic SuperHyperGraph. There are some SuperHyperClasses as follows. It's SuperHyperPath if it's only one SuperVertex as intersection amid two given SuperHyperEdges with two exceptions; it's SuperHyperDominating if it's only one SuperVertex as intersection amid two given SuperHyperEdges; it's SuperHyperStar it's only one SuperVertex as intersection amid all SuperHyperEdges; it's SuperHyperBipartite it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming two separate sets, has no SuperHyperEdge in common; it's SuperHyperMultiPartite it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming multi separate sets, has no SuperHyperEdge in common; it's a SuperHyperWheel if it's only one SuperVertex as intersection amid two given SuperHyperEdges and one SuperVertex has one SuperHyperEdge with any common SuperVertex. The SuperHyperModel proposes the specific designs and the specific architectures. The SuperHyperModel is officially called "SuperHyperGraph" and "Neutrosophic SuperHyperGraph". In this SuperHyperModel, The "specific" cells and "specific group" of cells are SuperHyperModeled as "SuperHyperVertices" and the common and intended properties between "specific" cells and "specific group" of cells are SuperHyperModeled as "SuperHyperEdges". Sometimes, it's useful to have some degrees of determinacy, indeterminacy, and neutrality to have more precise SuperHyperModel which in this case the SuperHyperModel is called "Neutrosophic". In the future research, the foundation will be based on the "Cancer's Recognition" and the results and the definitions will be introduced in redeemed ways. The recognition of the cancer in the long-term function. The specific region has been assigned by the model [it's called SuperHyperGraph] and the long cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be Neutrosophic SuperHyperGraph] to have convenient perception on what's happened and what's done. There are some specific models, which are well-known and they've got the names, and some SuperHyperGeneral SuperHyperModels. The moves and the traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a Neutrosophic SuperHyperPath(-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the longest SuperHyperDominating or the strongest SuperHyperDominating in those Neutrosophic SuperHyperModels. For the longest SuperHyperDominating, called SuperHyperDominating, and the strongest SuperHyper-

Dominating, called Neutrosophic SuperHyperDominating, some general results are introduced. Beyond that in SuperHyperStar, all possible SuperHyperPaths have only two SuperHyperEdges but it's not enough since it's essential to have at least three SuperHyperEdges to form any style of a SuperHyperDominating. There isn't any formation of any SuperHyperDominating but literarily, it's the deformation of any SuperHyperDominating. It, literarily, deforms and it doesn't form. A basic familiarity with Neutrosophic SuperHyperDominating theory, SuperHyperGraphs, and Neutrosophic SuperHyperGraphs theory are proposed.

Keywords: Neutrosophic SuperHyperGraph, SuperHyperDominating, Cancer's Neutrosophic Recognition

AMS Subject Classification: 05C17, 05C22, 05E45

CHAPTER 26

Background

There are some scientific researches covering the topic of this research. In what follows, there are some discussion and literature reviews about them date back on January 22, 2023.

First article is titled “properties of SuperHyperGraph and neutrosophic SuperHyperGraph” in **Ref.** [**HG1**] by Henry Garrett (2022). It’s first step toward the research on neutrosophic SuperHyperGraphs. This research article is published on the journal “Neutrosophic Sets and Systems” in issue 49 and the pages 531-561. In this research article, different types of notions like dominating, resolving, coloring, Eulerian(Hamiltonian) neutrosophic path, n-Eulerian(Hamiltonian) neutrosophic path, zero forcing number, zero forcing neutrosophic- number, independent number, independent neutrosophic-number, clique number, clique neutrosophic-number, matching number, matching neutrosophic-number, girth, neutrosophic girth, 1-zero-forcing number, 1-zero- forcing neutrosophic-number, failed 1-zero-forcing number, failed 1-zero-forcing neutrosophic-number, global- offensive alliance, t-offensive alliance, t-defensive alliance, t-powerful alliance, and global-powerful alliance are defined in SuperHyperGraph and neutrosophic SuperHyperGraph. Some Classes of SuperHyperGraph and Neutrosophic SuperHyperGraph are cases of research. Some results are applied in family of SuperHyperGraph and neutrosophic SuperHyperGraph. Thus this research article has concentrated on the vast notions and introducing the majority of notions.

The seminal paper and groundbreaking article is titled “neutrosophic co-degree and neutrosophic degree alongside chromatic numbers in the setting of some classes related to neutrosophic hypergraphs” in **Ref.** [**HG2**] by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on general forms without using neutrosophic classes of neutrosophic SuperHyperGraph. It’s published in prestigious and fancy journal is entitled “Journal of Current Trends in Computer Science Research (JCTCSR)” with abbreviation “J Curr Trends Comp Sci Res” in volume 1 and issue 1 with pages 06-14. The research article studies deeply with choosing neutrosophic hypergraphs instead of neutrosophic SuperHyperGraph. It’s the breakthrough toward independent results based on initial background.

The seminal paper and groundbreaking article is titled “Super Hyper Dominating and Super Hyper Resolving on Neutrosophic Super Hyper Graphs and Their Directions in Game Theory and Neutrosophic Super Hyper Classes” in **Ref.** [**HG3**] by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on fundamental SuperHyperNumber and using neutrosophic SuperHyperClasses of neutrosophic SuperHyperGraph. It’s published in prestigious and fancy journal is entitled “Journal of Mathematical Techniques and Computational Mathematics(JMTCM)” with abbreviation “J Math Techniques Comput Math” in volume 1 and issue 3 with pages 242-263. The research article studies deeply with choosing directly neutrosophic SuperHyperGraph and SuperHyperGraph. It’s the breakthrough toward independent results based on initial background and fundamental SuperHyperNumbers.

In some articles are titled “0039 | Closing Numbers and SupeV-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph” in **Ref.** [**HG4**] by Henry Garrett (2022), “0049 | (Failed)1-Zero-Forcing Number in Neutrosophic Graphs” in **Ref.** [**HG5**] by Henry Garrett (2022), “Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer’s Recognition as the Model in The Setting of (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG6**] by Henry Garrett (2022), “Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Neutrosophic Failed SuperHyperClique inside Neutrosophic SuperHyperGraphs Titled Cancer’s Recognition” in **Ref.** [**HG7**] by Henry Garrett (2022), “Neutrosophic Version Of Separates Groups Of Cells In Cancer’s Recognition On Neutrosophic SuperHyperGraphs” in **Ref.** [**HG8**] by Henry Garrett (2022), “The Shift Paradigm To Classify Separately The Cells and Affected Cells Toward The Totality Under Cancer’s Recognition By New Multiple Definitions On the Sets Polynomials Alongside Numbers In The (Neutrosophic) SuperHyperMatching Theory Based on SuperHyperGraph and Neutrosophic SuperHyperGraph” in **Ref.** [**HG9**] by Henry Garrett (2022), “Breaking the Continuity and Uniformity of Cancer In The Worst Case of Full Connections With Extreme Failed SuperHyperClique In Cancer’s Recognition Applied in (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG10**] by Henry Garrett (2022), “Neutrosophic Failed SuperHyperStable as the Survivors on the Cancer’s Neutrosophic Recognition Based on Uncertainty to All Modes in Neutrosophic SuperHyperGraphs” in **Ref.** [**HG11**] by Henry Garrett (2022), “Extremism of the Attacked Body Under the Cancer’s Circumstances Where Cancer’s Recognition Titled (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG12**] by Henry Garrett (2022), “(Neutrosophic) 1-Failed SuperHyperForcing in Cancer’s Recognitions And (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG13**] by Henry Garrett (2022), “Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer’s Neutrosophic Recognitions In Special ViewPoints” in **Ref.** [**HG14**] by Henry Garrett (2022), “Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer’s Neutrosophic Recognition And Beyond” in **Ref.** [**HG15**] by Henry Garrett (2022), “(Neutrosophic) SuperHyperStable on Cancer’s Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs ” in **Ref.** [**HG16**] by Henry Garrett (2022), “Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer’s Neutrosophic Recognitions In Special ViewPoints” in **Ref.** [**HG12**] by Henry Garrett (2022), “Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer’s Recognitions And (Neutrosophic) SuperHyperGraphs” in **Ref.** [**HG17**] by Henry Garrett (2022), “Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer’s Neutrosophic Recognitions In Special ViewPoints” in **Ref.** [**HG18**] by Henry Garrett (2022),“(Neutrosophic) SuperHyperModeling of Cancer’s Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances” in **Ref.** [**HG19**] by Henry Garrett (2022), “(Neutrosophic) SuperHyperAlliances With SuperHyper-Defensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer’s Recognitions And Related (Neutrosophic) SuperHyperClasses” in **Ref.** [**HG20**] by Henry Garrett (2022), “SuperHyperGirth on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer’s

Recognitions" in **Ref.** [**HG21**] by Henry Garrett (2022), "Some SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs and SuperHyperGraphs Alongside Applications in Cancer's Treatments" in **Ref.** [**HG22**] by Henry Garrett (2022), "SuperHyperDominating and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses" in **Ref.** [**HG23**] by Henry Garrett (2022), "SuperHyperMatching By (V-)Definitions And Polynomials To Monitor Cancer's Recognition In Neutrosophic SuperHyperGraphs" in **Ref.** [**HG24**] by Henry Garrett (2023), "The Focus on The Partitions Obtained By Parallel Moves In The Cancer's Extreme Recognition With Different Types of Extreme SuperHyperMatching Set and Polynomial on (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG25**] by Henry Garrett (2023), "Extreme Failed SuperHyperClique Decides the Failures on the Cancer's Recognition in the Perfect Connections of Cancer's Attacks By SuperHyperModels Named (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG26**] by Henry Garrett (2023), "Indeterminacy On The All Possible Connections of Cells In Front of Cancer's Attacks In The Terms of Neutrosophic Failed SuperHyperClique on Cancer's Recognition called Neutrosophic SuperHyperGraphs" in **Ref.** [**HG27**] by Henry Garrett (2023), "Perfect Directions Toward Idealism in Cancer's Neutrosophic Recognition Forwarding Neutrosophic SuperHyperClique on Neutrosophic SuperHyperGraphs" in **Ref.** [**HG28**] by Henry Garrett (2023), "Demonstrating Complete Connections in Every Embedded Regions and Sub-Regions in the Terms of Cancer's Recognition and (Neutrosophic) SuperHyperGraphs With (Neutrosophic) SuperHyperClique" in **Ref.** [**HG29**] by Henry Garrett (2023), "Different Neutrosophic Types of Neutrosophic Regions titled neutrosophic Failed SuperHyperStable in Cancer's Neutrosophic Recognition modeled in the Form of Neutrosophic SuperHyperGraphs" in **Ref.** [**HG30**] by Henry Garrett (2023), "Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG31**] by Henry Garrett (2023), "Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints" in **Ref.** [**HG32**] by Henry Garrett (2023), "(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG33**] by Henry Garrett (2023), "Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond" in **Ref.** [**HG34**] by Henry Garrett (2022), "(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG35**] by Henry Garrett (2022), "Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in **Ref.** [**HG36**] by Henry Garrett (2022), "Basic Neutrosophic Notions Concerning SuperHyperDominating and Neutrosophic SuperHyperResolving in SuperHyperGraph" in **Ref.** [**HG37**] by Henry Garrett (2022), "Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG)" in **Ref.** [**HG38**] by Henry Garrett (2022), there are some endeavors to formalize the basic SuperHyperNotions about neutrosophic SuperHyperGraph and SuperHyperGraph.

Some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in **Ref.** [**HG39**] by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3230 readers in Scribd. It's titled "Beyond Neutrosophic Graphs" and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory.

Also, some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in **Ref.** [**HG40**] by Henry Garrett (2022) which is indexed by Google Scholar and has more than 4117 readers in Scribd. It's titled "Neutrosophic Duality" and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and SuperHyperDominating in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It's smart to consider a set but acting on its complement that what's done in this research book which is popular in the terms of high readers in Scribd. See the seminal scientific researches [**HG1**; **HG2**; **HG3**]. The formalization of the notions on the framework of Extreme SuperHyperDominating theory, Neutrosophic SuperHyperDominating theory, and (Neutrosophic) SuperHyperGraphs theory at [**HG4**; **HG5**; **HG6**; **HG7**; **HG8**; **HG9**; **HG10**; **HG11**; **HG12**; **HG13**; **HG14**; **HG15**; **HG16**; **HG17**; **HG18**; **HG19**; **HG20**; **HG21**; **HG22**; **HG23**; **HG24**; **HG25**; **HG26**; **HG27**; **HG28**; **HG29**; **HG30**; **HG31**; **HG32**; **HG33**; **HG34**; **HG35**; **HG36**; **HG37**; **HG38**]. Two popular scientific research books in Scribd in the terms of high readers, 3230 and 4117 respectively, on neutrosophic science is on [**HG39**; **HG40**].

CHAPTER 27

Applied Notions Under The Scrutiny Of The Motivation Of This Scientific Research

In this scientific research, there are some ideas in the featured frameworks of motivations. I try to bring the motivations in the narrative ways. Some cells have been faced with some attacks from the situation which is caused by the cancer's attacks. In this case, there are some embedded analysis on the ongoing situations which in that, the cells could be labelled as some groups and some groups or individuals have excessive labels which all are raised from the behaviors to overcome the cancer's attacks. In the embedded situations, the individuals of cells and the groups of cells could be considered as "new groups". Thus it motivates us to find the proper SuperHyperModels for getting more proper analysis on this messy story. I've found the SuperHyperModels which are officially called "SuperHyperGraphs" and "Neutrosophic SuperHyperGraphs". In this SuperHyperModel, the cells and the groups of cells are defined as "SuperHyperVertices" and the relations between the individuals of cells and the groups of cells are defined as "SuperHyperEdges". Thus it's another motivation for us to do research on this SuperHyperModel based on the "Cancer's Recognition". Sometimes, the situations get worst. The situation is passed from the certainty and precise style. Thus it's the beyond them. There are three descriptions, namely, the degrees of determinacy, indeterminacy and neutrality, for any object based on vague forms, namely, incomplete data, imprecise data, and uncertain analysis. The latter model could be considered on the previous SuperHyperModel. It's SuperHyperModel. It's SuperHyperGraph but it's officially called "Neutrosophic SuperHyperGraphs". The cancer is the disease but the model is going to figure out what's going on this phenomenon. The special case of this disease is considered and as the consequences of the model, some parameters are used. The cells are under attack of this disease but the moves of the cancer in the special region are the matter of mind. The recognition of the cancer could help to find some treatments for this disease. The SuperHyperGraph and Neutrosophic SuperHyperGraph are the SuperHyperModels on the "Cancer's Recognition" and both bases are the background of this research. Sometimes the cancer has been happened on the region, full of cells, groups of cells and embedded styles. In this segment, the SuperHyperModel proposes some SuperHyperNotions based on the connectivities of the moves of the cancer in the forms of alliances' styles with the formation of the design and the architecture are formally called " SuperHyperDominating" in the themes of jargons and buzzwords. The prefix "SuperHyper" refers to the theme of the embedded styles to figure out the background for the SuperHyperNotions. The recognition of the cancer in the long-term function. The specific region has been assigned by the model [it's called SuperHyperGraph] and the long cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be Neutrosophic SuperHyperGraph] to have convenient perception on what's happened and what's done. There are some specific models, which are well-known and they've got the names, and some general models. The moves and the traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a Neutrosophic SuperHyperPath (-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the optimal SuperHyperDominating or the Neutrosophic SuperHyperDominating in those Neutrosophic SuperHyperModels. Some general results are introduced. Beyond that in SuperHyperStar, all possible Neutrosophic SuperHyperPath s have only two SuperHyperEdges but it's not enough since it's essential to have at least three SuperHyperEdges to form any style of a SuperHyperDominating. There isn't any formation of any SuperHyperDominating but literarily, it's the deformation of any SuperHyperDominating. It, literarily, deforms and it doesn't form.

Question 27.0.1. *How to define the SuperHyperNotions and to do research on them to find the " amount of SuperHyperDominating" of either individual of cells or the groups of cells based on the fixed cell or the fixed group of cells, extensively, the "amount of SuperHyperDominating" based on the fixed groups of cells or the fixed groups of group of cells?*

Question 27.0.2. *What are the best descriptions for the "Cancer's Recognition" in terms of these messy and dense SuperHyperModels where embedded notions are illustrated?*

It's motivation to find notions to use in this dense model is titled "SuperHyperGraphs". Thus it motivates us to define different types of " SuperHyperDominating" and "Neutrosophic SuperHyperDominating" on "SuperHyperGraph" and "Neutrosophic SuperHyperGraph". Then the research has taken more motivations to define SuperHyperClasses and to find some connections amid this SuperHyperNotion with other SuperHyperNotions. It motivates us to get some instances and examples to make clarifications about the framework of this research. The general results and some results about some connections are some avenues to make key point of this research, "Cancer's Recognition", more understandable and more clear.
The framework of this research is as follows. In the beginning, I introduce basic definitions to clarify about preliminaries. In the subsection "Preliminaries", initial definitions about SuperHyperGraphs and Neutrosophic SuperHyperGraph are deeply-introduced and in-depth-discussed. The elementary concepts are clarified and illustrated completely and sometimes review literature are applied to make sense about what's going to figure out about the upcoming sections. The main definitions and their clarifications alongside some results about new notions, SuperHyperDominating and Neutrosophic SuperHyperDominating, are figured out in sections " SuperHyperDominating" and "Neutrosophic SuperHyperDominating". In the sense of tackling on getting results and in order to make sense about continuing the research, the ideas of SuperHyperUniform and Neutrosophic SuperHyperUniform are introduced and as their consequences, corresponded SuperHyperClasses are figured out to debut what's done in this section, titled "Results on SuperHyperClasses" and "Results on Neutrosophic SuperHyperClasses". As going back to origin of the notions, there are some smart steps toward the common notions to extend the new notions in new frameworks, SuperHyperGraph and Neutrosophic SuperHyperGraph, in the sections "Results on SuperHyperClasses" and "Results on Neutrosophic SuperHyperClasses". The starter research about the general SuperHyperRelations and as concluding and closing section of theoretical research are contained in the section

"General Results". Some general SuperHyperRelations are fundamental and they are well-known as fundamental SuperHyperNotions as elicited and discussed in the sections, "General Results", " SuperHyperDominating", "Neutrosophic SuperHyperDominating", "Results on SuperHyperClasses" and "Results on Neutrosophic SuperHyperClasses". There are curious questions about what's done about the SuperHyperNotions to make sense about excellency of this research and going to figure out the word "best" as the description and adjective for this research as presented in section, " SuperHyperDominating". The keyword of this research debut in the section "Applications in Cancer's Recognition" with two cases and subsections "Case 1: The Initial Steps Toward SuperHyperBipartite as SuperHyperModel" and "Case 2: The Increasing Steps Toward SuperHyperMultipartite as SuperHyperModel". In the section, "Open Problems", there are some scrutiny and discernment on what's done and what's happened in this research in the terms of "questions" and "problems" to make sense to figure out this research in featured style. The advantages and the limitations of this research alongside about what's done in this research to make sense and to get sense about what's figured out are included in the section, "Conclusion and Closing Remarks".

CHAPTER 28

Neutrosophic Preliminaries Of This Scientific Research On the Redeemed Ways

In this section, the basic material in this scientific research, is referred to [Single Valued Neutrosophic Set](**Ref.**[**HG38**],Definition 2.2,p.2), [Neutrosophic Set](**Ref.**[**HG38**],Definition 2.1,p.1), [Neutrosophic SuperHyperGraph (NSHG)](**Ref.**[**HG38**],Definition 2.5,p.2), [Characterization of the Neutrosophic SuperHyperGraph (NSHG)](**Ref.**[**HG38**],Definition 2.7,p.3), [t-norm](**Ref.**[**HG38**], Definition 2.7, p.3), and [Characterization of the Neutrosophic SuperHyperGraph (NSHG)](**Ref.**[**HG38**],Definition 2.7,p.3), [Neutrosophic Strength of the Neutrosophic SuperHyperPaths] (**Ref.**[**HG38**],Definition 5.3,p.7), and [Different Neutrosophic Types of Neutrosophic SuperHyperEdges (NSHE)] (**Ref.**[**HG38**],Definition 5.4,p.7). Also, the new ideas and their clarifications are addressed to **Ref.**[**HG38**].
In this subsection, the basic material which is used in this scientific research, is presented. Also, the new ideas and their clarifications are elicited.

Definition 28.0.1 (Neutrosophic Set)**.** (**Ref.**[**HG38**],Definition 2.1,p.1).
Let X be a space of points (objects) with generic elements in X denoted by x; then the **Neutrosophic set** A (NS A) is an object having the form

$$A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$$

where the functions $T, I, F : X \to]^-0, 1^+[$ define respectively the a **truth-membership function**, an **indeterminacy-membership function**, and a **falsity-membership function** of the element $x \in X$ to the set A with the condition

$$^-0 \leq T_A(x) + I_A(x) + F_A(x) \leq 3^+.$$

The functions $T_A(x), I_A(x)$ and $F_A(x)$ are real standard or nonstandard subsets of $]^-0, 1^+[$.

Definition 28.0.2 (Single Valued Neutrosophic Set)**.** (**Ref.**[**HG38**],Definition 2.2,p.2).
Let X be a space of points (objects) with generic elements in X denoted by x. A **single valued Neutrosophic set** A (SVNS A) is characterized by truth-membership function $T_A(x)$, an indeterminacy-membership function $I_A(x)$, and a falsity-membership function $F_A(x)$. For each point x in X, $T_A(x), I_A(x), F_A(x) \in [0, 1]$. A SVNS A can be written as

$$A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}.$$

Definition 28.0.3. The **degree of truth-membership**, **indeterminacy-membership** and **falsity-membership of the subset** $X \subset A$ of the single valued Neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$:

$$T_A(X) = \min[T_A(v_i), T_A(v_j)]_{v_i, v_j \in X},$$

$$I_A(X) = \min[I_A(v_i), I_A(v_j)]_{v_i, v_j \in X},$$

$$\text{and } F_A(X) = \min[F_A(v_i), F_A(v_j)]_{v_i, v_j \in X}.$$

Definition 28.0.4. The **support** of $X \subset A$ of the single valued Neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$:

$$supp(X) = \{x \in X : \ T_A(x), I_A(x), F_A(x) > 0\}.$$

Definition 28.0.5 (Neutrosophic SuperHyperGraph (NSHG)). (**Ref.**[**HG38**],Definition 2.5,p.2). Assume V' is a given set. a **Neutrosophic SuperHyperGraph** (NSHG) S is an ordered pair $S = (V, E)$, where

(*i*) $V = \{V_1, V_2, \ldots, V_n\}$ a finite set of finite single valued Neutrosophic subsets of V';

(*ii*) $V = \{(V_i, T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i)) : \ T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i) \geq 0\}, \ (i = 1, 2, \ldots, n)$;

(*iii*) $E = \{E_1, E_2, \ldots, E_{n'}\}$ a finite set of finite single valued Neutrosophic subsets of V;

(*iv*) $E = \{(E_{i'}, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'})) : \ T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}) \geq 0\}, \ (i' = 1, 2, \ldots, n')$;

(*v*) $V_i \neq \emptyset, \ (i = 1, 2, \ldots, n)$;

(*vi*) $E_{i'} \neq \emptyset, \ (i' = 1, 2, \ldots, n')$;

(*vii*) $\sum_i supp(V_i) = V, \ (i = 1, 2, \ldots, n)$;

(*viii*) $\sum_{i'} supp(E_{i'}) = V, \ (i' = 1, 2, \ldots, n')$;

(*ix*) and the following conditions hold:

$$T'_V(E_{i'}) \leq \min[T_{V'}(V_i), T_{V'}(V_j)]_{V_i, V_j \in E_{i'}},$$

$$I'_V(E_{i'}) \leq \min[I_{V'}(V_i), I_{V'}(V_j)]_{V_i, V_j \in E_{i'}},$$

$$\text{and } F'_V(E_{i'}) \leq \min[F_{V'}(V_i), F_{V'}(V_j)]_{V_i, V_j \in E_{i'}}$$

where $i' = 1, 2, \ldots, n'$.

Here the Neutrosophic SuperHyperEdges (NSHE) $E_{j'}$ and the Neutrosophic SuperHyperVertices (NSHV) V_j are single valued Neutrosophic sets. $T_{V'}(V_i), I_{V'}(V_i)$, and $F_{V'}(V_i)$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership the Neutrosophic SuperHyperVertex (NSHV) V_i to the Neutrosophic SuperHyperVertex (NSHV) V. $T'_V(E_{i'}), T'_V(E_{i'})$, and $T'_V(E_{i'})$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership of the Neutrosophic SuperHyperEdge (NSHE) $E_{i'}$ to the Neutrosophic SuperHyperEdge (NSHE) E. Thus, the ii'th element of the **incidence matrix** of Neutrosophic SuperHyperGraph (NSHG) are of the form $(V_i, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}))$, the sets V and E are crisp sets.

Definition 28.0.6 (Characterization of the Neutrosophic SuperHyperGraph (NSHG))**.** (**Ref.**[**HG38**],Definition 2.7,p.3).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. The Neutrosophic SuperHyperEdges (NSHE) $E_{i'}$ and the Neutrosophic SuperHyperVertices (NSHV) V_i of Neutrosophic SuperHyperGraph (NSHG) $S = (V, E)$ could be characterized as follow-up items.

(i) If $|V_i| = 1$, then V_i is called **vertex**;

(ii) if $|V_i| \geq 1$, then V_i is called **SuperVertex**;

(iii) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **edge**;

(iv) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **HyperEdge**;

(v) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **SuperEdge**;

(vi) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **SuperHyperEdge**.

If we choose different types of binary operations, then we could get hugely diverse types of general forms of Neutrosophic SuperHyperGraph (NSHG).

Definition 28.0.7 (t-norm)**.** (**Ref.**[**HG38**], Definition 2.7, p.3).
A binary operation $\otimes : [0, 1] \times [0, 1] \to [0, 1]$ is a ***t*-norm** if it satisfies the following for $x, y, z, w \in [0, 1]$:

(i) $1 \otimes x = x$;

(ii) $x \otimes y = y \otimes x$;

(iii) $x \otimes (y \otimes z) = (x \otimes y) \otimes z$;

(iv) If $w \leq x$ and $y \leq z$ then $w \otimes y \leq x \otimes z$.

Definition 28.0.8. The **degree of truth-membership**, **indeterminacy-membership** and **falsity-membership of the subset** $X \subset A$ of the single valued Neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$ (with respect to t-norm T_{norm}):

$$T_A(X) = T_{norm}[T_A(v_i), T_A(v_j)]_{v_i, v_j \in X},$$

$$I_A(X) = T_{norm}[I_A(v_i), I_A(v_j)]_{v_i, v_j \in X},$$

$$\text{and } F_A(X) = T_{norm}[F_A(v_i), F_A(v_j)]_{v_i, v_j \in X}.$$

Definition 28.0.9. The **support** of $X \subset A$ of the single valued Neutrosophic set $A = \{< x : T_A(x), I_A(x), F_A(x) >, x \in X\}$:

$$supp(X) = \{x \in X : \; T_A(x), I_A(x), F_A(x) > 0\}.$$

Definition 28.0.10. (General Forms of Neutrosophic SuperHyperGraph (NSHG)).
Assume V' is a given set. a **Neutrosophic SuperHyperGraph** (NSHG) S is an ordered pair $S = (V, E)$, where

(*i*) $V = \{V_1, V_2, \ldots, V_n\}$ a finite set of finite single valued Neutrosophic subsets of V';

(*ii*) $V = \{(V_i, T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i)) : \ T_{V'}(V_i), I_{V'}(V_i), F_{V'}(V_i) \geq 0\}, \ (i = 1, 2, \ldots, n)$;

(*iii*) $E = \{E_1, E_2, \ldots, E_{n'}\}$ a finite set of finite single valued Neutrosophic subsets of V;

(*iv*) $E = \{(E_{i'}, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'})) : \ T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}) \geq 0\}, \ (i' = 1, 2, \ldots, n')$;

(*v*) $V_i \neq \emptyset, \ (i = 1, 2, \ldots, n)$;

(*vi*) $E_{i'} \neq \emptyset, \ (i' = 1, 2, \ldots, n')$;

(*vii*) $\sum_i supp(V_i) = V, \ (i = 1, 2, \ldots, n)$;

(*viii*) $\sum_{i'} supp(E_{i'}) = V, \ (i' = 1, 2, \ldots, n')$.

Here the Neutrosophic SuperHyperEdges (NSHE) $E_{j'}$ and the Neutrosophic SuperHyperVertices (NSHV) V_j are single valued Neutrosophic sets. $T_{V'}(V_i), I_{V'}(V_i)$, and $F_{V'}(V_i)$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership the Neutrosophic SuperHyperVertex (NSHV) V_i to the Neutrosophic SuperHyperVertex (NSHV) V. $T'_V(E_{i'}), T'_V(E_{i'})$, and $T'_V(E_{i'})$ denote the degree of truth-membership, the degree of indeterminacy-membership and the degree of falsity-membership of the Neutrosophic SuperHyperEdge (NSHE) $E_{i'}$ to the Neutrosophic SuperHyperEdge (NSHE) E. Thus, the ii'th element of the **incidence matrix** of Neutrosophic SuperHyperGraph (NSHG) are of the form $(V_i, T'_V(E_{i'}), I'_V(E_{i'}), F'_V(E_{i'}))$, the sets V and E are crisp sets.

Definition 28.0.11 (Characterization of the Neutrosophic SuperHyperGraph (NSHG))**.** (**Ref.**[**HG38**],Definition 2.7,p.3).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. The Neutrosophic SuperHyperEdges (NSHE) $E_{i'}$ and the Neutrosophic SuperHyperVertices (NSHV) V_i of Neutrosophic SuperHyperGraph (NSHG) $S = (V, E)$ could be characterized as follow-up items.

(*i*) If $|V_i| = 1$, then V_i is called **vertex**;

(*ii*) if $|V_i| \geq 1$, then V_i is called **SuperVertex**;

(*iii*) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **edge**;

(*iv*) if for all V_is are incident in $E_{i'}$, $|V_i| = 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **HyperEdge**;

(*v*) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| = 2$, then $E_{i'}$ is called **SuperEdge**;

(*vi*) if there's a V_i is incident in $E_{i'}$ such that $|V_i| \geq 1$, and $|E_{i'}| \geq 2$, then $E_{i'}$ is called **SuperHyperEdge**.

This SuperHyperModel is too messy and too dense. Thus there's a need to have some restrictions and conditions on SuperHyperGraph. The special case of this SuperHyperGraph makes the patterns and regularities.

Definition 28.0.12. A graph is **SuperHyperUniform** if it's SuperHyperGraph and the number of elements of SuperHyperEdges are the same.

To get more visions on SuperHyperUniform, the some SuperHyperClasses are introduced. It makes to have SuperHyperUniform more understandable.

Definition 28.0.13. Assume a Neutrosophic SuperHyperGraph. There are some SuperHyperClasses as follows.

(i). It's **Neutrosophic SuperHyperPath** if it's only one SuperVertex as intersection amid two given SuperHyperEdges with two exceptions;

(ii). it's **SuperHyperCycle** if it's only one SuperVertex as intersection amid two given SuperHyperEdges;

(iii). it's **SuperHyperStar** it's only one SuperVertex as intersection amid all SuperHyperEdges;

(iv). it's **SuperHyperBipartite** it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming two separate sets, has no SuperHyperEdge in common;

(v). it's **SuperHyperMultiPartite** it's only one SuperVertex as intersection amid two given SuperHyperEdges and these SuperVertices, forming multi separate sets, has no SuperHyperEdge in common;

(vi). it's **SuperHyperWheel** if it's only one SuperVertex as intersection amid two given SuperHyperEdges and one SuperVertex has one SuperHyperEdge with any common SuperVertex.

Definition 28.0.14. Let an ordered pair $S = (V, E)$ be a Neutrosophic SuperHyperGraph (NSHG) S. Then a sequence of Neutrosophic SuperHyperVertices (NSHV) and Neutrosophic SuperHyperEdges (NSHE)

$$V_1, E_1, V_2, E_2, V_3, \ldots, V_{s-1}, E_{s-1}, V_s$$

is called a **Neutrosophic SuperHyperPath** (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_1 to Neutrosophic SuperHyperVertex (NSHV) V_s if either of following conditions hold:

(i) $V_i, V_{i+1} \in E_{i'}$;

(ii) there's a vertex $v_i \in V_i$ such that $v_i, V_{i+1} \in E_{i'}$;

(iii) there's a SuperVertex $V'_i \in V_i$ such that $V'_i, V_{i+1} \in E_{i'}$;

(iv) there's a vertex $v_{i+1} \in V_{i+1}$ such that $V_i, v_{i+1} \in E_{i'}$;

(v) there's a SuperVertex $V'_{i+1} \in V_{i+1}$ such that $V_i, V'_{i+1} \in E_{i'}$;

(vi) there are a vertex $v_i \in V_i$ and a vertex $v_{i+1} \in V_{i+1}$ such that $v_i, v_{i+1} \in E_{i'}$;

(vii) there are a vertex $v_i \in V_i$ and a SuperVertex $V'_{i+1} \in V_{i+1}$ such that $v_i, V'_{i+1} \in E_{i'}$;

$(viii)$ there are a SuperVertex $V'_i \in V_i$ and a vertex $v_{i+1} \in V_{i+1}$ such that $V'_i, v_{i+1} \in E_{i'}$;

(ix) there are a SuperVertex $V'_i \in V_i$ and a SuperVertex $V'_{i+1} \in V_{i+1}$ such that $V'_i, V'_{i+1} \in E_{i'}$.

Definition 28.0.15. (Characterization of the Neutrosophic SuperHyperPaths).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. a Neutrosophic SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_1 to Neutrosophic SuperHyperVertex (NSHV) V_s is sequence of Neutrosophic SuperHyperVertices (NSHV) and Neutrosophic SuperHyperEdges (NSHE)

$$V_1, E_1, V_2, E_2, V_3, \ldots, V_{s-1}, E_{s-1}, V_s,$$

could be characterized as follow-up items.

(*i*) If for all $V_i, E_{j'}$, $|V_i| = 1,\ |E_{j'}| = 2$, then NSHP is called **path**;

(*ii*) if for all $E_{j'}$, $|E_{j'}| = 2$, and there's V_i, $|V_i| \geq 1$, then NSHP is called **SuperPath**;

(*iii*) if for all $V_i, E_{j'}$, $|V_i| = 1,\ |E_{j'}| \geq 2$, then NSHP is called **HyperPath**;

(*iv*) if there are $V_i, E_{j'}$, $|V_i| \geq 1, |E_{j'}| \geq 2$, then NSHP is called **Neutrosophic SuperHyperPath** .

Definition 28.0.16 (Neutrosophic Strength of the Neutrosophic SuperHyperPaths). (**Ref.**[**HG38**],Definition 5.3,p.7).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. A Neutrosophic SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_1 to Neutrosophic SuperHyperVertex (NSHV) V_s is sequence of Neutrosophic SuperHyperVertices (NSHV) and Neutrosophic SuperHyperEdges (NSHE)

$$V_1, E_1, V_2, E_2, V_3, \ldots, V_{s-1}, E_{s-1}, V_s,$$

have

(*i*) **Neutrosophic t-strength** $(\min\{T(V_i)\}, m, n)_{i=1}^{s}$;

(*ii*) **Neutrosophic i-strength** $(m, \min\{I(V_i)\}, n)_{i=1}^{s}$;

(*iii*) **Neutrosophic f-strength** $(m, n, \min\{F(V_i)\})_{i=1}^{s}$;

(*iv*) **Neutrosophic strength** $(\min\{T(V_i)\}, \min\{I(V_i)\}, \min\{F(V_i)\})_{i=1}^{s}$.

Definition 28.0.17 (Different Neutrosophic Types of Neutrosophic SuperHyperEdges (NSHE)). (**Ref.**[**HG38**],Definition 5.4,p.7).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(*ix*) **Neutrosophic t-connective** if $T(E) \geq$ maximum number of Neutrosophic t-strength of SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_i to Neutrosophic SuperHyperVertex (NSHV) V_j where $1 \leq i, j \leq s$;

(*x*) **Neutrosophic i-connective** if $I(E) \geq$ maximum number of Neutrosophic i-strength of SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_i to Neutrosophic SuperHyperVertex (NSHV) V_j where $1 \leq i, j \leq s$;

(xi) **Neutrosophic f-connective** if $F(E) \geq$ maximum number of Neutrosophic f-strength of SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_i to Neutrosophic SuperHyperVertex (NSHV) V_j where $1 \leq i, j \leq s$;

(xii) **Neutrosophic connective** if $(T(E), I(E), F(E)) \geq$ maximum number of Neutrosophic strength of SuperHyperPath (NSHP) from Neutrosophic SuperHyperVertex (NSHV) V_i to Neutrosophic SuperHyperVertex (NSHV) V_j where $1 \leq i, j \leq s$.

Definition 28.0.18. (Different Neutrosophic Types of Neutrosophic SuperHyperDominating). Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Neutrosophic e-SuperHyperDominating** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists E_j \in E'$, such that $V_a \in E_i, E_j$;

(ii) **Neutrosophic re-SuperHyperDominating** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists E_j \in E'$, such that $V_a \in E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Neutrosophic v-SuperHyperDominating** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V'$, $\exists V_j \in V'$, such that $V_i, V_j \notin E_a$;

(iv) **Neutrosophic rv-SuperHyperDominating** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V'$, $\exists V_j \in V'$, such that $V_i, V_j \in E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **Neutrosophic SuperHyperDominating** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating.

Definition 28.0.19. ((Neutrosophic) SuperHyperDominating). Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperDominating** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating;

(ii) a **Neutrosophic SuperHyperDominating** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating;

(*iii*) an **Extreme SuperHyperDominating SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **Neutrosophic SuperHyperDominating SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; and the Neutrosophic power is corresponded to its Neutrosophic coefficient;

(*v*) an **Extreme V-SuperHyperDominating** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating;

(*vi*) a **Neutrosophic V-SuperHyperDominating** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating;

(*vii*) an **Extreme V-SuperHyperDominating SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDominating; and the Extreme power is corresponded to its Extreme coefficient;

(*viii*) a **Neutrosophic SuperHyperDominating SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDominating, Neutrosophic re-SuperHyperDominating, Neutrosophic v-SuperHyperDominating, and Neutrosophic rv-SuperHyperDominating and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDominating; and the Neutrosophic power is corresponded to its Neutrosophic coefficient.

Definition 28.0.20. ((Extreme/Neutrosophic)$\delta-$SuperHyperDominating).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Then

(i) an $\delta-$**SuperHyperDominating** is a Neutrosophic kind of Neutrosophic SuperHyperDominating such that either of the following expressions hold for the Neutrosophic cardinalities of SuperHyperNeighbors of $s \in S$:

$$|S \cap N(s)| > |S \cap (V \setminus N(s))| + \delta; \quad \text{136EQN1}$$
$$|S \cap N(s)| < |S \cap (V \setminus N(s))| + \delta. \quad \text{136EQN2}$$

The Expression (28.1), holds if S is an $\delta-$**SuperHyperOffensive**. And the Expression (28.1), holds if S is an $\delta-$**SuperHyperDefensive**;

(ii) a **Neutrosophic** $\delta-$**SuperHyperDominating** is a Neutrosophic kind of Neutrosophic SuperHyperDominating such that either of the following Neutrosophic expressions hold for the Neutrosophic cardinalities of SuperHyperNeighbors of $s \in S$:

$$|S \cap N(s)|_{Neutrosophic} > |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta; \quad \text{136EQN3}$$
$$|S \cap N(s)|_{Neutrosophic} < |S \cap (V \setminus N(s))|_{Neutrosophic} + \delta. \quad \text{136EQN4}$$

The Expression (28.1), holds if S is a **Neutrosophic** $\delta-$**SuperHyperOffensive**. And the Expression (28.1), holds if S is a **Neutrosophic** $\delta-$**SuperHyperDefensive**.

For the sake of having a Neutrosophic SuperHyperDominating, there's a need to "**redefine**" the notion of "Neutrosophic SuperHyperGraph". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values.

136DEF1

Definition 28.0.21. Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. It's redefined **Neutrosophic SuperHyperGraph** if the Table (28.1) holds.

It's useful to define a "Neutrosophic" version of SuperHyperClasses. Since there's more ways to get Neutrosophic type-results to make a Neutrosophic more understandable.

136DEF2

Definition 28.0.22. Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. There are some **Neutrosophic SuperHyperClasses** if the Table (28.2) holds. Thus Neutrosophic SuperHyperPath , SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultiPartite, and SuperHyperWheel, are **Neutrosophic SuperHyperPath**, **Neutrosophic SuperHyperCycle**, **Neutrosophic SuperHyperStar**, **Neutrosophic SuperHyperBipartite**, **Neutrosophic SuperHyperMultiPartite**, and **Neutrosophic SuperHyperWheel** if the Table (28.2) holds.

Table 28.1: The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph Mentioned in the Definition (28.0.23)

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

136TBL3

Table 28.2: The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph, Mentioned in the Definition (28.0.22)

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

136TBL4

Table 28.3: The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperGraph Mentioned in the Definition (28.0.23)

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

136TBL1

It's useful to define a "Neutrosophic" version of a Neutrosophic SuperHyperDominating. Since there's more ways to get type-results to make a Neutrosophic SuperHyperDominating more Neutrosophicly understandable.

For the sake of having a Neutrosophic SuperHyperDominating, there's a need to "**redefine**" the Neutrosophic notion of "Neutrosophic SuperHyperDominating". The SuperHyperVertices and the SuperHyperEdges are assigned by the labels from the letters of the alphabets. In this procedure, there's the usage of the position of labels to assign to the values.

136DEF1

Definition 28.0.23. Assume a SuperHyperDominating. It's redefined a **Neutrosophic SuperHyperDominating** if the Table (28.3) holds.

CHAPTER 29

Neutrosophic SuperHyperDominating But As The Extensions Excerpt From Dense And Super Forms

136EXM1

Example 29.0.1. Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned Neutrosophic Figures in every Neutrosophic items.

- On the Figure (29.1), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Neutrosophic SuperHyperEdges but E_2 is a loop Neutrosophic SuperHyperEdge and E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperDominating.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty Neutrosophic SuperHyperEdges but E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every

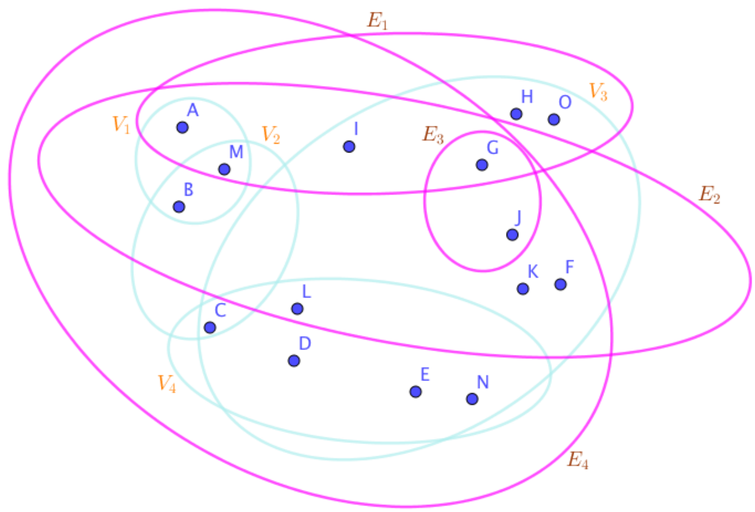


Figure 29.1: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3) 136NSHG1

given Neutrosophic SuperHyperDominating. 3979

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} = 3z.
\end{aligned}$$

3980

- On the Figure (29.3), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 3981 3982

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} = 3z.
\end{aligned}$$

3983

- On the Figure (29.4), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 3984 3985

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_2, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = 2z^2.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_1, V_4\}.
\end{aligned}$$

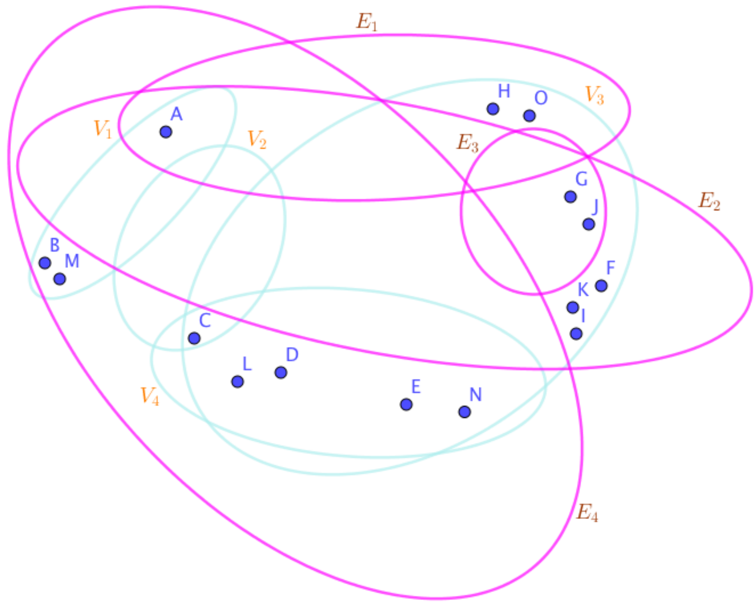


Figure 29.2: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG2

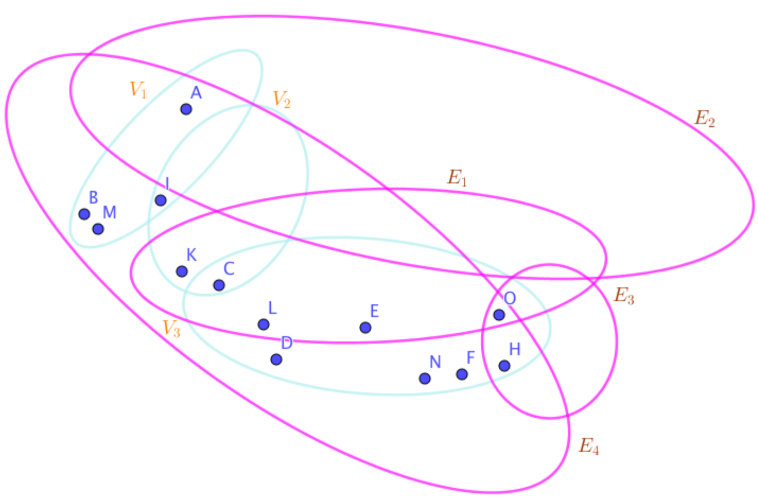


Figure 29.3: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG3

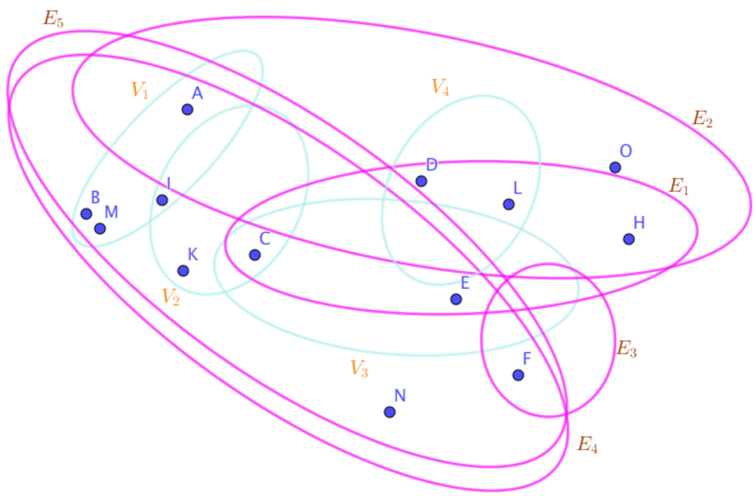


Figure 29.4: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3) 136NSHG4

$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} = 5 \times 3z^2.$$

3986

- On the Figure (29.5), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 3987 3988

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = 4z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} = z.$$

3989

- On the Figure (29.6), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 3990 3991

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}}$$
$$= \{E_{3i+1^3_{i=0}}, E_{3i+23^3_{i=0}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}}$$
$$= 3 \times 3z^8.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}}$$
$$= \{V_{3i+1^3_{i=0}}, V_{3i+11^3_{i=0}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-Quasi-SuperHyperDominating SuperHyperPolynomial}}$$

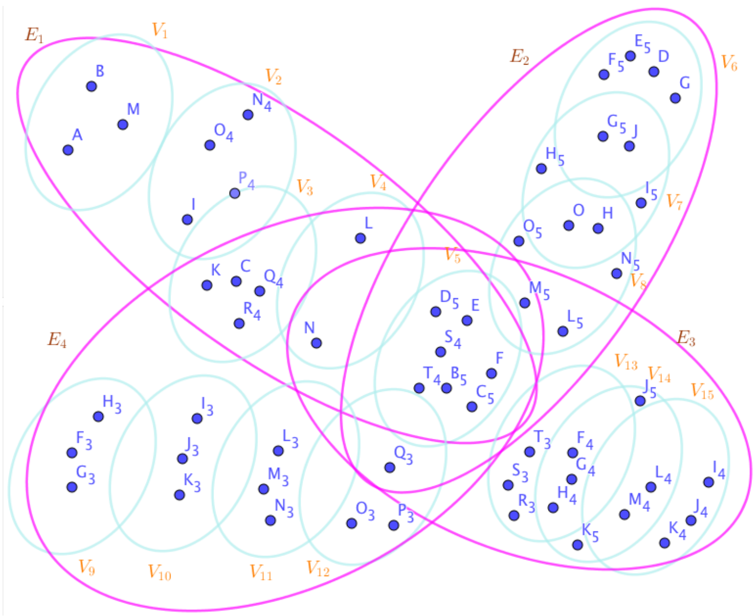


Figure 29.5: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG5

$$= 3 \times 3z^8.$$

- On the Figure (29.7), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_{15}, E_{16}, E_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}}$$
$$= 3 \times 3z^3.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_3, V_6, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}}$$
$$= 4 \times 5 \times 5z^3.$$

- On the Figure (29.8), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_3, V_6, V_8\}.$$

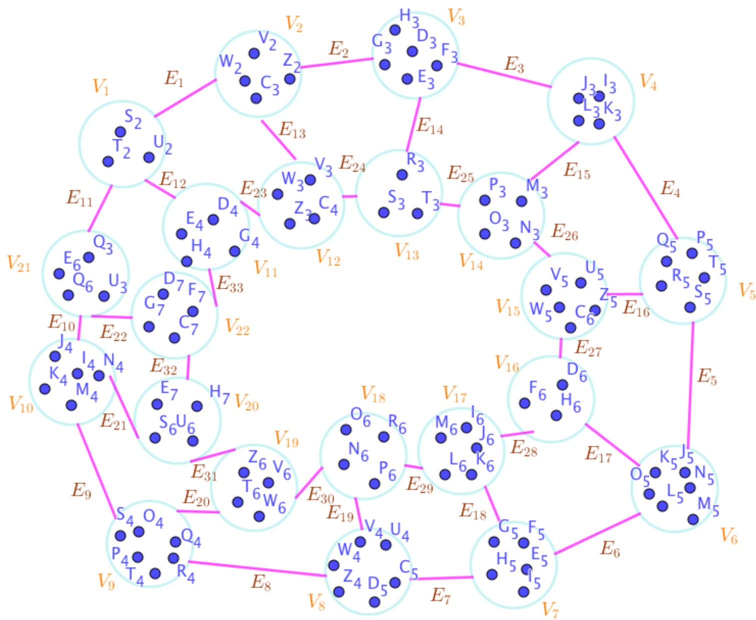


Figure 29.6: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3) 136NSHG6

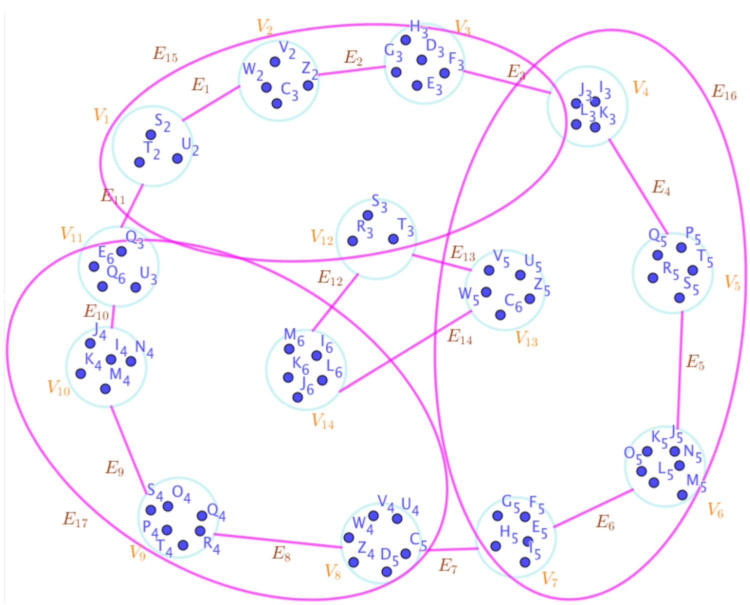


Figure 29.7: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3) 136NSHG7

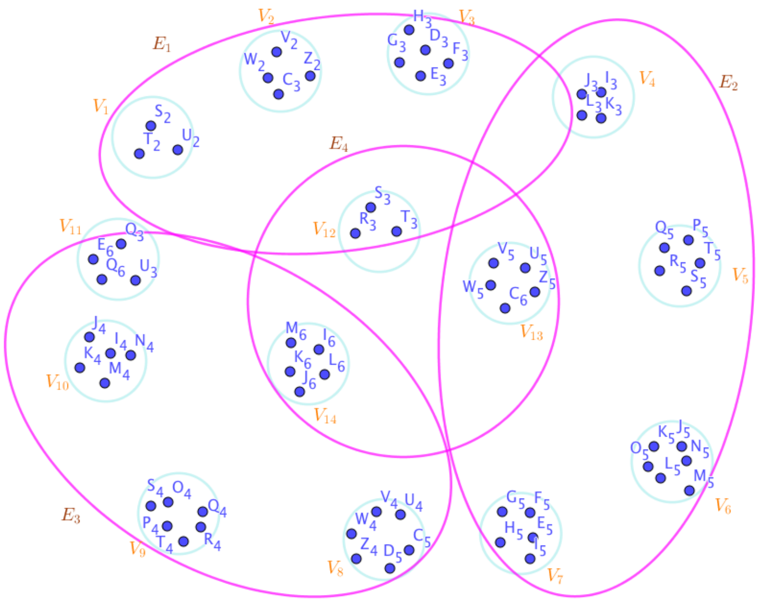


Figure 29.8: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG8

$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} = \\ = 4 \times 5 \times 5z^3.$$

- On the Figure (29.9), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} \\ = \{E_{3i+1_{i=0}^{3}}, E_{23}\}. \\ \mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} \\ = 3z^5. \\ \mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} \\ = \{V_{3i+1_{i=0}^{3}}, V_{11}\}. \\ \mathcal{C}(NSHG)_{\text{Neutrosophic V-Quasi-SuperHyperDominating SuperHyperPolynomial}} \\ = 3 \times 11z^5.$$

- On the Figure (29.10), the Neutrosophic SuperHyperNotion, namely, Neutrosophic Super-

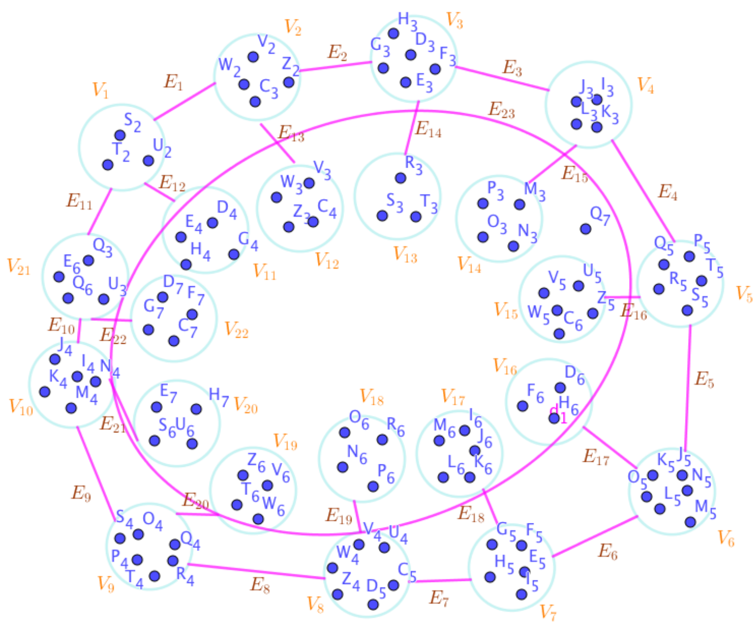


Figure 29.9: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3) 136NSHG9

HyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_3, V_6, V_8\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} =\\
&= 4 \times 5 \times 5z^3.
\end{aligned}$$

- On the Figure (29.11), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_1, E_3\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} z^2.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_1, V_6\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}}\\
&= 3 \times 3z^3.
\end{aligned}$$

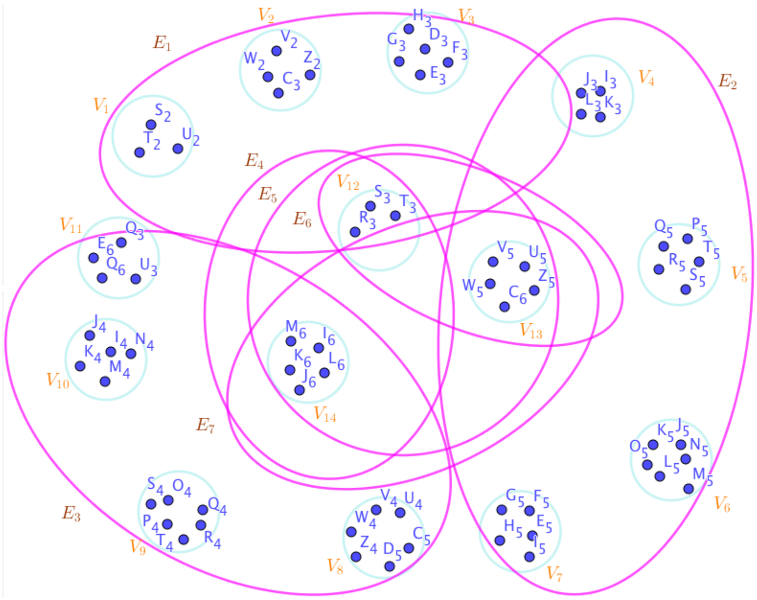


Figure 29.10: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG10

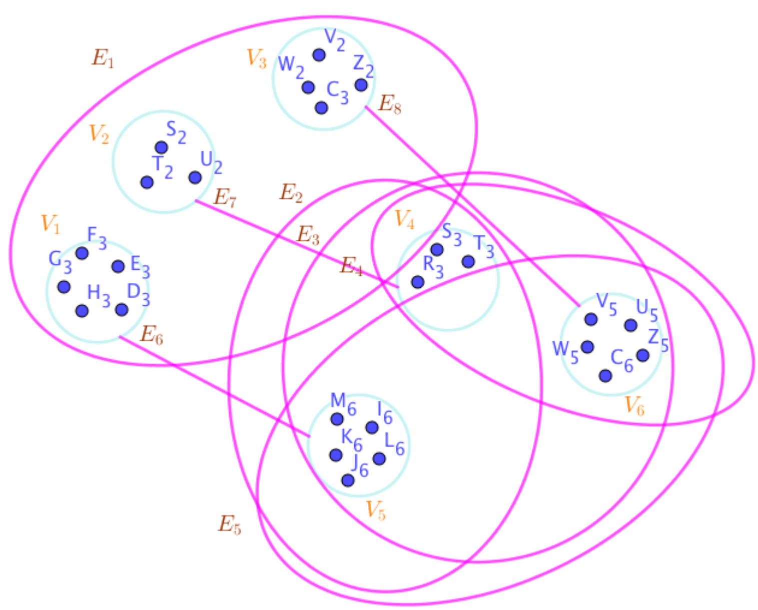


Figure 29.11: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG11

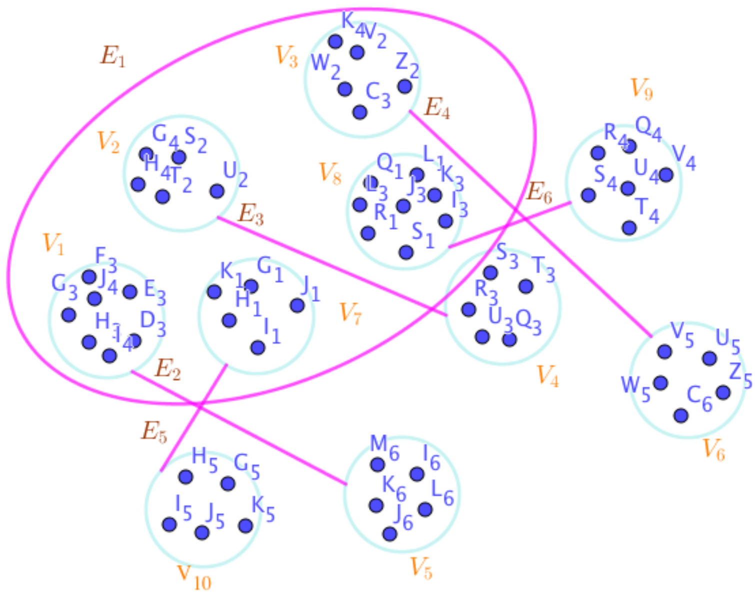


Figure 29.12: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3) 136NSHG12

- On the Figure (29.12), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4008 4009

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1, V^{i\neq 4,5,6}_{i^8_{i=1}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} =$$
$$= 5 \times 5z^5.$$

4010

- On the Figure (29.13), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4011 4012

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_3, E_9\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}}$$
$$= 3 \times 3z^2.$$

4013

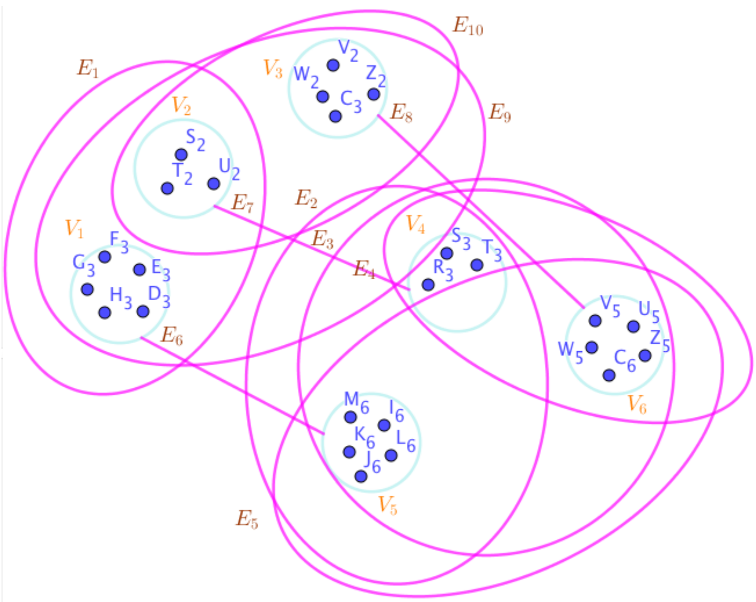


Figure 29.13: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG13

- On the Figure (29.14), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} = z.$$

- On the Figure (29.15), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 4z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} = z^2.$$

- On the Figure (29.16), the Neutrosophic SuperHyperNotion, namely, Neutrosophic Super-

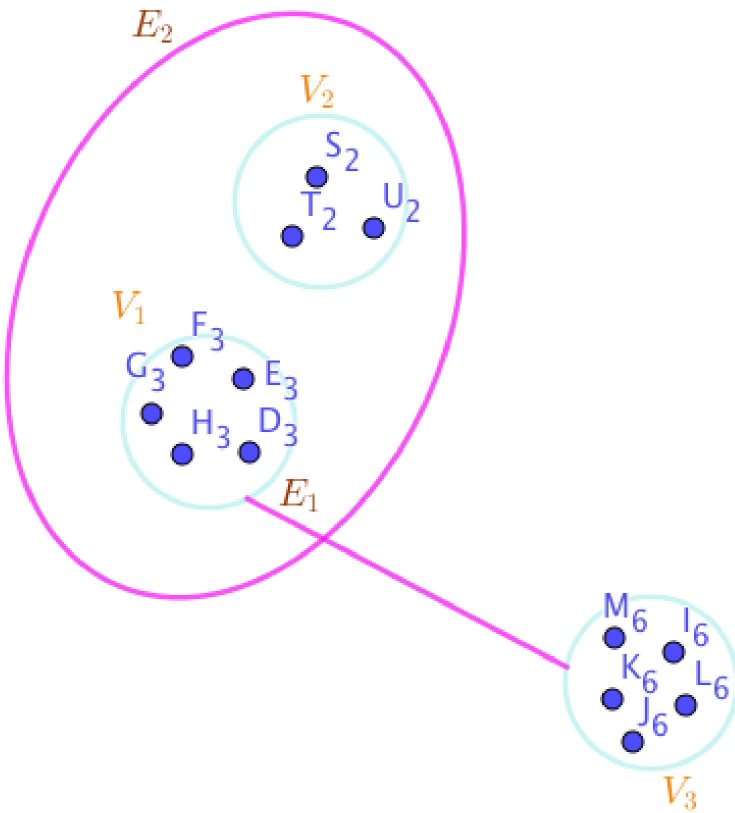


Figure 29.14: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG14

HyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4021

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_2, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 4z^2.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_2, V_7, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} =\\
&4 \times 3z^3.
\end{aligned}$$

4022

- On the Figure (29.17), the Neutrosophic SuperHyperNotion, namely, Neutrosophic Super- 4023
HyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4024

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_2, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 4z^2.
\end{aligned}$$

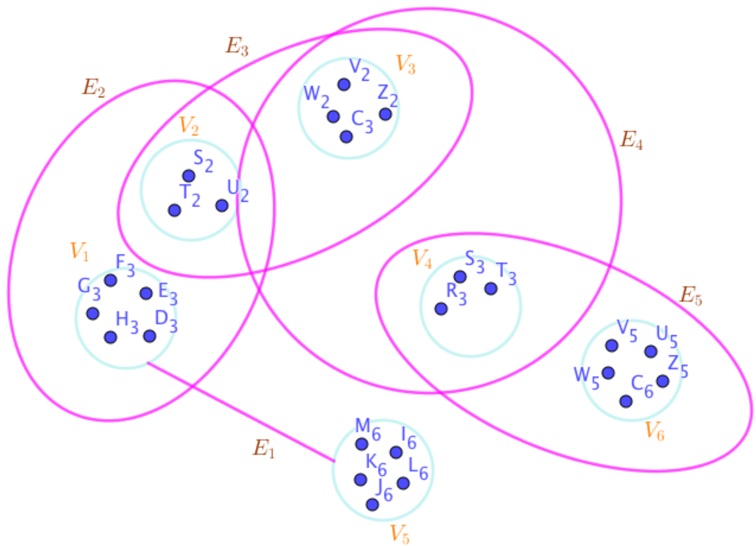


Figure 29.15: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG15

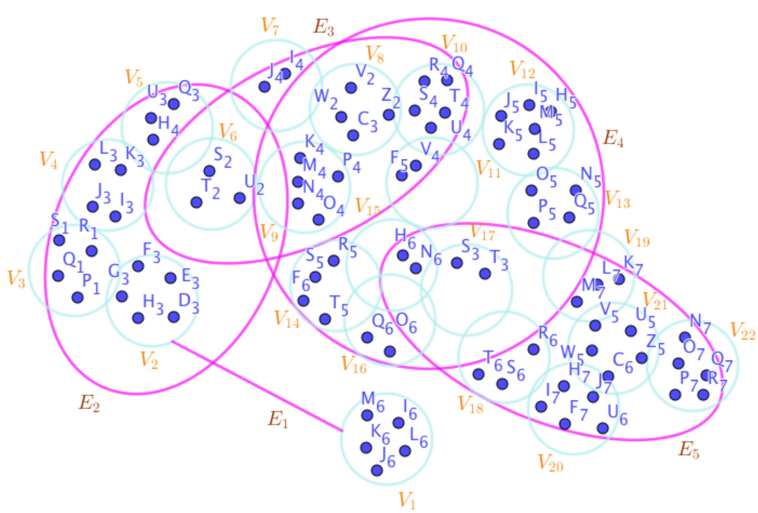


Figure 29.16: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG16

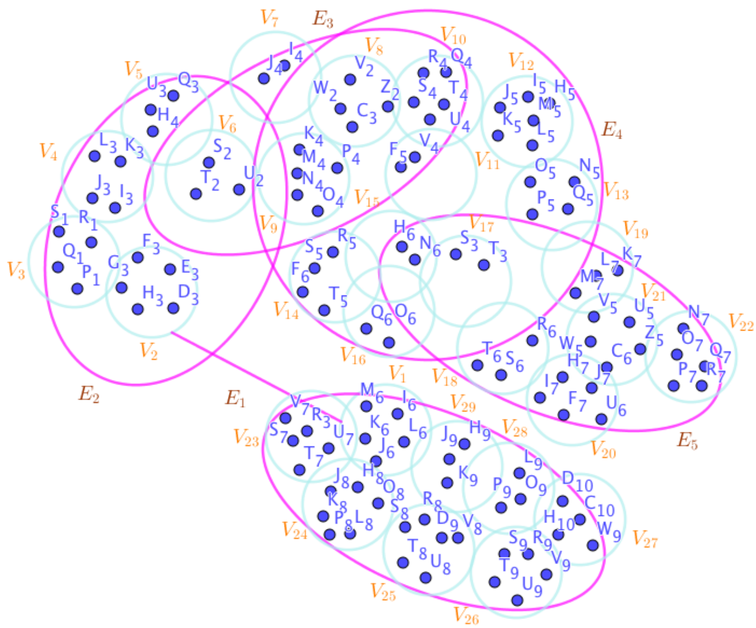


Figure 29.17: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3) 136NSHG17

$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1, V_2, V_7, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} =$$
$$4 \times 3z^4.$$

- On the Figure (29.18), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1, V_2, V_6, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} =$$
$$2 \times 4 \times 3z^4.$$

- On the Figure (29.19), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_{3i+1_{i=0^3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = 3z^4.$$

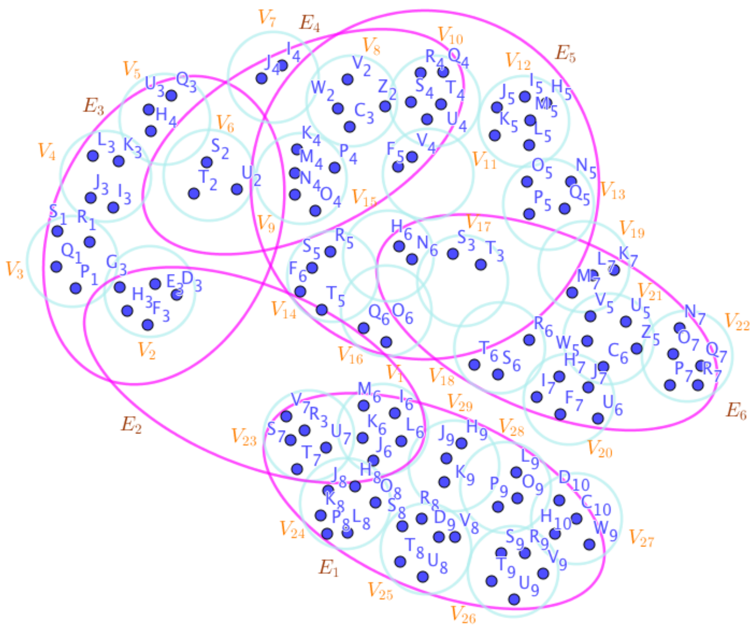


Figure 29.18: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG18

$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_{3i+1_{i=0^3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} = 3z^4.$$

- On the Figure (29.20), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 10z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}} = z.$$

- On the Figure (29.21), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDominating SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic V-SuperHyperDominating SuperHyperPolynomial}} = 10z.$$

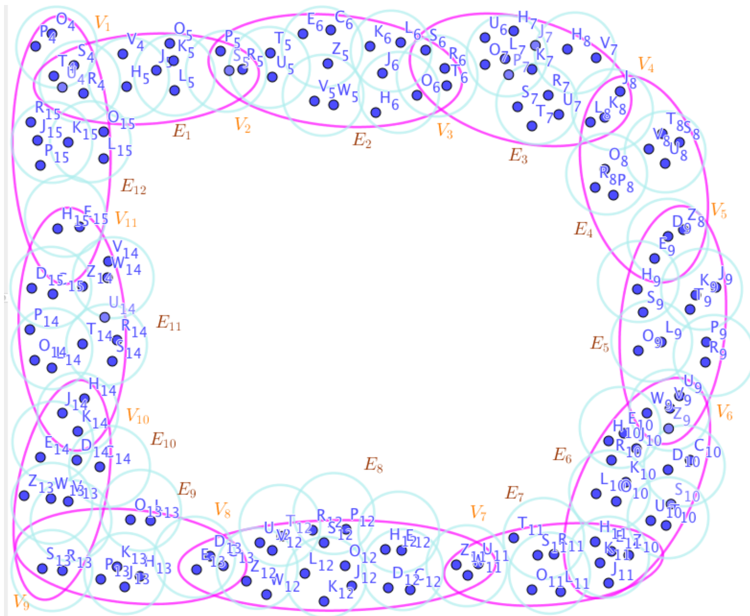


Figure 29.19: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3) 136NSHG19

- On the Figure (29.22), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDominating, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating}} = \{E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperDominating SuperHyperPolynomial}} = 4z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating}} = \{V_3, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme V-SuperHyperDominating SuperHyperPolynomial}}$$
$$= 5 \times 1z^2.$$

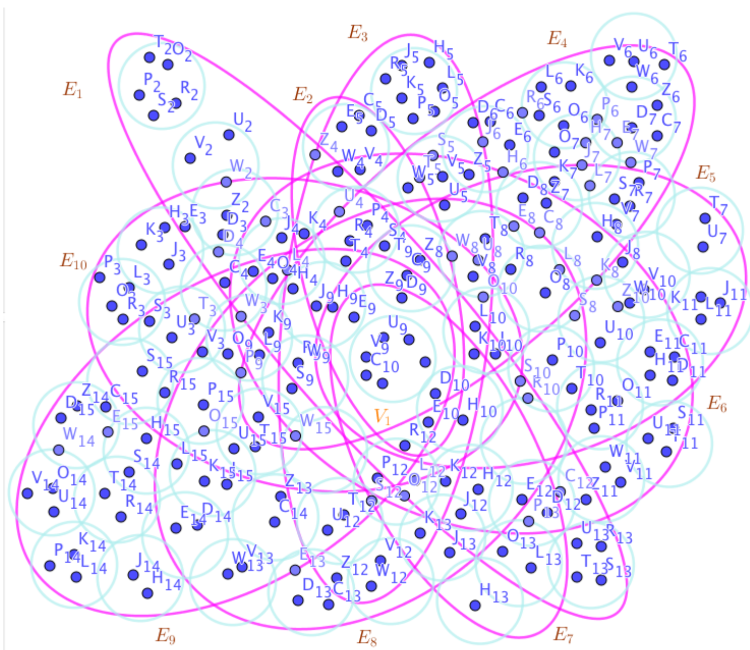


Figure 29.20: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

136NSHG20

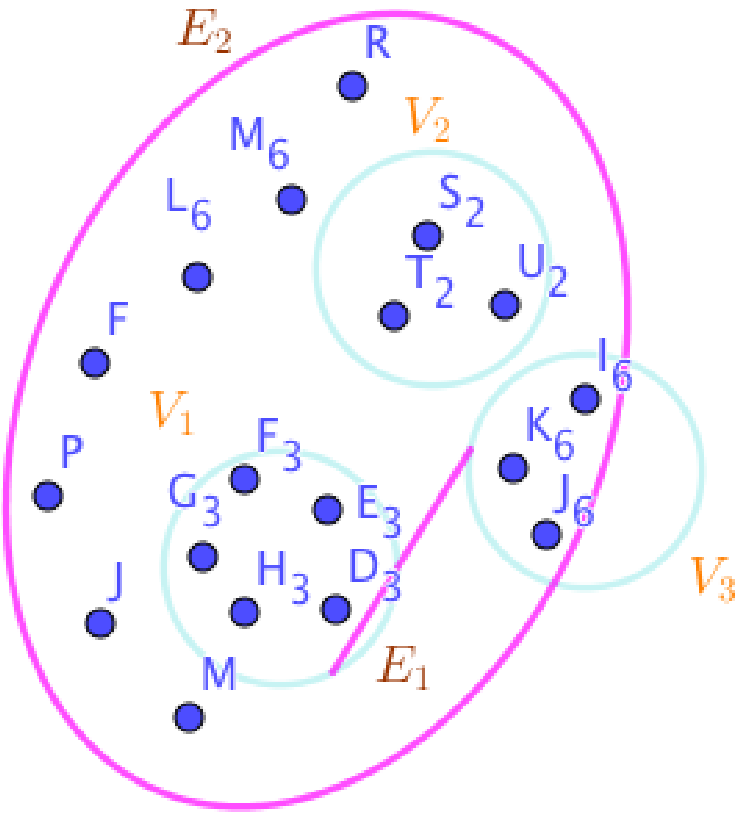


Figure 29.21: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

95NHG1

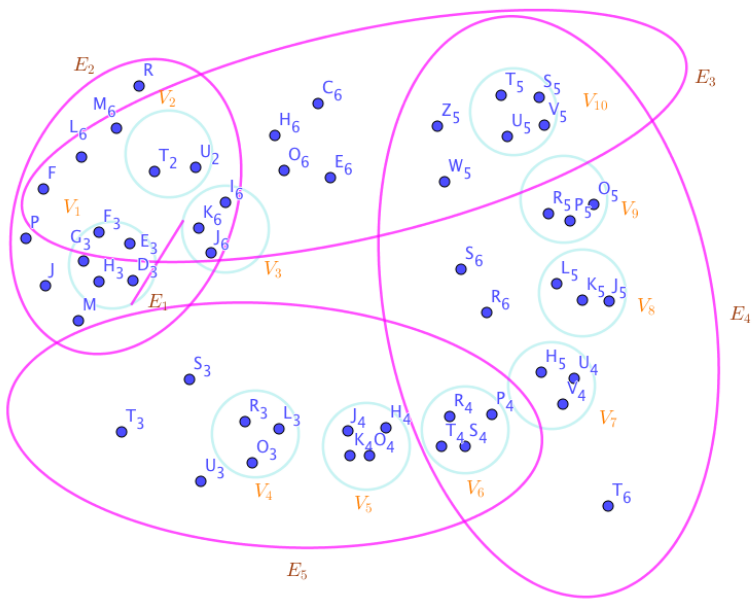


Figure 29.22: The Neutrosophic SuperHyperGraphs Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.3)

95NHG2

CHAPTER 30

The Neutrosophic Departures on The Theoretical Results Toward Theoretical Motivations

The previous Neutrosophic approach apply on the upcoming Neutrosophic results on Neutrosophic SuperHyperClasses.

Proposition 30.0.1. *Assume a connected Neutrosophic SuperHyperPath $ESHP:(V,E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating} = \\
&= \{E_{3i+1}\}_{i=0}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3} \rfloor}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating\ SuperHyperPolynomial} \\
&= 3z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3} \rfloor}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating} \\
&= \{V^{EXTERNAL}{}_{3i+1}\}_{i=0}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3} \rfloor}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial} \\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} 3z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3} \rfloor}.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P: \\
&V_2^{EXTERNAL}, E_2, \\
&V_3^{EXTERNAL}, E_3, \\
&\ldots, \\
&E_{\lfloor \frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3} \rfloor - 1}, V^{EXTERNAL}{}_{\lfloor \frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3} \rfloor}
\end{aligned}$$

be a longest path taken from a connected Neutrosophic SuperHyperPath $ESHP:(V,E)$. There's

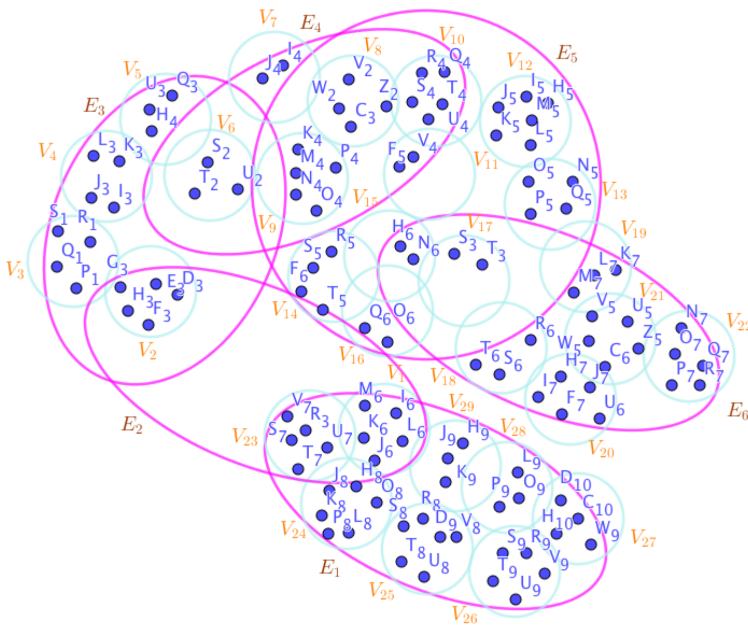


Figure 30.1: a Neutrosophic SuperHyperPath Associated to the Notions of Neutrosophic SuperHyperDominating in the Example (41.0.5) 136NSHG18a

a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. ■

136EXM18a **Example 30.0.2.** In the Figure (30.1), the connected Neutrosophic SuperHyperPath $ESHP : (V, E)$, is highlighted and featured. The Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.1), is the SuperHyperDominating.

Proposition 30.0.3. *Assume a connected Neutrosophic SuperHyperCycle $ESHC : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating} = \\
&= \{E_{3i+1}\}_{i=0}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating\ SuperHyperPolynomial} \\
&= 3z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}{}^{3}}{\cdot}} \\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating}
\end{aligned}$$

$$= \{V^{EXTERNAL}{}_{3i+1}\}_{i=0}^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}$$

$$\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} 3z^{\lfloor \frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.$$

Proof. Let

$$\begin{aligned}&P:\\ &V_2^{EXTERNAL}, E_2,\\ &V_3^{EXTERNAL}, E_3,\\ &\ldots,\\ &E_{\lfloor \frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3} - 1}, V^{EXTERNAL}{}_{\lfloor \frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}\end{aligned}$$

be a longest path taken from a connected Neutrosophic SuperHyperCycle $ESHC : (V, E)$. There's a new way to redefine as

$$\begin{aligned}&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\ &\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\ &\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. ∎

136EXM19a

Example 30.0.4. In the Figure (30.2), the connected Neutrosophic SuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.2), is the Neutrosophic SuperHyperDominating.

Proposition 30.0.5. *Assume a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. Then*

$$\begin{aligned}&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating} = \{E_i \in E_{ESHG:(V,E)}\}.\\ &\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating\ SuperHyperPolynomial}\\ &= |i \mid E_i \in |E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z.\\ &\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating} = \{CENTER \in V_{ESHG:(V,E)}\}.\\ &\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial} = z.\end{aligned}$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, E_j.$$

be a longest path taken a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. There's a new way to redefine as

$$\begin{aligned}&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\ &\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\ &\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.\end{aligned}$$

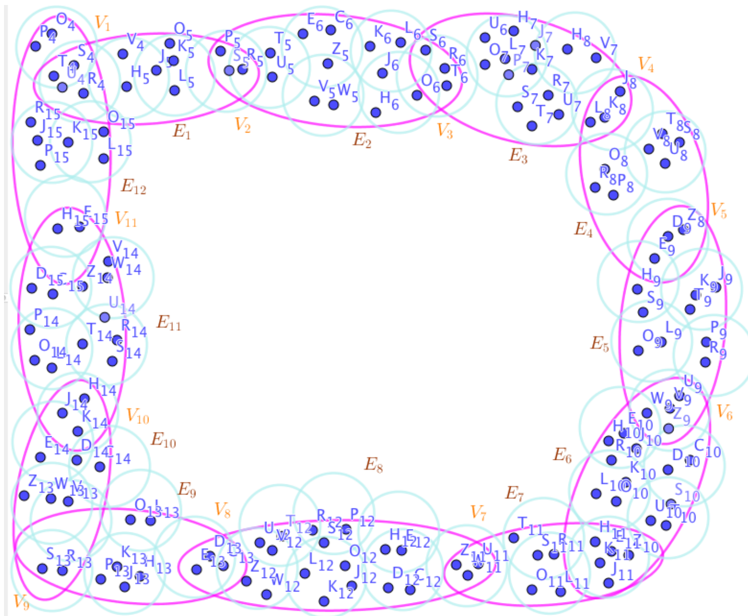


Figure 30.2: a Neutrosophic SuperHyperCycle Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.7)

136NSHG19a

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. ■

136EXM20a

Example 30.0.6. In the Figure (30.3), the connected Neutrosophic SuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperStar $ESHS : (V, E)$, in the Neutrosophic SuperHyperModel (30.3), is the Neutrosophic SuperHyperDominating.

Proposition 30.0.7. *Assume a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating}\\
&= \{E_a \in E_{P_i^{ESHG:(V,E)}},\\
&\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| = \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating\ SuperHyperPolynomial}\\
&= z^{\min |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&\mathit{where}\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}|\\
&= \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating}
\end{aligned}$$

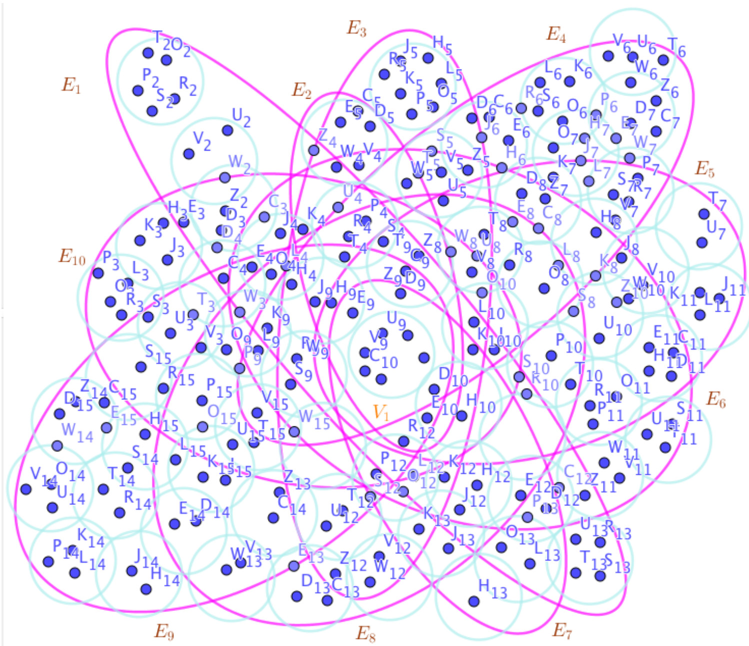


Figure 30.3: a Neutrosophic SuperHyperStar Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.9)

136NSHG20a

$$= \{V_a^{EXTERNAL} \in V_{P_i^{ESHG:(V,E)}}^{EXTERNAL}, V_b^{EXTERNAL} \in V_{P_i^{ESHG:(V,E)}}^{EXTERNAL}, \ i \neq j\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial}$$
$$= \sum_{|V_{ESHG:(V,E)}^{EXTERNAL}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i^{ESHG:(V,E)}| choose\ 2) = z^2.$$

Proof. Let

$$P: \\ V_1^{EXTERNAL}, E_1, \\ V_2^{EXTERNAL}, E_2$$

is a longest path taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\ \exists! E_z \in E_{ESHG:(V,E)}, \ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\ \exists! E_z \in E_{ESHG:(V,E)}, \ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. Then there's no at least one SuperHyperDominating. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperDominating could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$P: \\ V_1^{EXTERNAL}, E_1, \\ V_2^{EXTERNAL}, E_2$$

is a longest SuperHyperDominating taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$P: \\ V_1^{EXTERNAL}, E_1, \\ V_2^{EXTERNAL}, E_2$$

The latter is straightforward. ∎

136EXM21a

Example 30.0.8. In the Neutrosophic Figure (30.4), the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, is Neutrosophic highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Neutrosophic Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, in the Neutrosophic SuperHyperModel (30.4), is the Neutrosophic SuperHyperDominating.

Proposition 30.0.9. *Assume a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating} \\
&= \{E_a \in E_{P_i^{ESHG:(V,E)}}, \\
&\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| = \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating\ SuperHyperPolynomial} \\
&= z^{\min |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|} \\
&\mathit{where}\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| \\
&= \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating} \\
&= \{V_a^{EXTERNAL} \in V_{P_i^{ESHG:(V,E)}}^{EXTERNAL}, V_b^{EXTERNAL} \in V_{P_i^{ESHG:(V,E)}}^{EXTERNAL},\ i \neq j\}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial} \\
&= \sum_{|V_{ESHG:(V,E)}^{EXTERNAL}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i^{ESHG:(V,E)}|\ choose\ 2) = z^2.
\end{aligned}$$

Proof. Let

$$P:$$

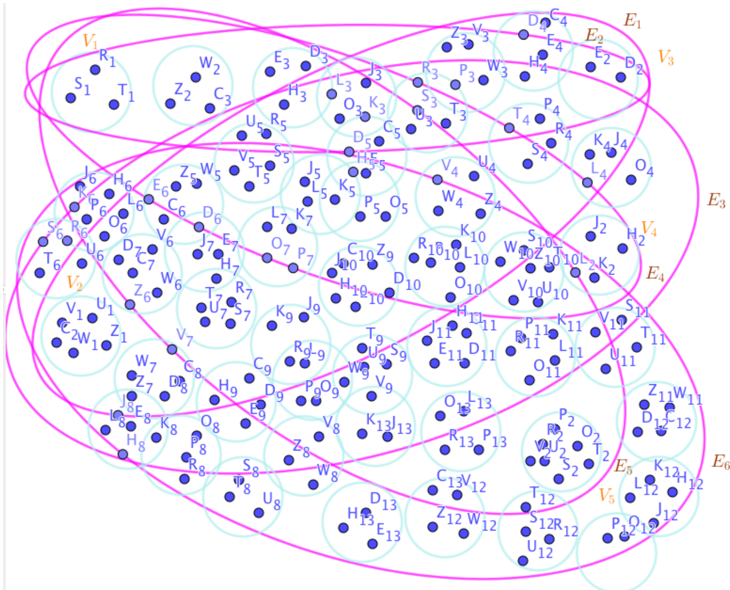


Figure 30.4: Neutrosophic SuperHyperBipartite Neutrosophic Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Example (41.0.11)

136NSHG21a

$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2$$

is a longest SuperHyperDominating taken from a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. Then there's no at least one SuperHyperDominating. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperDominating could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$P :$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart

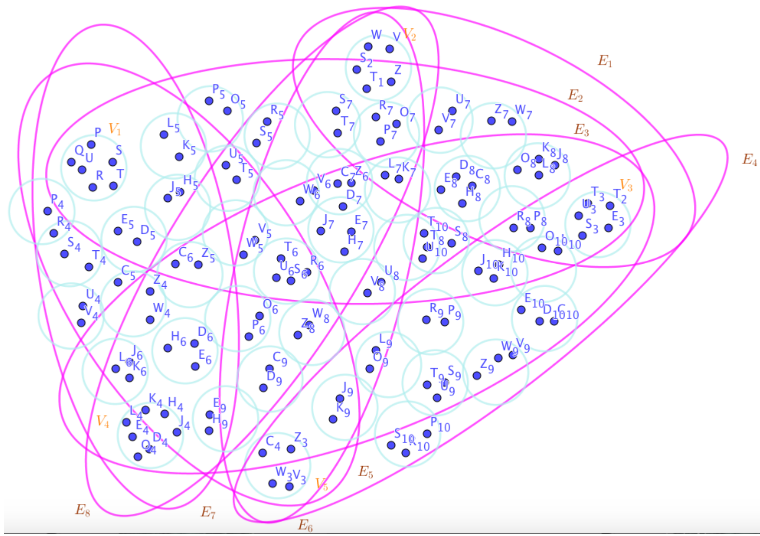


Figure 30.5: a Neutrosophic SuperHyperMultipartite Associated to the Notions of Neutrosophic SuperHyperDominating in the Example (41.0.13) 136NSHG22a

SuperHyperEdges are attained in any solution

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. The latter is straightforward. ■

136EXM22a **Example 30.0.10.** In the Figure (30.5), the connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$, is highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$, in the Neutrosophic SuperHyperModel (30.5), is the Neutrosophic SuperHyperDominating.

Proposition 30.0.11. *Assume a connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$. Then,*

$$\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating} = \{E_i \in E^*_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDominating\ SuperHyperPolynomial}$$
$$= |i \mid E_i \in |E^*{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}|z.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating} = \{CENTER \in V_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperDominating\ SuperHyperPolynomial} = z.$$

Proof. Let

$$P : V^{EXTERNAL}{}_i, E^*{}_i, CENTER, E_j.$$

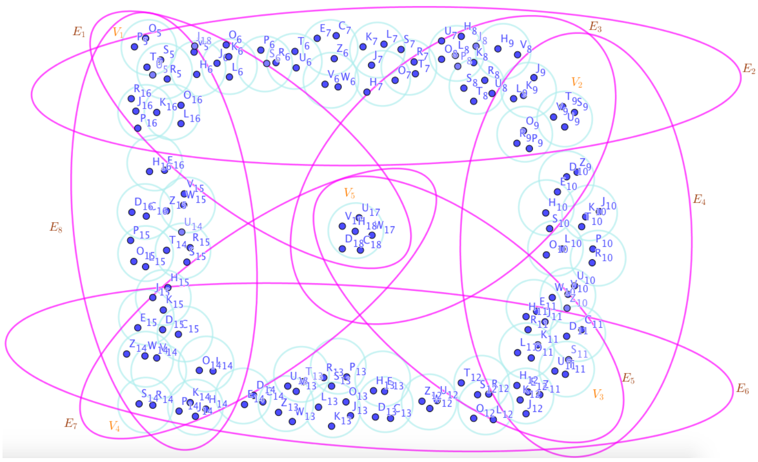


Figure 30.6: a Neutrosophic SuperHyperWheel Neutrosophic Associated to the Neutrosophic Notions of Neutrosophic SuperHyperDominating in the Neutrosophic Example (41.0.15) 136NSHG23a

is a longest SuperHyperDominating taken from a connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists ! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists ! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDominating. The latter is straightforward. Then there's at least one SuperHyperDominating. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperDominating could be applied. The unique embedded SuperHyperDominating proposes some longest SuperHyperDominating excerpt from some representatives. The latter is straightforward. ■

136EXM23a **Example 30.0.12.** In the Neutrosophic Figure (30.6), the connected Neutrosophic SuperHyperWheel $NSHW : (V, E)$, is Neutrosophic highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$, in the Neutrosophic SuperHyperModel (30.6), is the Neutrosophic SuperHyperDominating.

CHAPTER 31

The Surveys of Mathematical Sets On The Results But As The Initial Motivation

For the SuperHyperDominating, Neutrosophic SuperHyperDominating, and the Neutrosophic SuperHyperDominating, some general results are introduced.

Remark 31.0.1. Let remind that the Neutrosophic SuperHyperDominating is "redefined" on the positions of the alphabets.

Corollary 31.0.2. *Assume Neutrosophic SuperHyperDominating. Then*

$$
\begin{aligned}
&Neutrosophic\ SuperHyperDominating = \\
&\{theSuperHyperDominatingoftheSuperHyperVertices \mid \\
&\max|SuperHyperOffensive \\
&SuperHyperDominating \\
&|_{NeutrosophiccardinalityamidthoseSuperHyperDominating.}\}
\end{aligned}
$$

plus one Neutrosophic SuperHypeNeighbor to one. Where σ_i is the unary operation on the SuperHyperVertices of the SuperHyperGraph to assign the determinacy, the indeterminacy and the neutrality, for $i = 1, 2, 3$, respectively.

Corollary 31.0.3. *Assume a Neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then the notion of Neutrosophic SuperHyperDominating and SuperHyperDominating coincide.*

Corollary 31.0.4. *Assume a Neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then a consecutive sequence of the SuperHyperVertices is a Neutrosophic SuperHyperDominating if and only if it's a SuperHyperDominating.*

Corollary 31.0.5. *Assume a Neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then a consecutive sequence of the SuperHyperVertices is a strongest SuperHyperDominating if and only if it's a longest SuperHyperDominating.*

Corollary 31.0.6. *Assume SuperHyperClasses of a Neutrosophic SuperHyperGraph on the same identical letter of the alphabet. Then its Neutrosophic SuperHyperDominating is its SuperHyperDominating and reversely.*

Corollary 31.0.7. *Assume a Neutrosophic SuperHyperPath(-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel) on the same identical letter of the alphabet. Then its Neutrosophic SuperHyperDominating is its SuperHyperDominating and reversely.*

Corollary 31.0.8. *Assume a Neutrosophic SuperHyperGraph. Then its Neutrosophic SuperHyperDominating isn't well-defined if and only if its SuperHyperDominating isn't well-defined.*

Corollary 31.0.9. *Assume SuperHyperClasses of a Neutrosophic SuperHyperGraph. Then its Neutrosophic SuperHyperDominating isn't well-defined if and only if its SuperHyperDominating isn't well-defined.*

Corollary 31.0.10. *Assume a Neutrosophic SuperHyperPath(-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). Then its Neutrosophic SuperHyperDominating isn't well-defined if and only if its SuperHyperDominating isn't well-defined.*

Corollary 31.0.11. *Assume a Neutrosophic SuperHyperGraph. Then its Neutrosophic SuperHyperDominating is well-defined if and only if its SuperHyperDominating is well-defined.*

Corollary 31.0.12. *Assume SuperHyperClasses of a Neutrosophic SuperHyperGraph. Then its Neutrosophic SuperHyperDominating is well-defined if and only if its SuperHyperDominating is well-defined.*

Corollary 31.0.13. *Assume a Neutrosophic SuperHyperPath(-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). Then its Neutrosophic SuperHyperDominating is well-defined if and only if its SuperHyperDominating is well-defined.*

Proposition 31.0.14. *Let $ESHG : (V, E)$ be a Neutrosophic SuperHyperGraph. Then V is*

(i) : *the dual SuperHyperDefensive SuperHyperDominating;*

(ii) : *the strong dual SuperHyperDefensive SuperHyperDominating;*

(iii) : *the connected dual SuperHyperDefensive SuperHyperDominating;*

(iv) : *the δ-dual SuperHyperDefensive SuperHyperDominating;*

(v) : *the strong δ-dual SuperHyperDefensive SuperHyperDominating;*

(vi) : *the connected δ-dual SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.15. *Let $NTG : (V, E, \sigma, \mu)$ be a Neutrosophic SuperHyperGraph. Then $\emptyset$ is*

(i) : *the SuperHyperDefensive SuperHyperDominating;*

(ii) : *the strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *the connected defensive SuperHyperDefensive SuperHyperDominating;*

(iv) : *the δ-SuperHyperDefensive SuperHyperDominating;*

(v) : *the strong δ-SuperHyperDefensive SuperHyperDominating;*

$(vi):$ *the connected δ-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.16. *Let $ESHG:(V,E)$ be a Neutrosophic SuperHyperGraph. Then an independent SuperHyperSet is*

$(i):$ *the SuperHyperDefensive SuperHyperDominating;*

$(ii):$ *the strong SuperHyperDefensive SuperHyperDominating;*

$(iii):$ *the connected SuperHyperDefensive SuperHyperDominating;*

$(iv):$ *the δ-SuperHyperDefensive SuperHyperDominating;*

$(v):$ *the strong δ-SuperHyperDefensive SuperHyperDominating;*

$(vi):$ *the connected δ-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.17. *Let $ESHG:(V,E)$ be a Neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperDominating/SuperHyperPath. Then V is a maximal*

$(i):$ *SuperHyperDefensive SuperHyperDominating;*

$(ii):$ *strong SuperHyperDefensive SuperHyperDominating;*

$(iii):$ *connected SuperHyperDefensive SuperHyperDominating;*

$(iv):$ *$\mathcal{O}(ESHG)$-SuperHyperDefensive SuperHyperDominating;*

$(v):$ *strong $\mathcal{O}(ESHG)$-SuperHyperDefensive SuperHyperDominating;*

$(vi):$ *connected $\mathcal{O}(ESHG)$-SuperHyperDefensive SuperHyperDominating;*

Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 31.0.18. *Let $ESHG:(V,E)$ be a Neutrosophic SuperHyperGraph which is a SuperHyperUniform SuperHyperWheel. Then V is a maximal*

$(i):$ *dual SuperHyperDefensive SuperHyperDominating;*

$(ii):$ *strong dual SuperHyperDefensive SuperHyperDominating;*

$(iii):$ *connected dual SuperHyperDefensive SuperHyperDominating;*

$(iv):$ *$\mathcal{O}(ESHG)$-dual SuperHyperDefensive SuperHyperDominating;*

$(v):$ *strong $\mathcal{O}(ESHG)$-dual SuperHyperDefensive SuperHyperDominating;*

$(vi):$ *connected $\mathcal{O}(ESHG)$-dual SuperHyperDefensive SuperHyperDominating;*

Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 31.0.19. *Let $ESHG:(V,E)$ be a Neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperDominating/SuperHyperPath. Then the number of*

$(i):$ *the SuperHyperDominating;*

(ii) : *the SuperHyperDominating;*

(iii) : *the connected SuperHyperDominating;*

(iv) : *the* $\mathcal{O}(ESHG)$*-SuperHyperDominating;*

(v) : *the strong* $\mathcal{O}(ESHG)$*-SuperHyperDominating;*

(vi) : *the connected* $\mathcal{O}(ESHG)$*-SuperHyperDominating.*

is one and it's only V*. Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.*

Proposition 31.0.20. *Let* $ESHG : (V, E)$ *be a Neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperWheel. Then the number of*

(i) : *the dual SuperHyperDominating;*

(ii) : *the dual SuperHyperDominating;*

(iii) : *the dual connected SuperHyperDominating;*

(iv) : *the dual* $\mathcal{O}(ESHG)$*-SuperHyperDominating;*

(v) : *the strong dual* $\mathcal{O}(ESHG)$*-SuperHyperDominating;*

(vi) : *the connected dual* $\mathcal{O}(ESHG)$*-SuperHyperDominating.*

is one and it's only V*. Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.*

Proposition 31.0.21. *Let* $ESHG : (V, E)$ *be a Neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then a SuperHyperSet contains [the SuperHyperCenter and] the half of multiplying* r *with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices is a*

(i) : *dual SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong dual SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected dual SuperHyperDefensive SuperHyperDominating;*

(iv) : $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperDominating;*

(v) : *strong* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.22. *Let* $ESHG : (V, E)$ *be a Neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then a SuperHyperSet contains the half of multiplying* r *with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices in the biggest SuperHyperPart is a*

(i) : *SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected SuperHyperDefensive SuperHyperDominating;*

(iv) : *δ-SuperHyperDefensive SuperHyperDominating;*

(v) : *strong δ-SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected δ-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.23. *Let $ESHG : (V, E)$ be a Neutrosophic SuperHyperUniform SuperHyperGraph which is a SuperHyperStar/SuperHyperComplete SuperHyperBipartite/SuperHyperComplete SuperHyperMultipartite. Then Then the number of*

(i) : *dual SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong dual SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected dual SuperHyperDefensive SuperHyperDominating;*

(iv) : $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperDominating;*

(v) : *strong* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected* $\frac{\mathcal{O}(ESHG)}{2} + 1$*-dual SuperHyperDefensive SuperHyperDominating.*

is one and it's only S, a SuperHyperSet contains [the SuperHyperCenter and] the half of multiplying r with the number of all the SuperHyperEdges plus one of all the SuperHyperVertices. Where the exterior SuperHyperVertices and the interior SuperHyperVertices coincide.

Proposition 31.0.24. *Let $ESHG : (V, E)$ be a Neutrosophic SuperHyperGraph. The number of connected component is $|V - S|$ if there's a SuperHyperSet which is a dual*

(i) : *SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected SuperHyperDefensive SuperHyperDominating;*

(iv) : *SuperHyperDominating;*

(v) : *strong 1-SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected 1-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.25. *Let $ESHG : (V, E)$ be a Neutrosophic SuperHyperGraph. Then the number is at most $\mathcal{O}(ESHG)$ and the Neutrosophic number is at most $\mathcal{O}_n(ESHG)$.*

Proposition 31.0.26. *Let $ESHG : (V, E)$ be a Neutrosophic SuperHyperGraph which is SuperHyperComplete. The number is $\frac{\mathcal{O}(ESHG:(V,E))}{2} + 1$ and the Neutrosophic number is $\min \Sigma_{v \in \{v_1, v_2, \cdots, v_t\}_{t > \frac{\mathcal{O}(ESHG:(V,E))}{2}} \subseteq V} \sigma(v)$, in the setting of dual*

(i) : *SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected SuperHyperDefensive SuperHyperDominating;*

(iv) : $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$*-SuperHyperDefensive SuperHyperDominating;*

(v) : *strong* $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$*-SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected* $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$*-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.27. *Let* $ESHG:(V,E)$ *be a Neutrosophic SuperHyperGraph which is* $\emptyset$*. The number is* 0 *and the Neutrosophic number is* 0*, for an independent SuperHyperSet in the setting of dual*

(i) : *SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected SuperHyperDefensive SuperHyperDominating;*

(iv) : 0*-SuperHyperDefensive SuperHyperDominating;*

(v) : *strong* 0*-SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected* 0*-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.28. *Let* $ESHG:(V,E)$ *be a Neutrosophic SuperHyperGraph which is SuperHyperComplete. Then there's no independent SuperHyperSet.*

Proposition 31.0.29. *Let* $ESHG:(V,E)$ *be a Neutrosophic SuperHyperGraph which is SuperHyperDominating/SuperHyperPath/SuperHyperWheel. The number is* $\mathcal{O}(ESHG:(V,E))$ *and the Neutrosophic number is* $\mathcal{O}_n(ESHG:(V,E))$*, in the setting of a dual*

(i) : *SuperHyperDefensive SuperHyperDominating;*

(ii) : *strong SuperHyperDefensive SuperHyperDominating;*

(iii) : *connected SuperHyperDefensive SuperHyperDominating;*

(iv) : $\mathcal{O}(ESHG:(V,E))$*-SuperHyperDefensive SuperHyperDominating;*

(v) : *strong* $\mathcal{O}(ESHG:(V,E))$*-SuperHyperDefensive SuperHyperDominating;*

(vi) : *connected* $\mathcal{O}(ESHG:(V,E))$*-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.30. *Let* $ESHG:(V,E)$ *be a Neutrosophic SuperHyperGraph which is SuperHyperStar/complete SuperHyperBipartite/complete SuperHyperMultiPartite. The number is* $\frac{\mathcal{O}(ESHG:(V,E))}{2}+1$ *and the Neutrosophic number is* $\min \Sigma_{v\in\{v_1,v_2,\cdots,v_t\}_{t>\frac{\mathcal{O}(ESHG:(V,E))}{2}}\subseteq V}\sigma(v)$*, in the setting of a dual*

(i) : *SuperHyperDefensive SuperHyperDominating;*

$(ii):$ *strong SuperHyperDefensive SuperHyperDominating;*

$(iii):$ *connected SuperHyperDefensive SuperHyperDominating;*

$(iv):$ $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$*-SuperHyperDefensive SuperHyperDominating;*

$(v):$ *strong* $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$*-SuperHyperDefensive SuperHyperDominating;*

$(vi):$ *connected* $(\frac{\mathcal{O}(ESHG:(V,E))}{2}+1)$*-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.31. *Let* $\mathcal{NSHF}:(V,E)$ *be a SuperHyperFamily of the* $ESHGs:(V,E)$ *Neutrosophic SuperHyperGraphs which are from one-type SuperHyperClass which the result is obtained for the individuals. Then the results also hold for the SuperHyperFamily* $\mathcal{NSHF}:(V,E)$ *of these specific SuperHyperClasses of the Neutrosophic SuperHyperGraphs.*

Proposition 31.0.32. *Let* $ESHG:(V,E)$ *be a strong Neutrosophic SuperHyperGraph. If* S *is a dual SuperHyperDefensive SuperHyperDominating, then* $\forall v \in V \setminus S,\ \exists x \in S$ *such that*

(i) $v \in N_s(x)$;

(ii) $vx \in E$.

Proposition 31.0.33. *Let* $ESHG:(V,E)$ *be a strong Neutrosophic SuperHyperGraph. If* S *is a dual SuperHyperDefensive SuperHyperDominating, then*

(i) S *is SuperHyperDominating set;*

(ii) *there's* $S \subseteq S'$ *such that* $|S'|$ *is SuperHyperChromatic number.*

Proposition 31.0.34. *Let* $ESHG:(V,E)$ *be a strong Neutrosophic SuperHyperGraph. Then*

(i) $\Gamma \leq \mathcal{O}$;

(ii) $\Gamma_s \leq \mathcal{O}_n$.

Proposition 31.0.35. *Let* $ESHG:(V,E)$ *be a strong Neutrosophic SuperHyperGraph which is connected. Then*

(i) $\Gamma \leq \mathcal{O}-1$;

(ii) $\Gamma_s \leq \mathcal{O}_n - \Sigma_{i=1}^{3}\sigma_i(x)$.

Proposition 31.0.36. *Let* $ESHG:(V,E)$ *be an odd SuperHyperPath. Then*

(i) *the SuperHyperSet* $S=\{v_2,v_4,\cdots,v_{n-1}\}$ *is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma=\lfloor\frac{n}{2}\rfloor+1$ *and corresponded SuperHyperSet is* $S=\{v_2,v_4,\cdots,v_{n-1}\}$;

(iii) $\Gamma_s=\min\{\Sigma_{s\in S=\{v_2,v_4,\cdots,v_{n-1}\}}\Sigma_{i=1}^{3}\sigma_i(s),\Sigma_{s\in S=\{v_1,v_3,\cdots,v_{n-1}\}}\Sigma_{i=1}^{3}\sigma_i(s)\}$;

(iv) *the SuperHyperSets* $S_1=\{v_2,v_4,\cdots,v_{n-1}\}$ *and* $S_2=\{v_1,v_3,\cdots,v_{n-1}\}$ *are only a dual SuperHyperDominating.*

Proposition 31.0.37. *Let $ESHG : (V, E)$ be an even SuperHyperPath. Then*

(i) *the set $S = \{v_2, v_4, \cdots .v_n\}$ is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor$ *and corresponded SuperHyperSets are $\{v_2, v_4, \cdots .v_n\}$ and $\{v_1, v_3, \cdots .v_{n-1}\}$;*

(iii) $\Gamma_s = \min\{\Sigma_{s \in S=\{v_2,v_4,\cdots,v_n\}} \Sigma_{i=1}^{3} \sigma_i(s), \Sigma_{s \in S=\{v_1,v_3,\cdots .v_{n-1}\}} \Sigma_{i=1}^{3} \sigma_i(s)\}$;

(iv) *the SuperHyperSets $S_1 = \{v_2, v_4, \cdots .v_n\}$ and $S_2 = \{v_1, v_3, \cdots .v_{n-1}\}$ are only dual SuperHyperDominating.*

Proposition 31.0.38. *Let $ESHG : (V, E)$ be an even SuperHyperDominating. Then*

(i) *the SuperHyperSet $S = \{v_2, v_4, \cdots, v_n\}$ is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor$ *and corresponded SuperHyperSets are $\{v_2, v_4, \cdots, v_n\}$ and $\{v_1, v_3, \cdots, v_{n-1}\}$;*

(iii) $\Gamma_s = \min\{\Sigma_{s \in S=\{v_2,v_4,\cdots,v_n\}} \sigma(s), \Sigma_{s \in S=\{v_1,v_3,\cdots,v_{n-1}\}} \sigma(s)\}$;

(iv) *the SuperHyperSets $S_1 = \{v_2, v_4, \cdots, v_n\}$ and $S_2 = \{v_1, v_3, \cdots, v_{n-1}\}$ are only dual SuperHyperDominating.*

Proposition 31.0.39. *Let $ESHG : (V, E)$ be an odd SuperHyperDominating. Then*

(i) *the SuperHyperSet $S = \{v_2, v_4, \cdots, v_{n-1}\}$ is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor + 1$ *and corresponded SuperHyperSet is $S = \{v_2, v_4, \cdots, v_{n-1}\}$;*

(iii) $\Gamma_s = \min\{\Sigma_{s \in S=\{v_2,v_4,\cdots .v_{n-1}\}} \Sigma_{i=1}^{3} \sigma_i(s), \Sigma_{s \in S=\{v_1,v_3,\cdots .v_{n-1}\}} \Sigma_{i=1}^{3} \sigma_i(s)\}$;

(iv) *the SuperHyperSets $S_1 = \{v_2, v_4, \cdots .v_{n-1}\}$ and $S_2 = \{v_1, v_3, \cdots .v_{n-1}\}$ are only dual SuperHyperDominating.*

Proposition 31.0.40. *Let $ESHG : (V, E)$ be SuperHyperStar. Then*

(i) *the SuperHyperSet $S = \{c\}$ is a dual maximal SuperHyperDominating;*

(ii) $\Gamma = 1$;

(iii) $\Gamma_s = \Sigma_{i=1}^{3} \sigma_i(c)$;

(iv) *the SuperHyperSets $S = \{c\}$ and $S \subset S'$ are only dual SuperHyperDominating.*

Proposition 31.0.41. *Let $ESHG : (V, E)$ be SuperHyperWheel. Then*

(i) *the SuperHyperSet $S = \{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}$ is a dual maximal SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = |\{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}|$;

(iii) $\Gamma_s = \Sigma_{\{v_1,v_3\} \cup \{v_6,v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1) \leq n}} \Sigma_{i=1}^{3} \sigma_i(s)$;

(iv) *the SuperHyperSet* $\{v_1, v_3\} \cup \{v_6, v_9 \cdots, v_{i+6}, \cdots, v_n\}_{i=1}^{6+3(i-1)\leq n}$ *is only a dual maximal SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.42. *Let* $ESHG : (V, E)$ *be an odd SuperHyperComplete. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor + 1$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S=\{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}}$;

(iv) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *is only a dual SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.43. *Let* $ESHG : (V, E)$ *be an even SuperHyperComplete. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *is a dual SuperHyperDefensive SuperHyperDominating;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S=\{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}}$;

(iv) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ *is only a dual maximal SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.44. *Let* $\mathcal{NSHF} : (V, E)$ *be a m-SuperHyperFamily of Neutrosophic SuperHyperStars with common Neutrosophic SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{c_1, c_2, \cdots, c_m\}$ *is a dual SuperHyperDefensive SuperHyperDominating for* $\mathcal{NSHF}$;

(ii) $\Gamma = m$ *for* $\mathcal{NSHF} : (V, E)$;

(iii) $\Gamma_s = \Sigma_{i=1}^{m} \Sigma_{j=1}^{3} \sigma_j(c_i)$ *for* $\mathcal{NSHF} : (V, E)$;

(iv) *the SuperHyperSets* $S = \{c_1, c_2, \cdots, c_m\}$ *and* $S \subset S'$ *are only dual SuperHyperDominating for* $\mathcal{NSHF} : (V, E)$.

Proposition 31.0.45. *Let* $\mathcal{NSHF} : (V, E)$ *be an m-SuperHyperFamily of odd SuperHyperComplete SuperHyperGraphs with common Neutrosophic SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *is a dual maximal SuperHyperDefensive SuperHyperDominating for* $\mathcal{NSHF}$;

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor + 1$ *for* $\mathcal{NSHF} : (V, E)$;

(iii) $\Gamma_s = \min\{\Sigma_{s \in S} \Sigma_{i=1}^{3} \sigma_i(s)\}_{S=\{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}}$ *for* $\mathcal{NSHF} : (V, E)$;

(iv) *the SuperHyperSets* $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor + 1}$ *are only a dual maximal SuperHyperDominating for* $\mathcal{NSHF} : (V, E)$.

Proposition 31.0.46. *Let $\mathcal{NSHF} : (V, E)$ be a m-SuperHyperFamily of even SuperHyperComplete SuperHyperGraphs with common Neutrosophic SuperHyperVertex SuperHyperSet. Then*

(i) *the SuperHyperSet $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ is a dual SuperHyperDefensive SuperHyperDominating for $\mathcal{NSHF} : (V, E)$;*

(ii) $\Gamma = \lfloor \frac{n}{2} \rfloor$ *for $\mathcal{NSHF} : (V, E)$;*

(iii) $\Gamma_s = \min\{\Sigma_{s\in S}\Sigma_{i=1}^{3}\sigma_i(s)\}_{S=\{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}}$ *for $\mathcal{NSHF} : (V, E)$;*

(iv) *the SuperHyperSets $S = \{v_i\}_{i=1}^{\lfloor \frac{n}{2} \rfloor}$ are only dual maximal SuperHyperDominating for $\mathcal{NSHF} : (V, E)$.*

Proposition 31.0.47. *Let $ESHG : (V, E)$ be a strong Neutrosophic SuperHyperGraph. Then following statements hold;*

(i) *if $s \geq t$ and a SuperHyperSet S of SuperHyperVertices is an t-SuperHyperDefensive SuperHyperDominating, then S is an s-SuperHyperDefensive SuperHyperDominating;*

(ii) *if $s \leq t$ and a SuperHyperSet S of SuperHyperVertices is a dual t-SuperHyperDefensive SuperHyperDominating, then S is a dual s-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.48. *Let $ESHG : (V, E)$ be a strong Neutrosophic SuperHyperGraph. Then following statements hold;*

(i) *if $s \geq t + 2$ and a SuperHyperSet S of SuperHyperVertices is an t-SuperHyperDefensive SuperHyperDominating, then S is an s-SuperHyperPowerful SuperHyperDominating;*

(ii) *if $s \leq t$ and a SuperHyperSet S of SuperHyperVertices is a dual t-SuperHyperDefensive SuperHyperDominating, then S is a dual s-SuperHyperPowerful SuperHyperDominating.*

Proposition 31.0.49. *Let $ESHG : (V, E)$ be a[an] [V-]SuperHyperUniform-strong-Neutrosophic SuperHyperGraph. Then following statements hold;*

(i) *if $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{r}{2} \rfloor + 1$, then $ESHG : (V, E)$ is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) *if $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{r}{2} \rfloor + 1$, then $ESHG : (V, E)$ is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) *if $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$, then $ESHG : (V, E)$ is an V-SuperHyperDefensive SuperHyperDominating;*

(iv) *if $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$, then $ESHG : (V, E)$ is a dual V-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.50. *Let $ESHG : (V, E)$ is a[an] [V-]SuperHyperUniform-strong-Neutrosophic SuperHyperGraph. Then following statements hold;*

(i) $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{r}{2} \rfloor + 1$ *if $ESHG : (V, E)$ is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{r}{2} \rfloor + 1$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is an V-SuperHyperDefensive SuperHyperDominating;*

(iv) $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is a dual V-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.51. *Let* $ESHG : (V, E)$ *is a[an] [V-]SuperHyperUniform-strong-Neutrosophic SuperHyperGraph which is a SuperHyperComplete. Then following statements hold;*

(i) $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$ *if* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is an* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperDominating;*

(iv) $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is a dual* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.52. *Let* $ESHG : (V, E)$ *is a[an] [V-]SuperHyperUniform-strong-Neutrosophic SuperHyperGraph which is a SuperHyperComplete. Then following statements hold;*

(i) if $\forall a \in S,\ |N_s(a) \cap S| < \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$*, then* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) if $\forall a \in V \setminus S,\ |N_s(a) \cap S| > \lfloor \frac{\mathcal{O}-1}{2} \rfloor + 1$*, then* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) if $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$*, then* $ESHG : (V, E)$ *is* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperDominating;*

(iv) if $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$*, then* $ESHG : (V, E)$ *is a dual* $(\mathcal{O} - 1)$*-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.53. *Let* $ESHG : (V, E)$ *is a[an] [V-]SuperHyperUniform-strong-Neutrosophic SuperHyperGraph which is SuperHyperDominating. Then following statements hold;*

(i) $\forall a \in S,\ |N_s(a) \cap S| < 2$ *if* $ESHG : (V, E))$ *is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) $\forall a \in V \setminus S,\ |N_s(a) \cap S| > 2$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is an 2-SuperHyperDefensive SuperHyperDominating;*

(iv) $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$ *if* $ESHG : (V, E)$ *is a dual 2-SuperHyperDefensive SuperHyperDominating.*

Proposition 31.0.54. *Let $ESHG : (V, E)$ is a[an] [V-]SuperHyperUniform-strong-Neutrosophic SuperHyperGraph which is SuperHyperDominating. Then following statements hold;*

(i) *if $\forall a \in S,\ |N_s(a) \cap S| < 2$, then $ESHG : (V, E)$ is an 2-SuperHyperDefensive SuperHyperDominating;*

(ii) *if $\forall a \in V \setminus S,\ |N_s(a) \cap S| > 2$, then $ESHG : (V, E)$ is a dual 2-SuperHyperDefensive SuperHyperDominating;*

(iii) *if $\forall a \in S,\ |N_s(a) \cap V \setminus S| = 0$, then $ESHG : (V, E)$ is an 2-SuperHyperDefensive SuperHyperDominating;*

(iv) *if $\forall a \in V \setminus S,\ |N_s(a) \cap V \setminus S| = 0$, then $ESHG : (V, E)$ is a dual 2-SuperHyperDefensive SuperHyperDominating.*

CHAPTER 32

Neutrosophic Applications in Cancer's Neutrosophic Recognition

The cancer is the Neutrosophic disease but the Neutrosophic model is going to figure out what's going on this Neutrosophic phenomenon. The special Neutrosophic case of this Neutrosophic disease is considered and as the consequences of the model, some parameters are used. The cells are under attack of this disease but the moves of the cancer in the special region are the matter of mind. The Neutrosophic recognition of the cancer could help to find some Neutrosophic treatments for this Neutrosophic disease.
In the following, some Neutrosophic steps are Neutrosophic devised on this disease.

Step 1. (Neutrosophic Definition) The Neutrosophic recognition of the cancer in the long-term Neutrosophic function.

Step 2. (Neutrosophic Issue) The specific region has been assigned by the Neutrosophic model [it's called Neutrosophic SuperHyperGraph] and the long Neutrosophic cycle of the move from the cancer is identified by this research. Sometimes the move of the cancer hasn't be easily identified since there are some determinacy, indeterminacy and neutrality about the moves and the effects of the cancer on that region; this event leads us to choose another model [it's said to be Neutrosophic SuperHyperGraph] to have convenient perception on what's happened and what's done.

Step 3. (Neutrosophic Model) There are some specific Neutrosophic models, which are well-known and they've got the names, and some general Neutrosophic models. The moves and the Neutrosophic traces of the cancer on the complex tracks and between complicated groups of cells could be fantasized by a Neutrosophic SuperHyperPath(-/SuperHyperDominating, SuperHyperStar, SuperHyperBipartite, SuperHyperMultipartite, SuperHyperWheel). The aim is to find either the Neutrosophic SuperHyperDominating or the Neutrosophic SuperHyperDominating in those Neutrosophic Neutrosophic SuperHyperModels.

CHAPTER 33

Case 1: The Initial Neutrosophic Steps Toward Neutrosophic SuperHyperBipartite as Neutrosophic SuperHyperModel

Step 4. (Neutrosophic Solution) In the Neutrosophic Figure (33.1), the Neutrosophic SuperHyperBipartite is Neutrosophic highlighted and Neutrosophic featured.

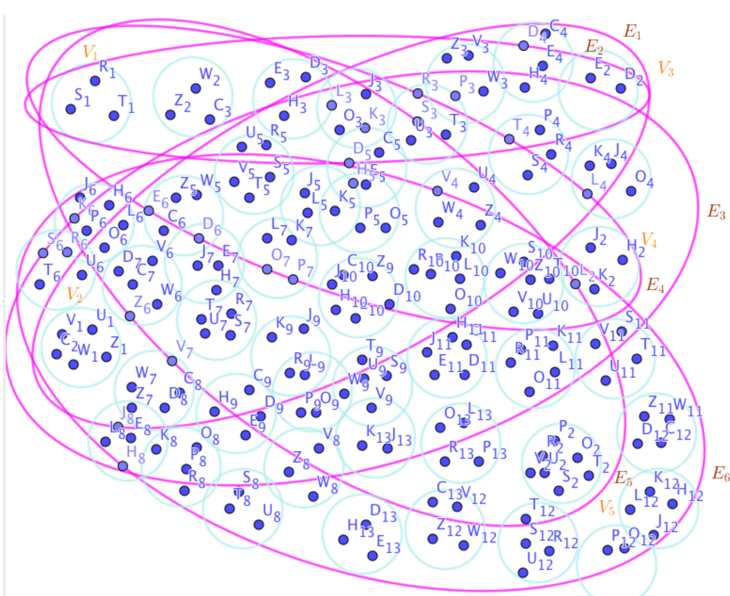


Figure 33.1: a Neutrosophic SuperHyperBipartite Associated to the Notions of Neutrosophic SuperHyperDominating

136NSHGaa21aa

Table 33.1: The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperBipartite

136TBLaa21aa

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

By using the Neutrosophic Figure (33.1) and the Table (33.1), the Neutrosophic SuperHyperBipartite is obtained.
The obtained Neutrosophic SuperHyperSet, by the Neutrosophic Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, in the Neutrosophic SuperHyperModel (33.1), is the Neutrosophic SuperHyperDominating.

CHAPTER 34

Case 2: The Increasing Neutrosophic Steps Toward Neutrosophic SuperHyperMultipartite as Neutrosophic SuperHyperModel

Step 4. (Neutrosophic Solution) In the Neutrosophic Figure (34.1), the Neutrosophic SuperHyperMultipartite is Neutrosophic highlighted and Neutrosophic featured.
By using the Neutrosophic Figure (34.1) and the Table (34.1), the Neutrosophic SuperHyperMultipartite is obtained.
The obtained Neutrosophic SuperHyperSet, by the Neutrosophic Algorithm in previous

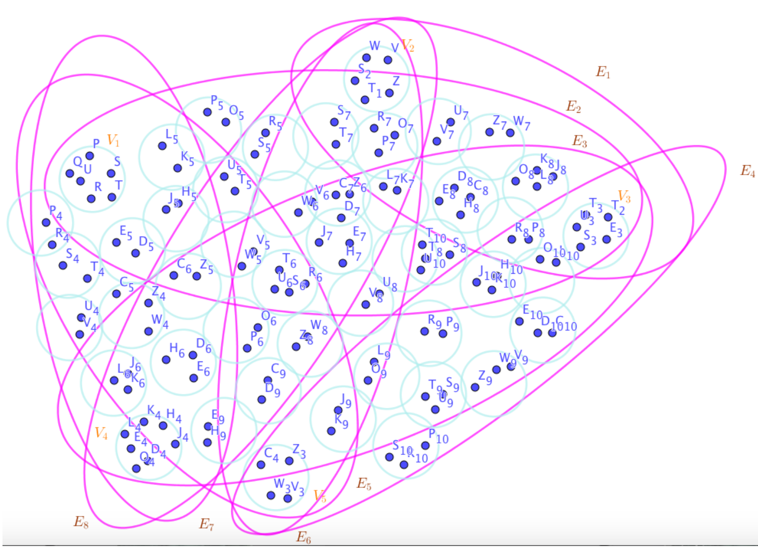


Figure 34.1: a Neutrosophic SuperHyperMultipartite Associated to the Notions of Neutrosophic SuperHyperDominating

136NSHGaa22aa

Table 34.1: The Values of Vertices, SuperVertices, Edges, HyperEdges, and SuperHyperEdges Belong to The Neutrosophic SuperHyperMultipartite

136TBLaa22aa

The Values of The Vertices	The Number of Position in Alphabet
The Values of The SuperVertices	The maximum Values of Its Vertices
The Values of The Edges	The maximum Values of Its Vertices
The Values of The HyperEdges	The maximum Values of Its Vertices
The Values of The SuperHyperEdges	The maximum Values of Its Endpoints

result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$, in the Neutrosophic SuperHyperModel (34.1), is the Neutrosophic SuperHyperDominating.

CHAPTER 35

Wondering Open Problems But As The Directions To Forming The Motivations

In what follows, some "problems" and some "questions" are proposed.
The SuperHyperDominating and the Neutrosophic SuperHyperDominating are defined on a real-world application, titled "Cancer's Recognitions".

Question 35.0.1. *Which the else SuperHyperModels could be defined based on Cancer's recognitions?*

Question 35.0.2. *Are there some SuperHyperNotions related to SuperHyperDominating and the Neutrosophic SuperHyperDominating?*

Question 35.0.3. *Are there some Algorithms to be defined on the SuperHyperModels to compute them?*

Question 35.0.4. *Which the SuperHyperNotions are related to beyond the SuperHyperDominating and the Neutrosophic SuperHyperDominating?*

Problem 35.0.5. *The SuperHyperDominating and the Neutrosophic SuperHyperDominating do a SuperHyperModel for the Cancer's recognitions and they're based on SuperHyperDominating, are there else?*

Problem 35.0.6. *Which the fundamental SuperHyperNumbers are related to these SuperHyper-Numbers types-results?*

Problem 35.0.7. *What's the independent research based on Cancer's recognitions concerning the multiple types of SuperHyperNotions?*

CHAPTER 36

Conclusion and Closing Remarks

In this section, concluding remarks and closing remarks are represented. The drawbacks of this research are illustrated. Some benefits and some advantages of this research are highlighted. This research uses some approaches to make Neutrosophic SuperHyperGraphs more understandable. In this endeavor, two SuperHyperNotions are defined on the SuperHyperDominating. For that sake in the second definition, the main definition of the Neutrosophic SuperHyperGraph is redefined on the position of the alphabets. Based on the new definition for the Neutrosophic SuperHyperGraph, the new SuperHyperNotion, Neutrosophic SuperHyperDominating, finds the convenient background to implement some results based on that. Some SuperHyperClasses and some Neutrosophic SuperHyperClasses are the cases of this research on the modeling of the regions where are under the attacks of the cancer to recognize this disease as it's mentioned on the title "Cancer's Recognitions". To formalize the instances on the SuperHyperNotion, SuperHyperDominating, the new SuperHyperClasses and SuperHyperClasses, are introduced. Some general results are gathered in the section on the SuperHyperDominating and the Neutrosophic SuperHyperDominating. The clarifications, instances and literature reviews have taken the whole way through. In this research, the literature reviews have fulfilled the lines containing the notions and the results. The SuperHyperGraph and Neutrosophic SuperHyperGraph are the SuperHyperModels on the "Cancer's Recognitions" and both bases are the background of this research. Sometimes the cancer has been happened on the region, full of cells, groups of cells and embedded styles. In this segment, the SuperHyperModel proposes some SuperHyperNotions based on the connectivities of the moves of the cancer in the longest and strongest styles with the formation of the design and the architecture are formally called " SuperHyperDominating" in the themes of jargons and buzzwords. The prefix "SuperHyper" refers to the theme of the embedded styles to figure out the background for the SuperHyperNotions. In the Table (36.1), benefits and avenues for this research are, figured out, pointed out and spoken out.

Table 36.1: An Overlook On This Research And Beyond

136TBLTBL

Advantages	Limitations
1. Redefining Neutrosophic SuperHyperGraph	1. General Results
2. SuperHyperDominating	
3. Neutrosophic SuperHyperDominating	2. Other SuperHyperNumbers
4. Modeling of Cancer's Recognitions	
5. SuperHyperClasses	3. SuperHyperFamilies

CHAPTER 37

Neutrosophic SuperHyperDuality But As The Extensions Excerpt From Dense And Super Forms

Definition 37.0.1. (Different Neutrosophic Types of Neutrosophic SuperHyperDuality).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Neutrosophic e-SuperHyperDuality** if $\forall E_i \in E'$, $\exists E_j \in E_{ESHG:(V,E)} \setminus E'$ such that $V_a \in E_i, E_j$;

(ii) **Neutrosophic re-SuperHyperDuality** if $\forall E_i \in E'$, $\exists E_j \in E_{ESHG:(V,E)} \setminus E'$ such that $V_a \in E_i, E_j$ and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Neutrosophic v-SuperHyperDuality** if $\forall V_i \in V'$, $\exists V_j \in V_{ESHG:(V,E)} \setminus V'$ such that $V_i, V_j \in E_a$;

(iv) **Neutrosophic rv-SuperHyperDuality** if $\forall V_i \in V'$, $\exists V_j \in V_{ESHG:(V,E)} \setminus V'$ such that $V_i, V_j \in E_a$ and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **Neutrosophic SuperHyperDuality** if it's either of Neutrosophic e-SuperHyperDuality, Neutrosophic re-SuperHyperDuality, Neutrosophic v-SuperHyperDuality, and Neutrosophic rv-SuperHyperDuality.

Definition 37.0.2. ((Neutrosophic) SuperHyperDuality).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperDuality** if it's either of Neutrosophic e-SuperHyperDuality, Neutrosophic re-SuperHyperDuality, Neutrosophic v-SuperHyperDuality, and Neutrosophic rv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDuality;

(*ii*) a **Neutrosophic SuperHyperDuality** if it's either of Neutrosophic e-SuperHyperDuality, Neutrosophic re-SuperHyperDuality, Neutrosophic v-SuperHyperDuality, and Neutrosophic rv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDuality;

(*iii*) an **Extreme SuperHyperDuality SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDuality, Neutrosophic re-SuperHyperDuality, Neutrosophic v-SuperHyperDuality, and Neutrosophic rv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDuality; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **Neutrosophic SuperHyperDuality SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDuality, Neutrosophic re-SuperHyperDuality, Neutrosophic v-SuperHyperDuality, and Neutrosophic rv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDuality; and the Neutrosophic power is corresponded to its Neutrosophic coefficient;

(*v*) an **Extreme R-SuperHyperDuality** if it's either of Neutrosophic e-SuperHyperDuality, Neutrosophic re-SuperHyperDuality, Neutrosophic v-SuperHyperDuality, and Neutrosophic rv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDuality;

(*vi*) a **Neutrosophic R-SuperHyperDuality** if it's either of Neutrosophic e-SuperHyperDuality, Neutrosophic re-SuperHyperDuality, Neutrosophic v-SuperHyperDuality, and Neutrosophic rv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDuality;

(*vii*) an **Extreme R-SuperHyperDuality SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDuality, Neutrosophic re-SuperHyperDuality, Neutrosophic v-SuperHyperDuality, and Neutrosophic rv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the

Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperDuality; and the Extreme power is corresponded to its Extreme coefficient;

$(viii)$ a **Neutrosophic SuperHyperDuality SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperDuality, Neutrosophic re-SuperHyperDuality, Neutrosophic v-SuperHyperDuality, and Neutrosophic rv-SuperHyperDuality and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperDuality; and the Neutrosophic power is corresponded to its Neutrosophic coefficient.

136EXM1 **Example 37.0.3.** Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned Neutrosophic Figures in every Neutrosophic items.

- On the Figure (29.1), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Extreme SuperHyperEdges but E_2 is a loop Neutrosophic SuperHyperEdge and E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperDuality.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty Neutrosophic SuperHyperEdges but E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperDuality.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.3), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.4), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_4, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 2z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 15z^2.$$

- On the Figure (29.5), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 4z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = z.$$

- On the Figure (29.6), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_{3i+1_{i=0}^{3}}, E_{3i+24_{i=0}^{3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} 6z^8.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_{3i+1_{i=0}^{7}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 6z^8.$$

- On the Figure (29.7), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_{15}, E_{16}, E_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_3, V_{13}, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 4 \times 5 \times 5z^3.$$

- On the Figure (29.8), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_4\}.$$

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_3, V_{13}, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 4 \times 5 \times 5z^3.$$

- On the Figure (29.9), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_{3i+1_{i=0}^{3}}, E_{23}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 3z^5.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_{3i+1_{i=0}^{3}}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 3z^5.$$

- On the Figure (29.10), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_3, V_{13}, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 4 \times 5 \times 5z^3.$$

- On the Figure (29.11), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_1, E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_6, V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 3 \times 3z^2.$$

- On the Figure (29.12), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_1, V_{i_{i=4}^{10}}^{i \neq 5,7,8}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 5z^5.$$

- On the Figure (29.13), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4710 4711

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_5, E_9\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_1, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 3 \times 3z^2.$$

- On the Figure (29.14), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4712 4713

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 2z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = z.$$

- On the Figure (29.15), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4714 4715

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = z.$$

- On the Figure (29.16), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4716 4717

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = (2 \times 1 \times 2) + (2 \times 4 \times 5)z.$$

- On the Figure (29.17), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4718 4719

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = (1 \times 1 \times 2)z.$$

- On the Figure (29.18), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = (2 \times 2 \times 2)z.$$

- On the Figure (29.19), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_{3i+1_{i=0^3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 3z^4.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_{2i+1_{i=0^5}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 2z^6.$$

- On the Figure (29.20), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 10z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = z.$$

- On the Figure (29.21), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 2z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 10z.$$

- On the Figure (29.22), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperDuality, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality}} = \{E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperDuality SuperHyperPolynomial}} = 4z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality}} = \{V_3, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperDuality SuperHyperPolynomial}} = 10 \times 9 + 10 \times 6 + 12 \times 9 + 12 \times 6z^2.$$

The previous Neutrosophic approach apply on the upcoming Neutrosophic results on Neutrosophic SuperHyperClasses.

Proposition 37.0.4. *Assume a connected Neutrosophic SuperHyperPath $ESHP:(V,E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDuality} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDuality\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperDuality} \\
&= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperDuality\ SuperHyperPolynomial} \\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P: \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}.
\end{aligned}$$

be a longest path taken from a connected Neutrosophic SuperHyperPath $ESHP:(V,E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. ■

136EXM18a

Example 37.0.5. In the Figure (30.1), the connected Neutrosophic SuperHyperPath $ESHP:(V,E)$, is highlighted and featured. The Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.1), is the SuperHyperDuality.

Proposition 37.0.6. *Assume a connected Neutrosophic SuperHyperCycle $ESHC:(V,E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDuality} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperDuality\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperDuality}
\end{aligned}$$

$$= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperDuality\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.$$

Proof. Let

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}.$$

be a longest path taken from a connected Neutrosophic SuperHyperCycle $ESHC : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. ■

136EXM19a

Example 37.0.7. In the Figure (30.2), the connected Neutrosophic SuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.2), is the Neutrosophic SuperHyperDuality.

Proposition 37.0.8. *Assume a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. Then*

$$\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality} = \{E \in E_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}$$
$$= |i \mid E_i \in E_{ESHG:(V,E)|_{Neutrosophic\ Cardinality}}|z.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}Quasi\text{-}SuperHyperDuality} = \{CENTER \in V_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial} = z.$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, V_j^{EXTERNAL}.$$

be a longest path taken a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. ■

136EXM20a

Example 37.0.9. In the Figure (30.3), the connected Neutrosophic SuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperStar $ESHS : (V, E)$, in the Neutrosophic SuperHyperModel (30.3), is the Neutrosophic SuperHyperDuality.

Proposition 37.0.10. *Assume a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality}\\
&= \{E_i \in E_{P_i{}^{ESHG:(V,E)}},\ |P_i{}^{ESHG:(V,E)}| = \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}\\
&= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|) choose |P_i{}^{ESHG:(V,E)}|)\\
&z^{\min |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality}\\
&= \{V_i^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}}, V_i^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i{}^{ESHG:(V,E)}| choose\ 2) = z^2.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P :\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. Then there's at least one SuperHyperDuality. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperDuality could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$P :$$

$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}$$

is a longest SuperHyperDuality taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}$$

The latter is straightforward. ■

136EXM21a

Example 37.0.11. In the Neutrosophic Figure (30.4), the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, is Neutrosophic highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Neutrosophic Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, in the Neutrosophic SuperHyperModel (30.4), is the Neutrosophic SuperHyperDuality.

Proposition 37.0.12. *Assume a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. Then*

$$\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality}$$
$$= \{E_i \in E_{P_i{}^{ESHG:(V,E)}},\ |P_i{}^{ESHG:(V,E)}| = \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}$$
$$= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|) choose |P_i{}^{ESHG:(V,E)}|)$$
$$z^{\min |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality}$$
$$= \{V_i^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}}, V_i^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}},\ i \neq j\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}$$
$$= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i{}^{ESHG:(V,E)}| choose\ 2) = z^2.$$

Proof. Let

$$\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest SuperHyperDuality taken from a connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. Then there's at least one SuperHyperDuality. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperDuality could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$. The latter is straightforward. ■

136EXM22a

Example 37.0.13. In the Figure (30.5), the connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$, is highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$, in the Neutrosophic SuperHyperModel (30.5), is the Neutrosophic SuperHyperDuality.

Proposition 37.0.14. *Assume a connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$. Then,*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality} = \{E^* \in E^*_{ESHG:(V,E)}\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial}\\
&= |i \mid E^*_i \in E^*_{ESHG:(V,E)|_{Neutrosophic\ Cardinality}}|z.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}Quasi\text{-}SuperHyperDuality} = \{CENTER \in V_{ESHG:(V,E)}\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}Quasi\text{-}SuperHyperDuality\ SuperHyperPolynomial} = z.
\end{aligned}
$$

Proof. Let

$$
\begin{aligned}
&P :\\
&V_1^{EXTERNAL}, E_1^*,\\
&V_2^{EXTERNAL}, E_2^*,\\
&\ldots,\\
&E^*_{|E^*_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}, V^{EXTERNAL}_{|E^*_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}+1}
\end{aligned}
$$

is a longest SuperHyperDuality taken from a connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z^* \in E^*_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z^* \equiv\\
&\exists! E_z^* \in E^*_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z^*.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperDuality. The latter is straightforward. Then there's at least one SuperHyperDuality. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperDuality could be applied. The unique embedded SuperHyperDuality proposes some longest SuperHyperDuality excerpt from some representatives. The latter is straightforward. ■

136EXM23a **Example 37.0.15.** In the Neutrosophic Figure (30.6), the connected Neutrosophic SuperHyperWheel $NSHW : (V, E)$, is Neutrosophic highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$, in the Neutrosophic SuperHyperModel (30.6), is the Neutrosophic SuperHyperDuality.

CHAPTER 38

Neutrosophic SuperHyperJoin But As The Extensions Excerpt From Dense And Super Forms

Definition 38.0.1. (Different Neutrosophic Types of Neutrosophic SuperHyperJoin).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Neutrosophic e-SuperHyperJoin** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists E_j \in E'$, such that $V_a \in E_i, E_j$; and $\forall E_i, E_j \in E'$, such that $V_a \notin E_i, E_j$;

(ii) **Neutrosophic re-SuperHyperJoin** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists E_j \in E'$, such that $V_a \in E_i, E_j$; $\forall E_i, E_j \in E'$, such that $V_a \notin E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Neutrosophic v-SuperHyperJoin** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V'$, $\exists V_j \in V'$, such that $V_i, V_j \notin E_a$; and $\forall V_i, V_j \in V'$, such that $V_i, V_j \notin E_a$;

(iv) **Neutrosophic rv-SuperHyperJoin** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V'$, $\exists V_j \in V'$, such that $V_i, V_j \in E_a$; $\forall V_i, V_j \in V'$, such that $V_i, V_j \notin E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **Neutrosophic SuperHyperJoin** if it's either of Neutrosophic e-SuperHyperJoin, Neutrosophic re-SuperHyperJoin, Neutrosophic v-SuperHyperJoin, and Neutrosophic rv-SuperHyperJoin.

Definition 38.0.2. ((Neutrosophic) SuperHyperJoin).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperJoin** if it's either of Neutrosophic e-SuperHyperJoin, Neutrosophic re-SuperHyperJoin, Neutrosophic v-SuperHyperJoin, and Neutrosophic rv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme

SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperJoin;

(*ii*) a **Neutrosophic SuperHyperJoin** if it's either of Neutrosophic e-SuperHyperJoin, Neutrosophic re-SuperHyperJoin, Neutrosophic v-SuperHyperJoin, and Neutrosophic rv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG:(V,E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperJoin;

(*iii*) an **Extreme SuperHyperJoin SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperJoin, Neutrosophic re-SuperHyperJoin, Neutrosophic v-SuperHyperJoin, and Neutrosophic rv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG:(V,E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperJoin; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **Neutrosophic SuperHyperJoin SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperJoin, Neutrosophic re-SuperHyperJoin, Neutrosophic v-SuperHyperJoin, and Neutrosophic rv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG:(V,E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperJoin; and the Neutrosophic power is corresponded to its Neutrosophic coefficient;

(*v*) an **Extreme R-SuperHyperJoin** if it's either of Neutrosophic e-SuperHyperJoin, Neutrosophic re-SuperHyperJoin, Neutrosophic v-SuperHyperJoin, and Neutrosophic rv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG:(V,E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperJoin;

(*vi*) a **Neutrosophic R-SuperHyperJoin** if it's either of Neutrosophic e-SuperHyperJoin, Neutrosophic re-SuperHyperJoin, Neutrosophic v-SuperHyperJoin, and Neutrosophic rv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG:(V,E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperJoin;

(*vii*) an **Extreme R-SuperHyperJoin SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperJoin, Neutrosophic re-SuperHyperJoin, Neutrosophic v-SuperHyperJoin, and Neutrosophic rv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG:(V,E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperJoin; and the Extreme power is corresponded to its Extreme coefficient;

$(viii)$ a **Neutrosophic SuperHyperJoin SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperJoin, Neutrosophic re-SuperHyperJoin, Neutrosophic v-SuperHyperJoin, and Neutrosophic rv-SuperHyperJoin and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG:(V,E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperJoin; and the Neutrosophic power is corresponded to its Neutrosophic coefficient.

136EXM1 **Example 38.0.3.** Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S=(V,E)$ in the mentioned Neutrosophic Figures in every Neutrosophic items.

- On the Figure (29.1), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Neutrosophic SuperHyperEdges but E_2 is a loop Neutrosophic SuperHyperEdge and E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperJoin.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty Neutrosophic SuperHyperEdges but E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperJoin.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.3), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.4), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_4, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 2z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 15z^2.$$

- On the Figure (29.5), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 4z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = z.$$

- On the Figure (29.6), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_{3i+1_{i=0}^{3}}, E_{3i+24_{i=0}^{3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} 6z^8.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_{3i+1_{i=0}^{7}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 6z^8.$$

- On the Figure (29.7), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_{15}, E_{16}, E_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_3, V_{13}, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 4 \times 5 \times 5z^3.$$

- On the Figure (29.8), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_4\}.$$

$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = z.$
$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_3, V_{13}, V_8\}.$
$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} =$
$4 \times 5 \times 5z^3.$

- On the Figure (29.9), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4933 4934

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_{3i+1_{i=0}^{3}}, E_{23}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 3z^5.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_{3i+1_{i=0}^{3}}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 3z^5.$$

- On the Figure (29.10), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4935 4936

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_3, V_{13}, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} =$$
$$4 \times 5 \times 5z^3.$$

- On the Figure (29.11), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4937 4938

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_1, E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_6, V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} =$$
$$3 \times 3z^2.$$

- On the Figure (29.12), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 4939 4940

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_1, V_{i_{i=4}^{10}}^{i \neq 5,7,8}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 5z^5.$$

- On the Figure (29.13), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_3, E_9\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_1, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 3 \times 3z^2.$$

- On the Figure (29.14), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 2z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = z.$$

- On the Figure (29.15), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = z.$$

- On the Figure (29.16), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_2, V_7, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = (1 \times 5 \times 5) + (1 \times 2 + 1)z^3.$$

- On the Figure (29.17), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_{27}, V_2, V_7, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = (1 \times 1 \times 2 + 1)z^4.$$

- On the Figure (29.18), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_{27}, V_2, V_7, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = (1 \times 1 \times 2 + 1)z^4.$$

- On the Figure (29.19), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_{3i+1_{i=0^3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 3z^4.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_{2i+1_{i=0^5}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 2z^6.$$

- On the Figure (29.20), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 10z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = z.$$

- On the Figure (29.21), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 2z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 10z.$$

- On the Figure (29.22), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperJoin, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin}} = \{E_2, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperJoin SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin}} = \{V_3, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperJoin SuperHyperPolynomial}} = 10 \times 6 + 10 \times 6 + 12 \times 6 + 12 \times 6z^2.$$

The previous Neutrosophic approach apply on the upcoming Neutrosophic results on Neutrosophic SuperHyperClasses.

Proposition 38.0.4. *Assume a connected Neutrosophic SuperHyperPath $ESHP : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperJoin} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperJoin\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperJoin} \\
&= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperJoin\ SuperHyperPolynomial} \\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}.
\end{aligned}$$

be a longest path taken from a connected Neutrosophic SuperHyperPath $ESHP : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. ■

136EXM18a

Example 38.0.5. In the Figure (30.1), the connected Neutrosophic SuperHyperPath $ESHP : (V, E)$, is highlighted and featured. The Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.1), is the SuperHyperJoin.

Proposition 38.0.6. *Assume a connected Neutrosophic SuperHyperCycle $ESHC : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperJoin} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperJoin\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperJoin}
\end{aligned}$$

$$= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.$$

$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperJoin\ SuperHyperPolynomial}$$

$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.$$

Proof. Let

$$\begin{aligned}&P: \\ &V_1^{EXTERNAL}, E_1, \\ &V_2^{EXTERNAL}, E_2, \\ &\ldots, \\ &E_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}.\end{aligned}$$

be a longest path taken from a connected Neutrosophic SuperHyperCycle $ESHC : (V, E)$. There's a new way to redefine as

$$\begin{aligned}&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\ &\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\ &\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. ∎

136EXM19a

Example 38.0.7. In the Figure (30.2), the connected Neutrosophic SuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.2), is the Neutrosophic SuperHyperJoin.

Proposition 38.0.8. *Assume a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. Then*

$$\begin{aligned}&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperJoin} = \{E \in E_{ESHG:(V,E)}\}. \\ &\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperJoin\ SuperHyperPolynomial} \\ &= |i \mid E_i \in E_{ESHG:(V,E)|_{Neutrosophic\ Cardinality}}|z. \\ &\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}Quasi\text{-}SuperHyperJoin} = \{CENTER \in V_{ESHG:(V,E)}\}. \\ &\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}Quasi\text{-}SuperHyperJoin\ SuperHyperPolynomial} = z.\end{aligned}$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, V_j^{EXTERNAL}.$$

be a longest path taken a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. There's a new way to redefine as

$$\begin{aligned}&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\ &\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\ &\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. ∎

136EXM20a

Example 38.0.9. In the Figure (30.3), the connected Neutrosophic SuperHyperStar $ESHS:(V,E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperStar $ESHS:(V,E)$, in the Neutrosophic SuperHyperModel (30.3), is the Neutrosophic SuperHyperJoin. 4987 4988 4989 4990 4991

Proposition 38.0.10. *Assume a connected Neutrosophic SuperHyperBipartite $ESHB:(V,E)$. Then* 4992 4993

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperJoin}\\
&= \textit{(PERFECT MATCHING)}.\\
&\{E_i \in E_{{P_i}^{ESHG:(V,E)}},\\
&\ \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| = \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperJoin}\\
&= \textit{(OTHERWISE)}.\\
&\{\},\\
&\textit{If } \exists {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| \neq \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperJoin\ SuperHyperPolynomial}\\
&= \textit{(PERFECT MATCHING)}.\\
&= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|)\, choose |{P_i}^{ESHG:(V,E)}|)\\
&z^{\min |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&\textit{where } \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}|\\
&= \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperJoin\ SuperHyperPolynomial}\\
&= \textit{(OTHERWISE)}0.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperJoin}\\
&= \{V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}}, V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperJoin\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|{P_i}^{ESHG:(V,E)}|\, choose\ 2) = z^2.
\end{aligned}
$$

Proof. Let 4994

$$
\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}
$$

is a longest path taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. Then there's no at least one SuperHyperJoin. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperJoin could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest SuperHyperJoin taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

The latter is straightforward. ■

136EXM21a **Example 38.0.11.** In the Neutrosophic Figure (30.4), the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, is Neutrosophic highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Neutrosophic Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, in the Neutrosophic SuperHyperModel (30.4), is the Neutrosophic SuperHyperJoin.

Proposition 38.0.12. *Assume a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$.*

Then 5013

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperJoin}\\
&= \textit{(PERFECT MATCHING)}.\\
&\{E_i \in E_{{P_i}^{ESHG:(V,E)}},\\
&\ \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| = \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperJoin}\\
&= \textit{(OTHERWISE)}.\\
&\{\},\\
&\textit{If}\ \exists {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| \neq \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperJoin\ SuperHyperPolynomial}\\
&= \textit{(PERFECT MATCHING)}.\\
&= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|)\, choose |{P_i}^{ESHG:(V,E)}|)\\
&z^{\min |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&\textit{where}\ \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}|\\
&= \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperJoin\ SuperHyperPolynomial}\\
&= \textit{(OTHERWISE)}0.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperJoin}\\
&= \{V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}}, V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperJoin\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|{P_i}^{ESHG:(V,E)}|\, choose\ 2) = z^2.
\end{aligned}$$

Proof. Let 5014

$$\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest SuperHyperJoin taken from a connected Neutrosophic SuperHyperMultipartite 5015
$ESHM : (V, E)$. There's a new way to redefine as 5016

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists ! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists ! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term “EXTERNAL” implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. Then there's no at least one SuperHyperJoin. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperJoin could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. The latter is straightforward. ■

136EXM22a

Example 38.0.13. In the Figure (30.5), the connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$, is highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$, in the Neutrosophic SuperHyperModel (30.5), is the Neutrosophic SuperHyperJoin.

Proposition 38.0.14. *Assume a connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$. Then,*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperJoin} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperJoin\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperJoin} \\
&= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperJoin\ SuperHyperPolynomial} \\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.
\end{aligned}$$

Proof. Let

$$
\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}.
\end{aligned}
$$

is a longest SuperHyperJoin taken from a connected Neutrosophic SuperHyperWheel $ESHW:(V,E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperJoin. The latter is straightforward. Then there's at least one SuperHyperJoin. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperJoin could be applied. The unique embedded SuperHyperJoin proposes some longest SuperHyperJoin excerpt from some representatives. The latter is straightforward. ∎

136EXM23a

Example 38.0.15. In the Neutrosophic Figure (30.6), the connected Neutrosophic SuperHyperWheel $NSHW:(V,E)$, is Neutrosophic highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperWheel $ESHW:(V,E)$, in the Neutrosophic SuperHyperModel (30.6), is the Neutrosophic SuperHyperJoin.

CHAPTER 39

Neutrosophic SuperHyperPerfect But As The Extensions Excerpt From Dense And Super Forms

Definition 39.0.1. (Different Neutrosophic Types of Neutrosophic SuperHyperPerfect).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Neutrosophic e-SuperHyperPerfect** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E',\ \exists! E_j \in E'$, such that $V_a \in E_i, E_j$;

(ii) **Neutrosophic re-SuperHyperPerfect** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E',\ \exists! E_j \in E'$, such that $V_a \in E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Neutrosophic v-SuperHyperPerfect** if $\forall V_i \in V_{ESHG:(V,E)} \setminus V',\ \exists! V_j \in V'$, such that $V_i, V_j \in E_a$;

(iv) **Neutrosophic rv-SuperHyperPerfect** if $\forall V_i \in V_{ESHG:(V,E)} \setminus V',\ \exists! V_j \in V'$, such that $V_i, V_j \in E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **Neutrosophic SuperHyperPerfect** if it's either of Neutrosophic e-SuperHyperPerfect, Neutrosophic re-SuperHyperPerfect, Neutrosophic v-SuperHyperPerfect, and Neutrosophic rv-SuperHyperPerfect.

Definition 39.0.2. ((Neutrosophic) SuperHyperPerfect).
Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperPerfect** if it's either of Neutrosophic e-SuperHyperPerfect, Neutrosophic re-SuperHyperPerfect, Neutrosophic v-SuperHyperPerfect, and Neutrosophic rv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperPerfect;

(*ii*) a **Neutrosophic SuperHyperPerfect** if it's either of Neutrosophic e-SuperHyperPerfect, Neutrosophic re-SuperHyperPerfect, Neutrosophic v-SuperHyperPerfect, and Neutrosophic rv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperPerfect;

(*iii*) an **Extreme SuperHyperPerfect SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperPerfect, Neutrosophic re-SuperHyperPerfect, Neutrosophic v-SuperHyperPerfect, and Neutrosophic rv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperPerfect; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **Neutrosophic SuperHyperPerfect SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperPerfect, Neutrosophic re-SuperHyperPerfect, Neutrosophic v-SuperHyperPerfect, and Neutrosophic rv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperPerfect; and the Neutrosophic power is corresponded to its Neutrosophic coefficient;

(*v*) an **Extreme R-SuperHyperPerfect** if it's either of Neutrosophic e-SuperHyperPerfect, Neutrosophic re-SuperHyperPerfect, Neutrosophic v-SuperHyperPerfect, and Neutrosophic rv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperPerfect;

(*vi*) a **Neutrosophic R-SuperHyperPerfect** if it's either of Neutrosophic e-SuperHyperPerfect, Neutrosophic re-SuperHyperPerfect, Neutrosophic v-SuperHyperPerfect, and Neutrosophic rv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperPerfect;

(*vii*) an **Extreme R-SuperHyperPerfect SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperPerfect, Neutrosophic re-SuperHyperPerfect, Neutrosophic v-SuperHyperPerfect, and Neutrosophic rv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the

Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperPerfect; and the Extreme power is corresponded to its Extreme coefficient;

$(viii)$ a **Neutrosophic SuperHyperPerfect SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperPerfect, Neutrosophic re-SuperHyperPerfect, Neutrosophic v-SuperHyperPerfect, and Neutrosophic rv-SuperHyperPerfect and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperPerfect; and the Neutrosophic power is corresponded to its Neutrosophic coefficient.

136EXM1

Example 39.0.3. Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned Neutrosophic Figures in every Neutrosophic items.

- On the Figure (29.1), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Neutrosophic SuperHyperEdges but E_2 is a loop Neutrosophic SuperHyperEdge and E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperPerfect.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty Neutrosophic SuperHyperEdges but E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperPerfect.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.3), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.4), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_4, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = 2z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = 15z^2.$$

- On the Figure (29.5), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = 4z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = z.$$

- On the Figure (29.6), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_{3i+1_{i=0}^{3}}, E_{3i+24_{i=0}^{3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} 6z^8.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_{3i+1_{i=0}^{7}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = 6z^8.$$

- On the Figure (29.7), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_{15}, E_{16}, E_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_3, V_6, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = 3 \times 4 \times 4z^3.$$

- On the Figure (29.8), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_4\}.$$

$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = z.$
$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_3, V_6, V_8\}.$
$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} =$
$3 \times 4 \times 4z^3.$

- On the Figure (29.9), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5163 5164

$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperPerfect}} = \{E_{3i+1_{i=0}^{3}}, E_{23}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperPerfect SuperHyperPolynomial}} = 3z^5.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect}} = \{V_{3i+1_{i=0}^{3}}, V_{15}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect SuperHyperPolynomial}} = 3z^5.$$

- On the Figure (29.10), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5165 5166

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_3, V_6, V_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} =$$
$$3 \times 4 \times 4z^3.$$

- On the Figure (29.11), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5167 5168

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_1, E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_6, V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} =$$
$$3 \times 2z^2.$$

- On the Figure (29.12), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5169 5170

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_1, V_{i_{i=4}^{10}}^{i \neq 5,7,8}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = 5z^5.$$

- On the Figure (29.13), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_3, E_9\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_1, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = 3 \times 3z^2.$$

- On the Figure (29.14), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = 2z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = z.$$

- On the Figure (29.15), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = z.$$

- On the Figure (29.16), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect}} = \{V_2, V_7, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect SuperHyperPolynomial}} = (1 \times 5 \times 5) + (1 \times 2 + 1)z^3.$$

- On the Figure (29.17), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect}} = \{V_{27}, V_2, V_7, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect SuperHyperPolynomial}} = (1 \times 1 \times 2 + 1)z^4.$$

- On the Figure (29.18), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = 3z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect}} = \{V_{27}, V_2, V_7, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect SuperHyperPolynomial}} = (1 \times 1 \times 2 + 1)z^4.$$

- On the Figure (29.19), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_{3i+1_{i=0^3}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = 3z^4.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect}} = \{V_{2i+1_{i=0^5}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect SuperHyperPolynomial}} = 2z^6.$$

- On the Figure (29.20), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = 10z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = z.$$

- On the Figure (29.21), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = 2z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperPerfect SuperHyperPolynomial}} = 10z.$$

- On the Figure (29.22), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperPerfect, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect}} = \{E_2, E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperPerfect SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect}} = \{V_3, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperPerfect SuperHyperPolynomial}} = 10 \times 6 + 10 \times 6 + 12 \times 6 + 12 \times 6z^2.$$

The previous Neutrosophic approach apply on the upcoming Neutrosophic results on Neutrosophic SuperHyperClasses.

Proposition 39.0.4. *Assume a connected Neutrosophic SuperHyperPath $ESHP:(V,E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperPerfect} \\
&= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperPerfect\ SuperHyperPolynomial} \\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.
\end{aligned}
$$

Proof. Let

$$
\begin{aligned}
&P: \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}.
\end{aligned}
$$

be a longest path taken from a connected Neutrosophic SuperHyperPath $ESHP:(V,E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. ■

136EXM18a

Example 39.0.5. In the Figure (30.1), the connected Neutrosophic SuperHyperPath $ESHP:(V,E)$, is highlighted and featured. The Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.1), is the SuperHyperPerfect.

Proposition 39.0.6. *Assume a connected Neutrosophic SuperHyperCycle $ESHC:(V,E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect} = \\
&= \{E_i\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect\ SuperHyperPolynomial} \\
&= 3z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperPerfect}
\end{aligned}
$$

$$= \{V_i^{EXTERNAL}\}_{i=1}^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperPerfect\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{\frac{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}}{3}}.$$

Proof. Let

$$P: \\ V_1^{EXTERNAL}, E_1, \\ V_2^{EXTERNAL}, E_2, \\ \ldots, \\ E_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}, V^{EXTERNAL}{}_{\frac{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}}{3}}.$$

be a longest path taken from a connected Neutrosophic SuperHyperCycle $ESHC : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\ \exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\ \exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. ■

136EXM19a

Example 39.0.7. In the Figure (30.2), the connected Neutrosophic SuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.2), is the Neutrosophic SuperHyperPerfect.

Proposition 39.0.8. *Assume a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. Then*

$$\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect} = \{E \in E_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect\ SuperHyperPolynomial}$$
$$= |i \mid E_i \in E_{ESHG:(V,E)|_{Neutrosophic\ Cardinality}}|z.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperPerfect} = \{CENTER \in V_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperPerfect\ SuperHyperPolynomial} = z.$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, V_j^{EXTERNAL}.$$

be a longest path taken a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\ \exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\ \exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. ■

136EXM20a

Example 39.0.9. In the Figure (30.3), the connected Neutrosophic SuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperStar $ESHS : (V, E)$, in the Neutrosophic SuperHyperModel (30.3), is the Neutrosophic SuperHyperPerfect.

Proposition 39.0.10. *Assume a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperPerfect}\\
&= \textit{(PERFECT MATCHING)}.\\
&\{E_i \in E_{{P_i}^{ESHG:(V,E)}},\\
&\ \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| = \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperPerfect}\\
&= \textit{(OTHERWISE)}.\\
&\{\},\\
&\textit{If } \exists {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| \neq \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect\ SuperHyperPolynomial}\\
&= \textit{(PERFECT MATCHING)}.\\
&= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|) \textit{choose} |{P_i}^{ESHG:(V,E)}|)\\
&z^{\min |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&\textit{where } \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}|\\
&= \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect\ SuperHyperPolynomial}\\
&= \textit{(OTHERWISE)}0.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperPerfect}\\
&= \{V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}}, V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperPerfect\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|{P_i}^{ESHG:(V,E)}| \textit{choose } 2) = z^2.
\end{aligned}
$$

Proof. Let

$$
\begin{aligned}
&P:\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2,\\
&\ldots,\\
&E_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}
$$

is a longest path taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. Then there's no at least one SuperHyperPerfect. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperPerfect could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest SuperHyperPerfect taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

The latter is straightforward. ■

136EXM21a **Example 39.0.11.** In the Neutrosophic Figure (30.4), the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, is Neutrosophic highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Neutrosophic Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, in the Neutrosophic SuperHyperModel (30.4), is the Neutrosophic SuperHyperPerfect.

Proposition 39.0.12. *Assume a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$.*

Then 5243

$$\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperPerfect}$$
$$= (PERFECT\ MATCHING).$$
$$\{E_i \in E_{{P_i}^{ESHG:(V,E)}},$$
$$\forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| = \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperPerfect}$$
$$= (OTHERWISE).$$
$$\{\},$$
$$If\ \exists {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}| \neq \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect\ SuperHyperPolynomial}$$
$$= (PERFECT\ MATCHING).$$
$$= (\sum_{i=|P^{ESHG:(V,E)}|} (\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|) choose |{P_i}^{ESHG:(V,E)}|)$$
$$z^{\min |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}$$
$$where\ \forall {P_i}^{ESHG:(V,E)},\ |{P_i}^{ESHG:(V,E)}|$$
$$= \min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect\ SuperHyperPolynomial}$$
$$= (OTHERWISE) 0.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperPerfect}$$
$$= \{V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}}, V_i^{EXTERNAL} \in V^{EXTERNAL}_{{P_i}^{ESHG:(V,E)}},\ i \neq j\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperPerfect\ SuperHyperPolynomial}$$
$$= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|{P_i}^{ESHG:(V,E)}| choose\ 2) = z^2.$$

Proof. Let 5244

$$P:$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2,$$
$$\ldots,$$
$$E_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |{P_i}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}$$

is a longest SuperHyperPerfect taken from a connected Neutrosophic SuperHyperMultipartite 5245
$ESHM : (V, E)$. There's a new way to redefine as 5246

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term “EXTERNAL” implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. Then there's no at least one SuperHyperPerfect. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperPerfect could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2, \\
&\ldots, \\
&E_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}, V^{EXTERNAL}_{\min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|+1}
\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. The latter is straightforward. ∎

136EXM22a

Example 39.0.13. In the Figure (30.5), the connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$, is highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$, in the Neutrosophic SuperHyperModel (30.5), is the Neutrosophic SuperHyperPerfect.

Proposition 39.0.14. *Assume a connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$. Then,*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect} = \{E \in E_{ESHG:(V,E)}\}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperPerfect\ SuperHyperPolynomial} \\
&= |i \mid E_i \in E_{ESHG:(V,E)|_{Neutrosophic\ Cardinality}}|z. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperPerfect} = \{CENTER \in V_{ESHG:(V,E)}\}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperPerfect\ SuperHyperPolynomial} = z.
\end{aligned}$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, V_j^{EXTERNAL}.$$

is a longest SuperHyperPerfect taken from a connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperPerfect. The latter is straightforward. Then there's at least one SuperHyperPerfect. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperPerfect could be applied. The unique embedded SuperHyperPerfect proposes some longest SuperHyperPerfect excerpt from some representatives. The latter is straightforward. ∎

136EXM23a

Example 39.0.15. In the Neutrosophic Figure (30.6), the connected Neutrosophic SuperHyperWheel $NSHW : (V, E)$, is Neutrosophic highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$, in the Neutrosophic SuperHyperModel (30.6), is the Neutrosophic SuperHyperPerfect.

CHAPTER 40

Neutrosophic SuperHyperTotal But As The Extensions Excerpt From Dense And Super Forms

Definition 40.0.1. (Different Neutrosophic Types of Neutrosophic SuperHyperTotal). Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Neutrosophic e-SuperHyperTotal** if $\forall E_i \in E_{ESHG:(V,E)}$, $\exists! E_j \in E'$, such that $V_a \in E_i, E_j$;

(ii) **Neutrosophic re-SuperHyperTotal** if $\forall E_i \in E_{ESHG:(V,E)}$, $\exists! E_j \in E'$, such that $V_a \in E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Neutrosophic v-SuperHyperTotal** if $\forall V_i \in V_{ESHG:(V,E)}$, $\exists! V_j \in V'$, such that $V_i, V_j \in E_a$;

(iv) **Neutrosophic rv-SuperHyperTotal** if $\forall V_i \in V_{ESHG:(V,E)}$, $\exists! V_j \in V'$, such that $V_i, V_j \in E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **Neutrosophic SuperHyperTotal** if it's either of Neutrosophic e-SuperHyperTotal, Neutrosophic re-SuperHyperTotal, Neutrosophic v-SuperHyperTotal, and Neutrosophic rv-SuperHyperTotal.

Definition 40.0.2. ((Neutrosophic) SuperHyperTotal). Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperTotal** if it's either of Neutrosophic e-SuperHyperTotal, Neutrosophic re-SuperHyperTotal, Neutrosophic v-SuperHyperTotal, and Neutrosophic rv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperTotal;

(*ii*) a **Neutrosophic SuperHyperTotal** if it's either of Neutrosophic e-SuperHyperTotal, Neutrosophic re-SuperHyperTotal, Neutrosophic v-SuperHyperTotal, and Neutrosophic rv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperTotal;

(*iii*) an **Extreme SuperHyperTotal SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperTotal, Neutrosophic re-SuperHyperTotal, Neutrosophic v-SuperHyperTotal, and Neutrosophic rv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperTotal; and the Extreme power is corresponded to its Extreme coefficient;

(*iv*) a **Neutrosophic SuperHyperTotal SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperTotal, Neutrosophic re-SuperHyperTotal, Neutrosophic v-SuperHyperTotal, and Neutrosophic rv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperTotal; and the Neutrosophic power is corresponded to its Neutrosophic coefficient;

(*v*) an **Extreme R-SuperHyperTotal** if it's either of Neutrosophic e-SuperHyperTotal, Neutrosophic re-SuperHyperTotal, Neutrosophic v-SuperHyperTotal, and Neutrosophic rv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperTotal;

(*vi*) a **Neutrosophic R-SuperHyperTotal** if it's either of Neutrosophic e-SuperHyperTotal, Neutrosophic re-SuperHyperTotal, Neutrosophic v-SuperHyperTotal, and Neutrosophic rv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperTotal;

(*vii*) an **Extreme R-SuperHyperTotal SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperTotal, Neutrosophic re-SuperHyperTotal, Neutrosophic v-SuperHyperTotal, and Neutrosophic rv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the

Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperTotal; and the Extreme power is corresponded to its Extreme coefficient;

$(viii)$ a **Neutrosophic SuperHyperTotal SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperTotal, Neutrosophic re-SuperHyperTotal, Neutrosophic v-SuperHyperTotal, and Neutrosophic rv-SuperHyperTotal and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperTotal; and the Neutrosophic power is corresponded to its Neutrosophic coefficient.

136EXM1

Example 40.0.3. Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned Neutrosophic Figures in every Neutrosophic items.

- On the Figure (29.1), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Neutrosophic SuperHyperEdges but E_2 is a loop Neutrosophic SuperHyperEdge and E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperTotal.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperTotal}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperTotal SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty Neutrosophic SuperHyperEdges but E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperTotal.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperTotal}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperTotal SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.3), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5382 5383

$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperTotal}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperTotal SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.4), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5384 5385

$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-}} = \{E_4, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperTotal SuperHyperPolynomial}} = 2z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal}} = \{V_1, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal SuperHyperPolynomial}} = 15z^2.$$

- On the Figure (29.5), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5386 5387

$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperTotal}} = \{E_3\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperTotal SuperHyperPolynomial}} = 4z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal}} = \{V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal SuperHyperPolynomial}} = z.$$

- On the Figure (29.6), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5388 5389

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperTotal}} = \{E_{i+1_{i=0}^{9}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperTotal SuperHyperPolynomial}} 20z^{10}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperTotal}} = \{V_{i+1_{i=0}^{9}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperTotal SuperHyperPolynomial}} = 20z^{10}.$$

- On the Figure (29.7), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5390 5391

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_{12}, E_{13}, E_{14}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_{12}, V_{13}, V_{14}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = z^3.$$

- On the Figure (29.8), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5392 5393

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperTotal}} = \{E_4\}.$$

$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperTotal SuperHyperPolynomial}} = z.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_{12}, V_{13}, V_{14}\}.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} =$
$3 \times 4 \times 4z^3.$

- On the Figure (29.9), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5394 5395

$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperTotal}} = \{E_{i+1_{i=0}^{9}}\}.$
$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperTotal SuperHyperPolynomial}} 10z^{10}.$
$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperTotal}} = \{V_{i+1_{i=0}^{9}}\}.$
$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperTotal SuperHyperPolynomial}} = 20z^{10}.$

- On the Figure (29.10), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5396 5397

$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperTotal}} = \{E_5\}.$
$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperTotal SuperHyperPolynomial}} = z.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_{12}, V_{13}, V_{14}\}.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} =$
$3 \times 4 \times 4z^3.$

- On the Figure (29.11), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5398 5399

$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_1, E_6, E_7, E_8\}.$
$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = 2z^4.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_5\}.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 3z^2.$

- On the Figure (29.12), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5400 5401

$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_1, E_2\}.$
$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = 5z^2.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_{i_{i=1}^{8}}^{i \neq 4,5,6}\}.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = z^5.$

- On the Figure (29.13), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5402 5403

$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_3, E_9, E_6\}.$
$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = 3z^3.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_5\}.$
$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 3z^2.$

- On the Figure (29.14), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_1, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_3\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 2z^2.$$

- On the Figure (29.15), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_2, V_3, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = z^3.$$

- On the Figure (29.16), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_2, V_6, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 4 \times 3z^3.$$

- On the Figure (29.17), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_2, V_6, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 4 \times 3z^4.$$

- On the Figure (29.18), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V_2, V_6, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}} = 2 \times 4 \times 3z^4.$$

- On the Figure (29.19), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5414 5415

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperTotal}} = \{E_{i+2_{i=0}{}^{11}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperTotal SuperHyperPolynomial}} = 11z^{10}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal}} = \{V_{i+2_{i=0}{}^{11}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperTotal SuperHyperPolynomial}} = 11z^{10}.$$

- On the Figure (29.20), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5416 5417

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_6, E_{10}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = 9z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal}} = \{V_1, V\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperTotal SuperHyperPolynomial}}$$
$$= |(|V| - 1)z^2.$$

- On the Figure (29.21), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5418 5419

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperTotal}} = \{E_1, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperTotal SuperHyperPolynomial}} = 2z^2.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperTotal}} = \{V_1, V_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperTotal SuperHyperPolynomial}} = 9z^2.$$

- On the Figure (29.22), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperTotal, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. 5420 5421

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal}} = \{E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperTotal SuperHyperPolynomial}} = z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperTotal}} = \{V_3, V_{10}, V_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperTotal SuperHyperPolynomial}}$$
$$= 3 \times 6z^3.$$

The previous Neutrosophic approach apply on the upcoming Neutrosophic results on 5422
Neutrosophic SuperHyperClasses. 5423

Proposition 40.0.4. *Assume a connected Neutrosophic SuperHyperPath $ESHP : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal} = \\
&= \{E_i\}_{i=1}^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal\ SuperHyperPolynomial} \\
&= z^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperTotal} \\
&= \{V_i^{EXTERNAL}\}_{i=1}^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperTotal\ SuperHyperPolynomial} \\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P : \\
&V_2^{EXTERNAL}, E_2, \\
&V_3^{EXTERNAL}, E_3, \\
&\ldots, \\
&E_{|E^{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}-1}, V^{EXTERNAL}{}_{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}-1}}.
\end{aligned}$$

be a longest path taken from a connected Neutrosophic SuperHyperPath $ESHP : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. ∎

136EXM18a

Example 40.0.5. In the Figure (30.1), the connected Neutrosophic SuperHyperPath $ESHP : (V, E)$, is highlighted and featured. The Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.1), is the SuperHyperTotal.

Proposition 40.0.6. *Assume a connected Neutrosophic SuperHyperCycle $ESHC : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal} = \\
&= \{E_i\}_{i=1}^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal\ SuperHyperPolynomial} \\
&= (|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} - 1) \\
&z^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperTotal} \\
&= \{V_i^{EXTERNAL}\}_{i=1}^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}.
\end{aligned}$$

$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperTotal\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}$$

Proof. Let 5434

$$P:$$
$$V_2^{EXTERNAL}, E_2,$$
$$V_3^{EXTERNAL}, E_3,$$
$$\ldots,$$
$$E_{\frac{|E_{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}-1}}{,}} V^{EXTERNAL}{}_{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}-1}.$$

be a longest path taken from a connected Neutrosophic SuperHyperCycle $ESHC : (V, E)$. There's 5435
a new way to redefine as 5436

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to 5437
$V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. ∎ 5438

136EXM19a

Example 40.0.7. In the Figure (30.2), the connected Neutrosophic SuperHyperCycle $NSHC :$ 5439
(V, E), is highlighted and featured. The obtained Neutrosophic SuperHyperSet, in the 5440
Neutrosophic SuperHyperModel (30.2), is the Neutrosophic SuperHyperTotal. 5441

Proposition 40.0.8. *Assume a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. Then* 5442

$$\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal} = \{E_i, E_j \in E_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal\ SuperHyperPolynomial}$$
$$= |i(i-1) \mid E_i \in E_{ESHG:(V,E)|_{Neutrosophic\ Cardinality}}| z^2.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperTotal} = \{CENTER, V_j \in V_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperTotal\ SuperHyperPolynomial} =$$
$$(|V_{ESHG:(V,E)|_{Neutrosophic\ Cardinality}}|)\ choose\ (|V_{ESHG:(V,E)|_{Neutrosophic\ Cardinality}}| - 1)$$
$$z^2.$$

Proof. Let 5443

$$P : V_i^{EXTERNAL}, E_i, CENTER, E_j.$$

be a longest path taken a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. There's a 5444
new way to redefine as 5445

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. ■

136EXM20a **Example 40.0.9.** In the Figure (30.3), the connected Neutrosophic SuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperStar $ESHS : (V, E)$, in the Neutrosophic SuperHyperModel (30.3), is the Neutrosophic SuperHyperTotal.

Proposition 40.0.10. *Assume a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal}\\
&= \{E_a \in E_{P_i{}^{ESHG:(V,E)}},\\
&\ \forall P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}| = \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal}\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal\ SuperHyperPolynomial}\\
&= z^{\min |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&where\ \forall P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}|\\
&= \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal}\\
&= \{V_a^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}}, V_b^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperTotal\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i{}^{ESHG:(V,E)}|\, choose\ 2) = z^2.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P :\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2
\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. Then there's no at least one SuperHyperTotal. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperTotal could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

is a longest SuperHyperTotal taken from a connected Neutrosophic SuperHyperBipartite $ESHB:(V,E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

The latter is straightforward. ∎

136EXM21a **Example 40.0.11.** In the Neutrosophic Figure (30.4), the connected Neutrosophic SuperHyperBipartite $ESHB:(V,E)$, is Neutrosophic highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Neutrosophic Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperBipartite $ESHB:(V,E)$, in the Neutrosophic SuperHyperModel (30.4), is the Neutrosophic SuperHyperTotal.

Proposition 40.0.12. *Assume a connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal}\\
&=\{E_a \in E_{P_i^{ESHG:(V,E)}},\\
&\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| = \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal}\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal\ SuperHyperPolynomial}\\
&= z^{\min |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&where\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}|\\
&= \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal}\\
&= \{V_a^{EXTERNAL} \in V^{EXTERNAL}_{P_i^{ESHG:(V,E)}}, V_b^{EXTERNAL} \in V^{EXTERNAL}_{P_i^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperTotal\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i^{ESHG:(V,E)}|\, choose\ 2) = z^2.
\end{aligned}$$

Proof. Let

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

is a longest SuperHyperTotal taken from a connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$. There's a new way to redefine as

$$\begin{aligned}&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. Then there's no at least one SuperHyperTotal. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperTotal could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$\begin{aligned}&P:\\&V_1^{EXTERNAL}, E_1,\\&V_2^{EXTERNAL}, E_2\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$. The latter is straightforward. ∎

136EXM22a

Example 40.0.13. In the Figure (30.5), the connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$, is highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperMultipartite $ESHM:(V,E)$, in the Neutrosophic SuperHyperModel (30.5), is the Neutrosophic SuperHyperTotal.

Proposition 40.0.14. *Assume a connected Neutrosophic SuperHyperWheel $ESHW:(V,E)$. Then,*

$$\begin{aligned}&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal} = \{E_i, E_j \in E^*_{ESHG:(V,E)}\}.\\&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperTotal\ SuperHyperPolynomial}\\&= |i(i-1) \mid E_i \in E^*_{ESHG:(V,E)|_{Neutrosophic\ Cardinality}}|z^2.\end{aligned}$$

$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperTotal} = \{CENTER, V_j \in V_{ESHG:(V,E)}\}$.
$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperTotal\ SuperHyperPolynomial} =$
$(|V_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}|)$ *choose* $(|V_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}| - 1)$
z^2.

Proof. Let

$$P : V_i^{EXTERNAL}, E_i^*, CENTER, E_j.$$

is a longest SuperHyperTotal taken from a connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperTotal. The latter is straightforward. Then there's at least one SuperHyperTotal. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperTotal could be applied. The unique embedded SuperHyperTotal proposes some longest SuperHyperTotal excerpt from some representatives. The latter is straightforward. ∎

136EXM23a

Example 40.0.15. In the Neutrosophic Figure (30.6), the connected Neutrosophic SuperHyperWheel $NSHW : (V, E)$, is Neutrosophic highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$, in the Neutrosophic SuperHyperModel (30.6), is the Neutrosophic SuperHyperTotal.

CHAPTER 41

Neutrosophic SuperHyperConnected But As The Extensions Excerpt From Dense And Super Forms

Definition 41.0.1. (Different Neutrosophic Types of Neutrosophic SuperHyperConnected). Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperSet $V' = \{V_1, V_2, \ldots, V_s\}$ and $E' = \{E_1, E_2, \ldots, E_z\}$. Then either V' or E' is called

(i) **Neutrosophic e-SuperHyperConnected** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists E_j \in E'$, such that $V_a \in E_i, E_j$; and $\forall E_i, E_j \in E'$, such that $V_a \notin E_i, E_j$;

(ii) **Neutrosophic re-SuperHyperConnected** if $\forall E_i \in E_{ESHG:(V,E)} \setminus E'$, $\exists E_j \in E'$, such that $V_a \in E_i, E_j$; $\forall E_i, E_j \in E'$, such that $V_a \notin E_i, E_j$; and $|E_i|_{\text{NEUTROSOPIC CARDINALITY}} = |E_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(iii) **Neutrosophic v-SuperHyperConnected** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V'$, $\exists V_j \in V'$, such that $V_i, V_j \notin E_a$; and $\forall V_i, V_j \in V'$, such that $V_i, V_j \notin E_a$;

(iv) **Neutrosophic rv-SuperHyperConnected** if $\forall V_i \in E_{ESHG:(V,E)} \setminus V'$, $\exists V_j \in V'$, such that $V_i, V_j \in E_a$; $\forall V_i, V_j \in V'$, such that $V_i, V_j \notin E_a$; and $|V_i|_{\text{NEUTROSOPIC CARDINALITY}} = |V_j|_{\text{NEUTROSOPIC CARDINALITY}}$;

(v) **Neutrosophic SuperHyperConnected** if it's either of Neutrosophic e-SuperHyperConnected, Neutrosophic re-SuperHyperConnected, Neutrosophic v-SuperHyperConnected, and Neutrosophic rv-SuperHyperConnected.

Definition 41.0.2. ((Neutrosophic) SuperHyperConnected). Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$. Consider a Neutrosophic SuperHyperEdge (NSHE) $E = \{V_1, V_2, \ldots, V_s\}$. Then E is called

(i) an **Extreme SuperHyperConnected** if it's either of Neutrosophic e-SuperHyperConnected, Neutrosophic re-SuperHyperConnected, Neutrosophic v-SuperHyperConnected, and Neutrosophic rv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperEdges in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperConnected;

(ii) a **Neutrosophic SuperHyperConnected** if it's either of Neutrosophic e-SuperHyperConnected, Neutrosophic re-SuperHyperConnected, Neutrosophic v-SuperHyperConnected, and Neutrosophic rv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperConnected;

(iii) an **Extreme SuperHyperConnected SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperConnected, Neutrosophic re-SuperHyperConnected, Neutrosophic v-SuperHyperConnected, and Neutrosophic rv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperEdges of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperConnected; and the Extreme power is corresponded to its Extreme coefficient;

(iv) a **Neutrosophic SuperHyperConnected SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperConnected, Neutrosophic re-SuperHyperConnected, Neutrosophic v-SuperHyperConnected, and Neutrosophic rv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperEdges of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperConnected; and the Neutrosophic power is corresponded to its Neutrosophic coefficient;

(v) an **Extreme R-SuperHyperConnected** if it's either of Neutrosophic e-SuperHyperConnected, Neutrosophic re-SuperHyperConnected, Neutrosophic v-SuperHyperConnected, and Neutrosophic rv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the maximum Extreme cardinality of an Extreme SuperHyperSet S of high Extreme cardinality of the Extreme SuperHyperVertices in the consecutive Extreme sequence of Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperConnected;

(vi) a **Neutrosophic R-SuperHyperConnected** if it's either of Neutrosophic e-SuperHyperConnected, Neutrosophic re-SuperHyperConnected, Neutrosophic v-SuperHyperConnected, and Neutrosophic rv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperConnected;

(*vii*) an **Extreme R-SuperHyperConnected SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperConnected, Neutrosophic re-SuperHyperConnected, Neutrosophic v-SuperHyperConnected, and Neutrosophic rv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for an Extreme SuperHyperGraph $NSHG : (V, E)$ is the Extreme SuperHyperPolynomial contains the Extreme coefficients defined as the Extreme number of the maximum Extreme cardinality of the Extreme SuperHyperVertices of an Extreme SuperHyperSet S of high Extreme cardinality consecutive Extreme SuperHyperEdges and Extreme SuperHyperVertices such that they form the Extreme SuperHyperConnected; and the Extreme power is corresponded to its Extreme coefficient;

(*viii*) a **Neutrosophic SuperHyperConnected SuperHyperPolynomial** if it's either of Neutrosophic e-SuperHyperConnected, Neutrosophic re-SuperHyperConnected, Neutrosophic v-SuperHyperConnected, and Neutrosophic rv-SuperHyperConnected and $\mathcal{C}(NSHG)$ for a Neutrosophic SuperHyperGraph $NSHG : (V, E)$ is the Neutrosophic SuperHyperPolynomial contains the Neutrosophic coefficients defined as the Neutrosophic number of the maximum Neutrosophic cardinality of the Neutrosophic SuperHyperVertices of a Neutrosophic SuperHyperSet S of high Neutrosophic cardinality consecutive Neutrosophic SuperHyperEdges and Neutrosophic SuperHyperVertices such that they form the Neutrosophic SuperHyperConnected; and the Neutrosophic power is corresponded to its Neutrosophic coefficient.

136EXM1

Example 41.0.3. Assume a Neutrosophic SuperHyperGraph (NSHG) S is an ordered pair $S = (V, E)$ in the mentioned Neutrosophic Figures in every Neutrosophic items.

- On the Figure (29.1), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1 and E_3 are some empty Neutrosophic SuperHyperEdges but E_2 is a loop Neutrosophic SuperHyperEdge and E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperConnected.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected}} = \{V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected SuperHyperPolynomial}} = 3z.$$

- On the Figure (29.2), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward. E_1, E_2 and E_3 are some empty Neutrosophic SuperHyperEdges but E_4 is a Neutrosophic SuperHyperEdge. Thus in the terms of Neutrosophic SuperHyperNeighbor, there's only one Neutrosophic SuperHyperEdge, namely, E_4. The Neutrosophic SuperHyperVertex, V_3 is Neutrosophic isolated means that there's no Neutrosophic SuperHyperEdge has it as a Neutrosophic endpoint. Thus the Neutrosophic SuperHyperVertex, V_3, **is** excluded in every given Neutrosophic SuperHyperConnected.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected}} = \{V_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected SuperHyperPolynomial}} = 3z.
\end{aligned}$$

- On the Figure (29.3), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected}} = \{E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected}} = \{V_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected SuperHyperPolynomial}} = 3z.
\end{aligned}$$

- On the Figure (29.4), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected}} = \{E_1, E_2, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected SuperHyperPolynomial}} = z^3.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperConnected}} = \{V_1, V_4\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 15z^2.
\end{aligned}$$

- On the Figure (29.5), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected}} = \{E_3\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected SuperHyperPolynomial}} = 4z.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected}} = \{V_5\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.6), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperConnected}} = \{E_{i+1_{i=0}^{9}}\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperConnected SuperHyperPolynomial}} 20z^{10}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperConnected}} = \{V_{i+1_{i=0}^{9}}\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 20z^{10}.
\end{aligned}$$

- On the Figure (29.7), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_{12}, E_{13}, E_{14}\}.$$

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_{12}, V_{13}, V_{14}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = z^3.$$

- On the Figure (29.8), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_{12}, V_{13}, V_{14}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = 3 \times 4 \times 4z^3.$$

- On the Figure (29.9), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperConnected}} = \{E_{i+1_{i=0}^{9}}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperConnected SuperHyperPolynomial}} 10z^{10}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected}} = \{V_{i+1_{i=11}^{19}}, V_{22}\}.$$
$$\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected SuperHyperPolynomial}} = 20z^{10}.$$

- On the Figure (29.10), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_{12}, V_{13}, V_{14}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = 3 \times 4 \times 4z^3.$$

- On the Figure (29.11), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_1, E_6, E_7, E_8\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = 2z^4.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_1, V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 3z^2.$$

- On the Figure (29.12), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_1, E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = 5z^2.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_1, V_{i_{i=1}^{8}}^{i \neq 4,5,6}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^5.$$

- On the Figure (29.13), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_3, E_9, E_6\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = 3z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_1, V_5\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = 3z^2.$$

- On the Figure (29.14), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_2\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = z.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_1\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = z.$$

- On the Figure (29.15), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_2, V_3, V_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^3.$$

- On the Figure (29.16), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_2, V_6, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = 4 \times 3z^3.$$

- On the Figure (29.17), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_2, E_3, E_4\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^3.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_1, V_2, V_6, V_{17}\}.$$
$$\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 4 \times 3z^4.$$

- On the Figure (29.18), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_2, E_3, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^3.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_1, V_2, V_6, V_{17}\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}} =\\
&2 \times 4 \times 3z^4.
\end{aligned}$$

- On the Figure (29.19), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperConnected}} = \{E_{i+2_{i=0^{11}}}\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic Quasi-SuperHyperConnected SuperHyperPolynomial}} = 11z^{10}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperConnected}} = \{V_{i+2_{i=0^{11}}}\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-Quasi-SuperHyperConnected SuperHyperPolynomial}} = 11z^{10}.
\end{aligned}$$

- On the Figure (29.20), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected}} = \{E_6\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme SuperHyperConnected SuperHyperPolynomial}} = 10z.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected}} = \{V_1\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-SuperHyperConnected SuperHyperPolynomial}} = z.
\end{aligned}$$

- On the Figure (29.21), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected}} = \{E_2\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic SuperHyperConnected SuperHyperPolynomial}} = z.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected}} = \{V_1\}.\\
&\mathcal{C}(NSHG)_{\text{Neutrosophic R-SuperHyperConnected SuperHyperPolynomial}} = 10z.
\end{aligned}$$

- On the Figure (29.22), the Neutrosophic SuperHyperNotion, namely, Neutrosophic SuperHyperConnected, is up. The Neutrosophic Algorithm is Neutrosophicly straightforward.

$$\begin{aligned}
&\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected}} = \{E_3, E_4\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme Quasi-SuperHyperConnected SuperHyperPolynomial}} = z^2.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected}} = \{V_3, V_{10}, V_6\}.\\
&\mathcal{C}(NSHG)_{\text{Extreme R-Quasi-SuperHyperConnected SuperHyperPolynomial}}\\
&= 3 \times 6z^3.
\end{aligned}$$

The previous Neutrosophic approach apply on the upcoming Neutrosophic results on Neutrosophic SuperHyperClasses.

Proposition 41.0.4. *Assume a connected Neutrosophic SuperHyperPath $ESHP:(V,E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperConnected} =\\
&= \{E_i\}_{i=1}^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\
&= z^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}Quasi\text{-}SuperHyperConnected}\\
&= \{V_i^{EXTERNAL}\}_{i=1}^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}Quasi\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\
&= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}
\end{aligned}
$$

Proof. Let

$$
\begin{aligned}
&P:\\
&V_2^{EXTERNAL}, E_2,\\
&V_3^{EXTERNAL}, E_3,\\
&\ldots,\\
&E_{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}-1}, V^{EXTERNAL}{}_{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}-1}.
\end{aligned}
$$

be a longest path taken from a connected Neutrosophic SuperHyperPath $ESHP:(V,E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. ■

136EXM18a

Example 41.0.5. In the Figure (30.1), the connected Neutrosophic SuperHyperPath $ESHP:(V,E)$, is highlighted and featured. The Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.1), is the SuperHyperConnected.

Proposition 41.0.6. *Assume a connected Neutrosophic SuperHyperCycle $ESHC:(V,E)$. Then*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperConnected} =\\
&= \{E_i\}_{i=1}^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\
&= (|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} - 1)\\
&z^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}Quasi\text{-}SuperHyperConnected}
\end{aligned}
$$

$$= \{V_i^{EXTERNAL}\}_{i=1}^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}Quasi\text{-}SuperHyperConnected\ SuperHyperPolynomial}$$
$$= \prod |V^{EXTERNAL}{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z^{|E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}-2}$$

Proof. Let

$$P:$$
$$V_2^{EXTERNAL}, E_2,$$
$$V_3^{EXTERNAL}, E_3,$$
$$\ldots,$$
$$E_{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}-1}, V^{EXTERNAL}{}_{|E_{ESHG:(V,E)}|_{\text{Neutrosophic Cardinality}}-1}.$$

be a longest path taken from a connected Neutrosophic SuperHyperCycle $ESHC : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. ■

136EXM19a

Example 41.0.7. In the Figure (30.2), the connected Neutrosophic SuperHyperCycle $NSHC : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, in the Neutrosophic SuperHyperModel (30.2), is the Neutrosophic SuperHyperConnected.

Proposition 41.0.8. *Assume a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. Then*

$$\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperConnected} = \{E_i \in E_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperConnected\ SuperHyperPolynomial}$$
$$= |i \mid E_i \in |E_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality} z.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperConnected} = \{CENTER \in V_{ESHG:(V,E)}\}.$$
$$\mathcal{C}(NSHG)_{Neutrosophic\ R\text{-}SuperHyperConnected\ SuperHyperPolynomial} = z.$$

Proof. Let

$$P : V_i^{EXTERNAL}, E_i, CENTER, E_j.$$

be a longest path taken a connected Neutrosophic SuperHyperStar $ESHS : (V, E)$. There's a new way to redefine as

$$V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv$$
$$\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. ■

136EXM20a

Example 41.0.9. In the Figure (30.3), the connected Neutrosophic SuperHyperStar $ESHS : (V, E)$, is highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperStar $ESHS : (V, E)$, in the Neutrosophic SuperHyperModel (30.3), is the Neutrosophic SuperHyperConnected.

Proposition 41.0.10. *Assume a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperConnected}\\
&= \{E_a \in E_{P_i{}^{ESHG:(V,E)}},\\
&\ \forall P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}| = \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\
&= z^{\min |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&where\ \forall P_i{}^{ESHG:(V,E)},\ |P_i{}^{ESHG:(V,E)}|\\
&= \min_i |P_i{}^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperConnected}\\
&= \{V_a^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}}, V_b^{EXTERNAL} \in V^{EXTERNAL}_{P_i{}^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i{}^{ESHG:(V,E)}| choose\ 2) = z^2.
\end{aligned}$$

Proof. Let

$$\begin{aligned}
&P :\\
&V_1^{EXTERNAL}, E_1,\\
&V_2^{EXTERNAL}, E_2
\end{aligned}$$

is a longest path taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. There's a new way to redefine as

$$\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv\\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. Then there's no at least one SuperHyperConnected. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperConnected could be applied. There are only two SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$P :$$

$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2$$

is a longest SuperHyperConnected taken from a connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$P :$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2$$

The latter is straightforward. ■

136EXM21a

Example 41.0.11. In the Neutrosophic Figure (30.4), the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, is Neutrosophic highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Neutrosophic Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperBipartite $ESHB : (V, E)$, in the Neutrosophic SuperHyperModel (30.4), is the Neutrosophic SuperHyperConnected.

Proposition 41.0.12. *Assume a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. Then*

$$\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperConnected}\\
&= \{E_a \in E_{P_i^{ESHG:(V,E)}},\\
&\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}| = \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ Quasi\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\
&= z^{\min |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|}\\
&where\ \forall P_i^{ESHG:(V,E)},\ |P_i^{ESHG:(V,E)}|\\
&= \min_i |P_i^{ESHG:(V,E)} \in P^{ESHG:(V,E)}|\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperConnected}\\
&= \{V_a^{EXTERNAL} \in V^{EXTERNAL}_{P_i^{ESHG:(V,E)}}, V_b^{EXTERNAL} \in V^{EXTERNAL}_{P_i^{ESHG:(V,E)}},\ i \neq j\}.\\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperConnected\ SuperHyperPolynomial}\\
&= \sum_{|V^{EXTERNAL}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}} = (\sum_{i=|P^{ESHG:(V,E)}|} (|P_i^{ESHG:(V,E)}| choose\ 2) = z^2.
\end{aligned}$$

Proof. Let

$$P :$$
$$V_1^{EXTERNAL}, E_1,$$
$$V_2^{EXTERNAL}, E_2$$

is a longest SuperHyperConnected taken from a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. Then there's no at least one SuperHyperConnected. Thus the notion of quasi may be up but the SuperHyperNotions based on SuperHyperConnected could be applied. There are only z' SuperHyperParts. Thus every SuperHyperPart could have one SuperHyperVertex as the representative in the

$$
\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2
\end{aligned}
$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. Thus only some SuperHyperVertices and only minimum-Neutrosophic-of-SuperHyperPart SuperHyperEdges are attained in any solution

$$
\begin{aligned}
&P : \\
&V_1^{EXTERNAL}, E_1, \\
&V_2^{EXTERNAL}, E_2
\end{aligned}
$$

is a longest path taken from a connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$. The latter is straightforward. ■

136EXM22a

Example 41.0.13. In the Figure (30.5), the connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$, is highlighted and Neutrosophic featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous Neutrosophic result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperMultipartite $ESHM : (V, E)$, in the Neutrosophic SuperHyperModel (30.5), is the Neutrosophic SuperHyperConnected.

Proposition 41.0.14. *Assume a connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$. Then,*

$$
\begin{aligned}
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperConnected} = \{E_i \in E^*_{ESHG:(V,E)}\}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ SuperHyperConnected\ SuperHyperPolynomial} \\
&= |i \mid E_i \in |E^*{}_{ESHG:(V,E)}|_{Neutrosophic\ Cardinality}|z. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperConnected} = \{CENTER \in V_{ESHG:(V,E)}\}. \\
&\mathcal{C}(NSHG)_{Neutrosophic\ V\text{-}SuperHyperConnected\ SuperHyperPolynomial} = z.
\end{aligned}
$$

Proof. Let

$$P : V^{EXTERNAL}{}_i, E^*{}_i, CENTER, E_j.$$

is a longest SuperHyperConnected taken from a connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$. There's a new way to redefine as

$$
\begin{aligned}
&V_i^{EXTERNAL} \sim V_j^{EXTERNAL} \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ V_i^{EXTERNAL}, V_j^{EXTERNAL} \in E_z \equiv \\
&\exists! E_z \in E_{ESHG:(V,E)},\ \{V_i^{EXTERNAL}, V_j^{EXTERNAL}\} \subseteq E_z.
\end{aligned}
$$

The term "EXTERNAL" implies $|N(V_i^{EXTERNAL})| \geq |N(V_j)|$ where V_j is corresponded to $V_i^{EXTERNAL}$ in the literatures of SuperHyperConnected. The latter is straightforward. Then there's at least one SuperHyperConnected. Thus the notion of quasi isn't up and the SuperHyperNotions based on SuperHyperConnected could be applied. The unique embedded SuperHyperConnected proposes some longest SuperHyperConnected excerpt from some representatives. The latter is straightforward. ∎

136EXM23a **Example 41.0.15.** In the Neutrosophic Figure (30.6), the connected Neutrosophic SuperHyperWheel $NSHW : (V, E)$, is Neutrosophic highlighted and featured. The obtained Neutrosophic SuperHyperSet, by the Algorithm in previous result, of the Neutrosophic SuperHyperVertices of the connected Neutrosophic SuperHyperWheel $ESHW : (V, E)$, in the Neutrosophic SuperHyperModel (30.6), is the Neutrosophic SuperHyperConnected.

Bibliography

HG1 [1] Henry Garrett, "*Properties of SuperHyperGraph and Neutrosophic SuperHyperGraph*", Neutrosophic Sets and Systems 49 (2022) 531-561 (doi: 10.5281/zenodo.6456413). (http://fs.unm.edu/NSS/NeutrosophicSuperHyperGraph34.pdf). (https://digitalrepository.unm.edu/nss_journal/vol49/iss1/34).

HG2 [2] Henry Garrett, "*Neutrosophic Co-degree and Neutrosophic Degree alongside Chromatic Numbers in the Setting of Some Classes Related to Neutrosophic Hypergraphs*", J Curr Trends Comp Sci Res 1(1) (2022) 06-14.

HG3 [3] Henry Garrett, "*Super Hyper Dominating and Super Hyper Resolving on Neutrosophic Super Hyper Graphs and Their Directions in Game Theory and Neutrosophic Super Hyper Classes*", J Math Techniques Comput Math 1(3) (2022) 242-263.

HG4 [4] Garrett, Henry. "*0039 | Closing Numbers and SupeV-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph.*" CERN European Organization for Nuclear Research - Zenodo, Nov. 2022. CERN European Organization for Nuclear Research, https://doi.org/10.5281/zenodo.6319942. https://oa.mg/work/10.5281/zenodo.6319942

HG5 [5] Garrett, Henry. "*0049 | (Failed)1-Zero-Forcing Number in Neutrosophic Graphs.*" CERN European Organization for Nuclear Research - Zenodo, Feb. 2022. CERN European Organization for Nuclear Research, https://doi.org/10.13140/rg.2.2.35241.26724. https://oa.mg/work/10.13140/rg.2.2.35241.26724

HG6 [6] Henry Garrett, "*Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer's Recognition as the Model in The Setting of (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010308 (doi: 10.20944/preprints202301.0308.v1).

HG7 [7] Henry Garrett, "*Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Neutrosophic Failed SuperHyperClique inside Neutrosophic SuperHyperGraphs Titled Cancer's Recognition*", Preprints 2023, 2023010282 (doi: 10.20944/preprints202301.0282.v1).

HG8 [8] Henry Garrett, "*Neutrosophic Version Of Separates Groups Of Cells In Cancer's Recognition On Neutrosophic SuperHyperGraphs*", Preprints 2023, 2023010267 (doi: 10.20944/preprints202301.0267.v1).

HG9 [9] Henry Garrett, "*The Shift Paradigm To Classify Separately The Cells and Affected Cells Toward The Totality Under Cancer's Recognition By New Multiple Definitions On the Sets Polynomials Alongside Numbers In The (Neutrosophic) SuperHyperMatching Theory Based on SuperHyperGraph and Neutrosophic SuperHyperGraph*", Preprints 2023, 2023010265 (doi: 10.20944/preprints202301.0265.v1).

HG10 [10] Henry Garrett, "*Breaking the Continuity and Uniformity of Cancer In The Worst Case of Full Connections With Extreme Failed SuperHyperClique In Cancer's Recognition Applied in (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010262,(doi: 10.20944/preprints202301.0262.v1).

HG11 [11] Henry Garrett, "*Neutrosophic Failed SuperHyperStable as the Survivors on the Cancer's Neutrosophic Recognition Based on Uncertainty to All Modes in Neutrosophic SuperHyperGraphs*", Preprints 2023, 2023010240 (doi: 10.20944/preprints202301.0240.v1).

HG12 [12] Henry Garrett, "*Extremism of the Attacked Body Under the Cancer's Circumstances Where Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010224, (doi: 10.20944/preprints202301.0224.v1).

HG13 [13] Henry Garrett, "*(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1).

HG14 [14] Henry Garrett, "*Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints*", Preprints 2023, 2023010088 (doi: 10.20944/preprints202301.0088.v1).

HG15 [15] Henry Garrett, "*Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond*", Preprints 2023, 2023010044

HG16 [16] Henry Garrett, "*(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs*", Preprints 2023, 2023010043 (doi: 10.20944/preprints202301.0043.v1).

HG17 [17] Henry Garrett, *"Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs"*, Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1).

HG18 [18] Henry Garrett, *"Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints"*, Preprints 2023, 2023010088 (doi: 10.20944/preprints202301.0088.v1).

HG19 [19] Henry Garrett, *"(Neutrosophic) SuperHyperModeling of Cancer's Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances"*, Preprints 2022, 2022120549 (doi: 10.20944/preprints202212.0549.v1).

HG20 [20] Henry Garrett, "*(Neutrosophic) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer's Recognitions And Related (Neutrosophic) SuperHyperClasses*", Preprints 2022, 2022120540 (doi: 10.20944/preprints202212.0540.v1).

HG21 [21] Henry Garrett, "*SuperHyperGirth on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer's Recognitions*", Preprints 2022, 2022120500 (doi: 10.20944/preprints202212.0500.v1).

HG22 [22] Henry Garrett, "*Some SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs and SuperHyperGraphs Alongside Applications in Cancer's Treatments*", Preprints 2022, 2022120324 (doi: 10.20944/preprints202212.0324.v1).

HG23 [23] Henry Garrett, "*SuperHyperDominating and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses*", Preprints 2022, 2022110576 (doi: 10.20944/preprints202211.0576.v1).

HG24 [24] Henry Garrett,"*SuperHyperMatching By (V-)Definitions And Polynomials To Monitor Cancer's Recognition In Neutrosophic SuperHyperGraphs*", ResearchGate 2023,(doi: 10.13140/RG.2.2.35061.65767).

HG25 [25] Henry Garrett,"*The Focus on The Partitions Obtained By Parallel Moves In The Cancer's Extreme Recognition With Different Types of Extreme SuperHyperMatching Set and Polynomial on (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.18494.15680).

HG26 [26] Henry Garrett,"*Extreme Failed SuperHyperClique Decides the Failures on the Cancer's Recognition in the Perfect Connections of Cancer's Attacks By SuperHyperModels Named (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.32530.73922).

HG27 [27] Henry Garrett,"*Indeterminacy On The All Possible Connections of Cells In Front of Cancer's Attacks In The Terms of Neutrosophic Failed SuperHyperClique on Cancer's Recognition called Neutrosophic SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.15897.70243).

HG28 [28] Henry Garrett,"*Perfect Directions Toward Idealism in Cancer's Neutrosophic Recognition Forwarding Neutrosophic SuperHyperClique on Neutrosophic SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.30092.80004).

HG29 [29] Henry Garrett,"*Demonstrating Complete Connections in Every Embedded Regions and Sub-Regions in the Terms of Cancer's Recognition and (Neutrosophic) SuperHyperGraphs With (Neutrosophic) SuperHyperClique*", ResearchGate 2023, (doi: 10.13140/RG.2.2.23172.19849).

HG30 [30] Henry Garrett,"*Different Neutrosophic Types of Neutrosophic Regions titled neutrosophic Failed SuperHyperStable in Cancer's Neutrosophic Recognition modeled in the Form of Neutrosophic SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.17385.36968).

HG31 [31] Henry Garrett, "*Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs*", ResearchGate 2023, (doi: 10.13140/RG.2.2.28945.92007).

HG32 [32] Henry Garrett, "*Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints*", ResearchGate 2023, (doi: 10.13140/RG.2.2.11447.80803).

HG33 [33] Henry Garrett, “*(Neutrosophic) SuperHyperStable on Cancer’s Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs*”, ResearchGate 2023, (doi: 10.13140/RG.2.2.35774.77123).

HG34 [34] Henry Garrett, “*Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer’s Neutrosophic Recognition And Beyond*”, ResearchGate 2022, (doi: 10.13140/RG.2.2.36141.77287).

HG35 [35] Henry Garrett, “*(Neutrosophic) 1-Failed SuperHyperForcing in Cancer’s Recognitions And (Neutrosophic) SuperHyperGraphs*”, ResearchGate 2022, (doi: 10.13140/RG.2.2.29430.88642).

HG36 [36] Henry Garrett, “*Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer’s Recognitions And (Neutrosophic) SuperHyperGraphs*”, ResearchGate 2022, (doi: 10.13140/RG.2.2.11369.16487).

HG37 [37] Henry Garrett, *“Basic Neutrosophic Notions Concerning SuperHyperDominating and Neutrosophic SuperHyperResolving in SuperHyperGraph”*, ResearchGate 2022 (doi: 10.13140/RG.2.2.29173.86244).

HG38 [38] Henry Garrett, “*Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG)*”, ResearchGate 2022 (doi: 10.13140/RG.2.2.25385.88160).

HG39 [39] Henry Garrett, (2022). “*Beyond Neutrosophic Graphs*”, Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 979-1-59973-725-6 (http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf).

HG40 [40] Henry Garrett, (2022). “*Neutrosophic Duality*”, Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (http://fs.unm.edu/NeutrosophicDuality.pdf).

CHAPTER 42

Books' Contributions

"Books' Contributions": | Featured Threads
| Book #108
| Title: SuperHyperDomination
#Latest_Updates
#The_Links
| Available at WordPress Preprints_org ResearchGate Scribd academia ZENODO_ORG Twitter LinkedIn Amazon googlebooks GooglePlay
–

#Latest_Updates

#The_Links

| Book #108

|Title: SuperHyperDomination

| Available at WordPress ResearchGate Scribd academia ZENODO_ORG Twitter LinkedIn Amazon googlebooks GooglePlay

–

| Publisher |
(Paperback): https://www.amazon.com/dp/-
(Hardcover): https://www.amazon.com/dp/-
(Kindle Edition): https://www.amazon.com/dp/-

–

| ISBN |
(Paperback): -
(Hardcover): -
(Kindle Edition): CC BY-NC-ND 4.0

–

| Print length |
(Paperback): - pages
(Hardcover): - pages
(Kindle Edition): - pages
(E-Book): 418 pages

–

#Latest_Updates

#The_Links

| ResearchGate: https://www.researchgate.net/publication/-

| WordPress: https://drhenrygarrett.wordpress.com/2023/02/18/SuperHyperDomination/

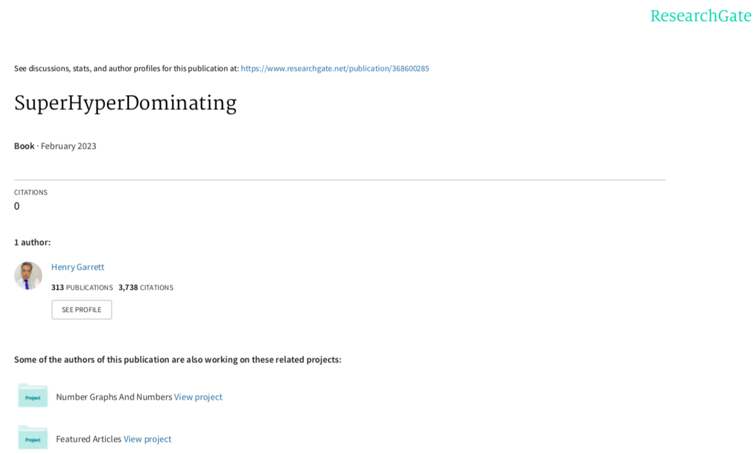
@Scribd: https://www.scribd.com/document/-

| academia: https://www.academia.edu/-

| ZENODO_ORG: https://zenodo.org/record/-

| googlebooks: https://books.google.com/books/about?id=-

| GooglePlay: https://play.google.com/store/books/details?id=-



ResearchGate

See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/368600285

SuperHyperDominating

Book · February 2023

CITATIONS
0

1 author:

Henry Garrett
313 PUBLICATIONS 3,738 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:

Number Graphs And Numbers View project

Featured Articles View project

Figure 42.1: “#108th Book” || SuperHyperDomination February 2023 License: CC BY-NC-ND 4.0 Print length: 418 pages Project: Neutrosophic SuperHyperGraphs and SuperHyperGraphs

SuperHyperDomination (Published Version)

The Link:

https://drhenrygarrett.wordpress.com/2023/02/18/SuperHyperDomination/

–

Posted by Dr. Henry Garrett

February 18, 2023

Posted in 0108 | SuperHyperDomination

Tags:
Applications, Applied Mathematics, Applied Research, Cancer, Cancer’s Recognitions, Combinatorics, Edge, Edges, Graph Theory, Graphs, Latest Research, Literature Reviews, Modeling, Neutrosophic Graph, Neutrosophic Graph Theory, Neutrosophic Science, Neutrosophic SuperHyperClasses, Neutrosophic SuperHyperGraph, Neutrosophic SuperHyperGraph Theory, neutrosophic SuperHyperGraphs, Neutrosophic SuperHyperDomination, Open Problems, Open Questions, Problems, Pure Math, Pure Mathematics, Questions, Real-World Applications, Recent Research, Recognitions, Research, scientific research Article, scientific research Articles, scientific research Book, scientific research Chapter, scientific research Chapters, Review, SuperHyperClasses, SuperHyperEdges, SuperHyperGraph, SuperHyperGraph Theory, SuperHyperGraphs, SuperHyperDomination, SuperHyperModeling, SuperHyperVertices, Theoretical Research, Vertex, Vertices.

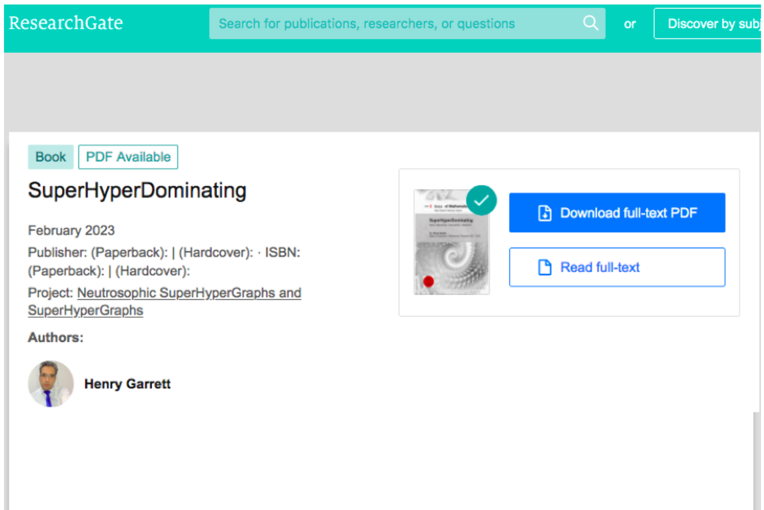


Figure 42.2: "#108th Book" || SuperHyperDomination February 2023 License: CC BY-NC-ND 4.0 Print length: 418 pages Project: Neutrosophic SuperHyperGraphs and SuperHyperGraphs

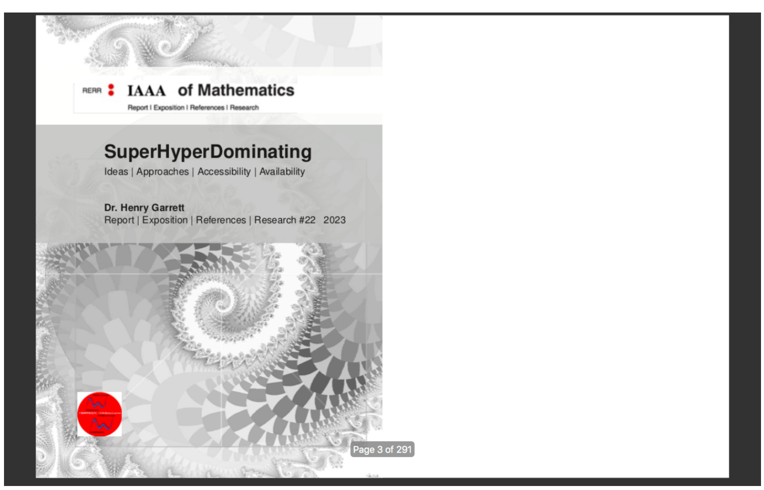


Figure 42.3: "#108th Book" || SuperHyperDomination February 2023 License: CC BY-NC-ND 4.0 Print length: 418 pages Project: Neutrosophic SuperHyperGraphs and SuperHyperGraphs

In this scientific research book, there are some scientific research chapters on "Extreme SuperHyperDomination" and "Neutrosophic SuperHyperDomination" about some researches on Extreme SuperHyperDomination and neutrosophic SuperHyperDomination.

CHAPTER 43

“SuperHyperGraph-Based Books”: | Featured Tweets

“SuperHyperGraph-Based Books”: | Featured Tweets

Project

ResearchGate

Neutrosophic SuperHyperGraphs and SuperHyperGraphs

Henry Garrett

Goal: The aim of this project is to contribute some research articles and some research books in that subject. Finding tools and notions to define in this structure to make this structure more understandable. Clarifications are presented in oversimplified ways. There are well-defined efforts to get more sensible results.

Sometimes, I post one part of book at my website. After that, I put that link in this project. Some research articles and some research books are excerpt from these posts.

Instance updates are on my accounts, simultaneously [Website, Scribd, Twitter, Amazon, Academia, LinkedIn, Twitter, ResearchGate.].

I've listed my accounts below.
-My website [Covering all my contributions containing articles and books as free access to download with PDF extension and more]: https://drhenrygarrett.wordpress.com

-Amazon [Some of my all books, here]: https://www.amzn.com/author/drhenrygarrett

-Twitter: @DrHenryGarrett (www.twitter.com/DrHenryGarrett)

-ResearchGate: https://www.researchgate.net/profile/Henry-Garrett-2

-Academia: https://independent.academia.edu/drhenrygarrett/

-Scribd: https://www.scribd.com/user/596815491/Henry-Garrett

-Scholar: https://scholar.google.com/citations?hl=en&user=SUjFCmcAAAAJ&view_op=list_works&sortby=pubdate

-LinkedIn: https://www.linkedin.com/in/drhenrygarrett/

Figure 43.1: "SuperHyperGraph-Based Books": | Featured Tweets

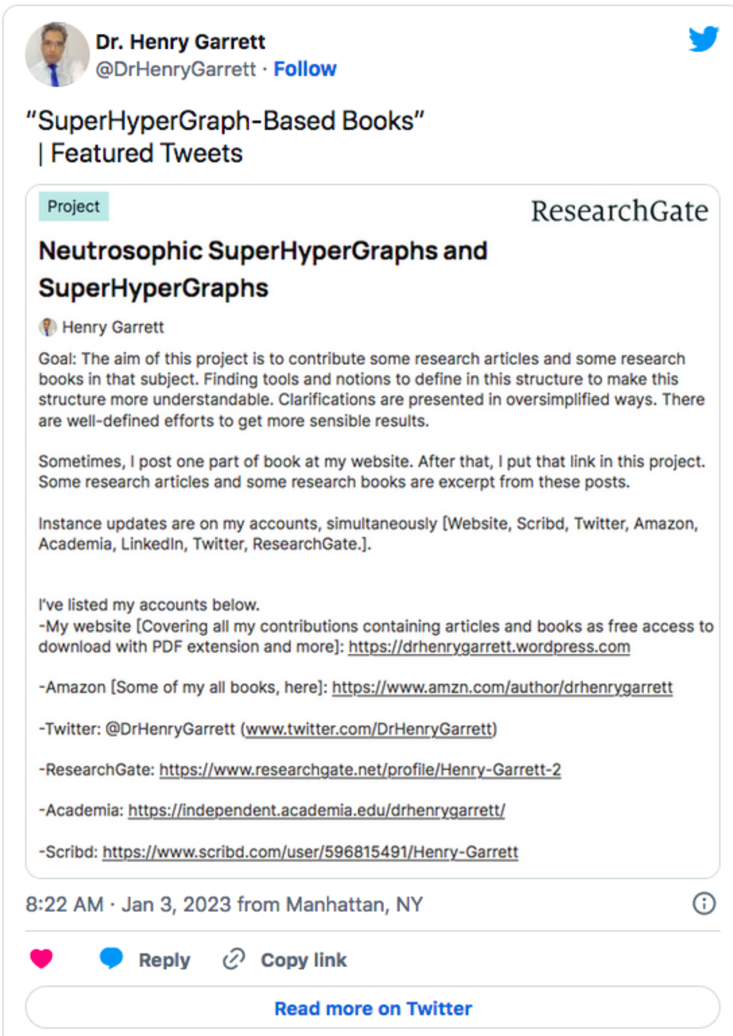


Figure 43.2: "SuperHyperGraph-Based Books": | Featured Tweets

Figure 43.3: "SuperHyperGraph-Based Books": | Featured Tweets #69

Figure 43.4: "SuperHyperGraph-Based Books": | Featured Tweets #69

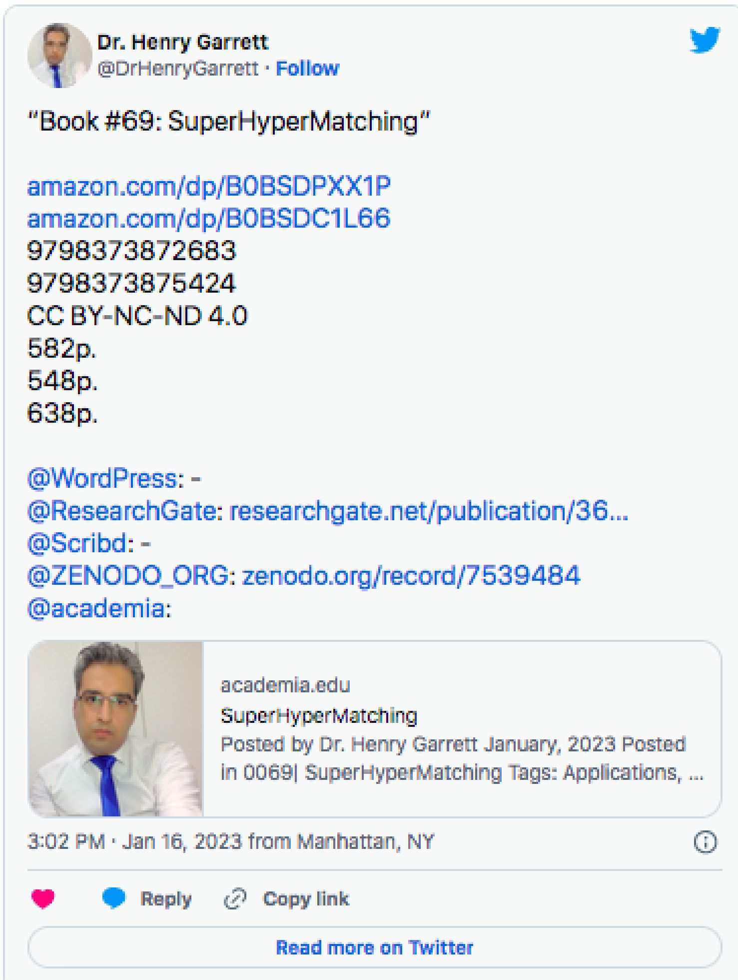
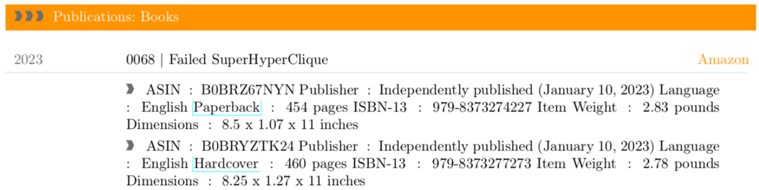


Figure 43.5: "SuperHyperGraph-Based Books": | Featured Tweets #69

Figure 43.6: "SuperHyperGraph-Based Books": | Featured Tweets #68

Figure 43.7: "SuperHyperGraph-Based Books": | Featured Tweets #68

Figure 43.8: "SuperHyperGraph-Based Books": | Featured Tweets #68



Publications: Books

2023 0068 | Failed SuperHyperClique Amazon

- ASIN : B0BRZ67NYN Publisher : Independently published (January 10, 2023) Language : English Paperback : 454 pages ISBN-13 : 979-8373274227 Item Weight : 2.83 pounds Dimensions : 8.5 x 1.07 x 11 inches
- ASIN : B0BRYZTK24 Publisher : Independently published (January 10, 2023) Language : English Hardcover : 460 pages ISBN-13 : 979-8373277273 Item Weight : 2.78 pounds Dimensions : 8.25 x 1.27 x 11 inches

Figure 43.9: "SuperHyperGraph-Based Books": | Featured Tweets #68

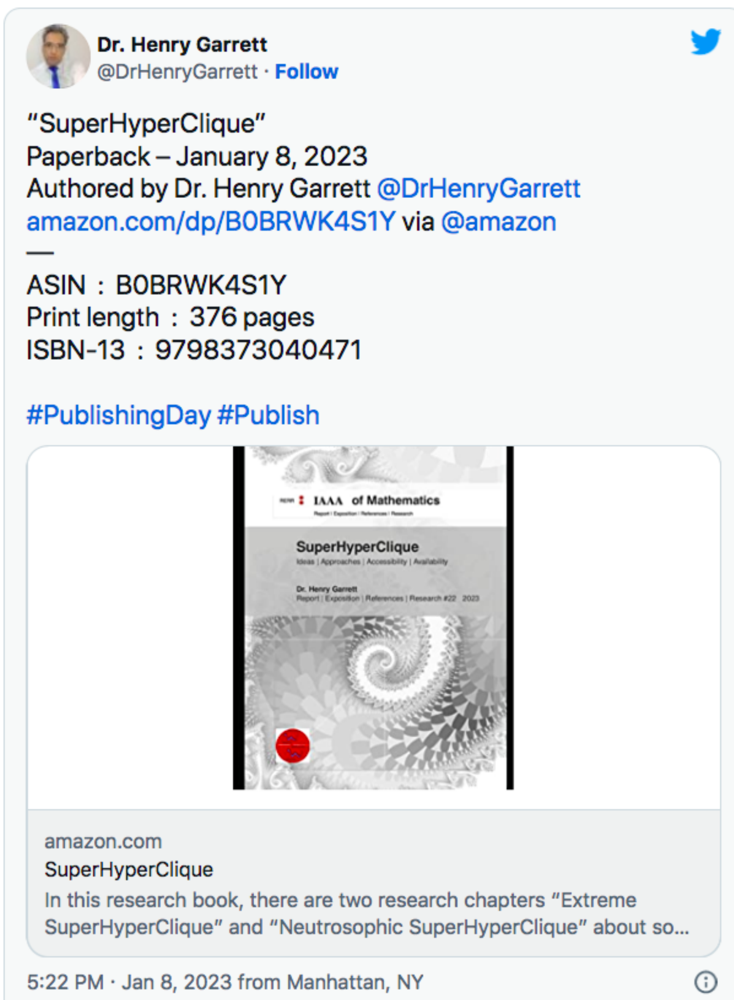
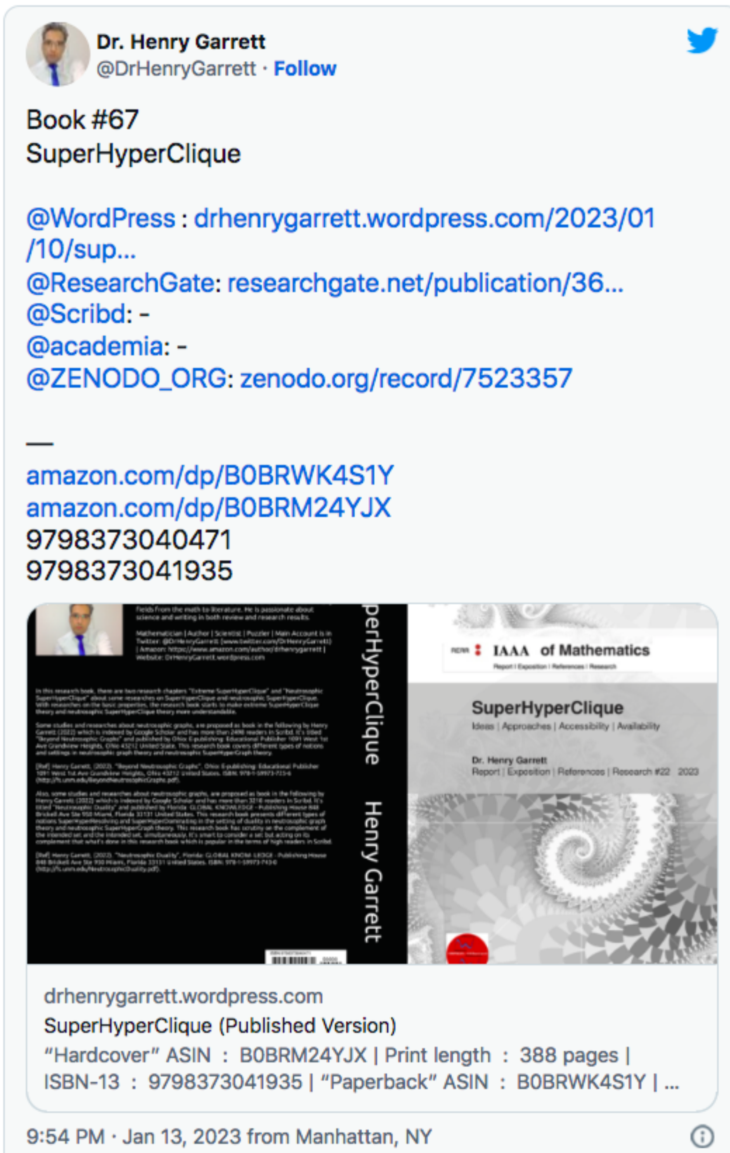


Figure 43.10: "SuperHyperGraph-Based Books": | Featured Tweets #67

Figure 43.11: "SuperHyperGraph-Based Books": | Featured Tweets #67



Dr. Henry Garrett
@DrHenryGarrett · Follow

Book #67
SuperHyperClique

@WordPress : drhenrygarrett.wordpress.com/2023/01/10/sup...
@ResearchGate: researchgate.net/publication/36...
@Scribd: -
@academia: -
@ZENODO_ORG: zenodo.org/record/7523357

—
amazon.com/dp/B0BRWK4S1Y
amazon.com/dp/B0BRM24YJX
9798373040471
9798373041935

drhenrygarrett.wordpress.com
SuperHyperClique (Published Version)
"Hardcover" ASIN : B0BRM24YJX | Print length : 388 pages | ISBN-13 : 9798373041935 | "Paperback" ASIN : B0BRWK4S1Y | ...

9:54 PM · Jan 13, 2023 from Manhattan, NY

Figure 43.12: "SuperHyperGraph-Based Books": | Featured Tweets #67

Publications: Books

2023 0067 | SuperHyperClique Amazon

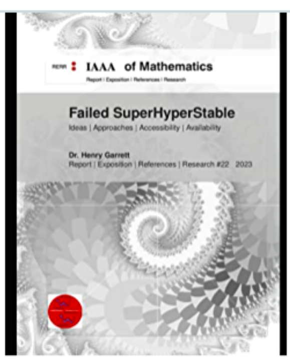
- ASIN : B0BRWK4S1Y Publisher : Independently published (January 8, 2023) Language : English Paperback : 376 pages ISBN-13 : 979-8373040471 Item Weight : 2.36 pounds Dimensions : 8.5 x 0.89 x 11 inches
- ASIN : B0BRM24YJX Publisher : Independently published (January 8, 2023) Language : English Hardcover : 388 pages ISBN-13 : 979-8373041935 Item Weight : 2.36 pounds Dimensions : 8.25 x 1.1 x 11 inches

Figure 43.13: "SuperHyperGraph-Based Books": | Featured Tweets #67

Dr. Henry Garrett
@DrHenryGarrett · Follow

"Failed SuperHyperStable"
Paperback – January 4, 2023
Authored by Dr. Henry Garrett @DrHenryGarrett
amazon.com/dp/B0BRNG7DC8 via @amazon
—
ASIN : B0BRNG7DC8
Print length : 304 pages
ISBN-13 : 9798372597976

#PublishingDay #Publish



amazon.com
Failed SuperHyperStable
In this research book, there are two research chapters "Extreme Failed SuperHyperStable" and "Neutrosophic Failed SuperHyperStable" ...

11:22 PM · Jan 5, 2023 from Manhattan, NY

Figure 43.14: "SuperHyperGraph-Based Books": | Featured Tweets #66

Figure 43.15: "SuperHyperGraph-Based Books": | Featured Tweets #66

Figure 43.16: "SuperHyperGraph-Based Books": | Featured Tweets #66

Figure 43.17: "SuperHyperGraph-Based Books": | Featured Tweets #66

Publications: Books

2023 | 0066 | Failed SuperHyperStable | Amazon

- ASIN : B0BRNG7DC8 Publisher : Independently published (January 4, 2023) Language : English Paperback : 304 pages ISBN-13 : 979-8372597976 Item Weight : 1.93 pounds Dimensions : 8.5 x 0.72 x 11 inches
- ASIN : B0BRLVN39L Publisher : Independently published (January 4, 2023) Language : English Hardcover : 306 pages ISBN-13 : 979-8372599765 Item Weight : 1.89 pounds Dimensions : 8.25 x 0.91 x 11 inches

Figure 43.18: "SuperHyperGraph-Based Books": | Featured Tweets #66

Figure 43.19: “SuperHyperGraph-Based Books”: | Featured Tweets #65

Figure 43.20: "SuperHyperGraph-Based Books": | Featured Tweets #65

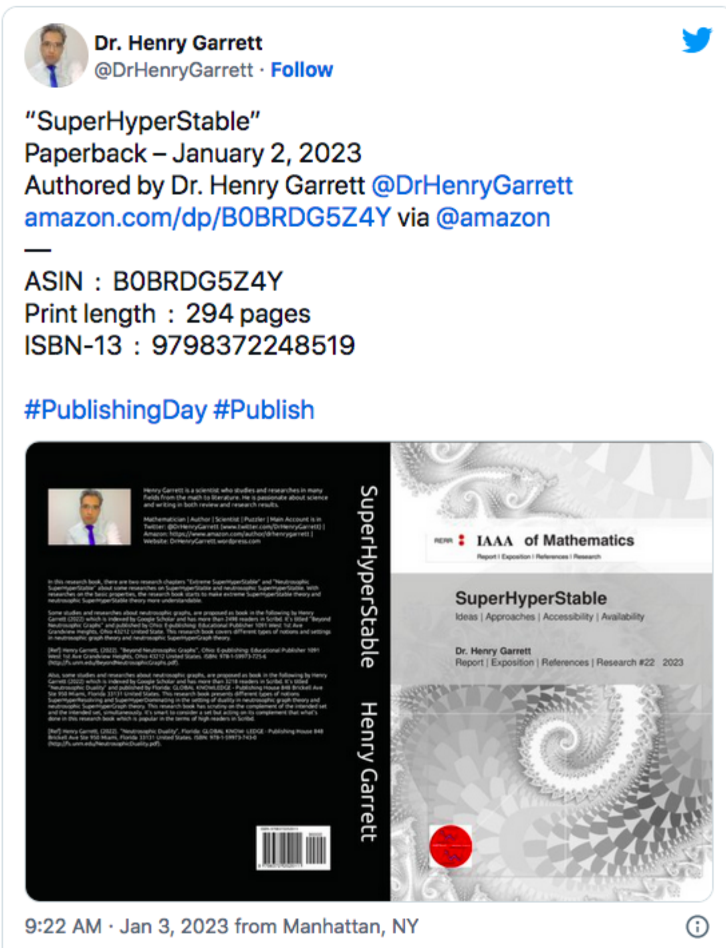


Figure 43.21: "SuperHyperGraph-Based Books": | Featured Tweets #65

Figure 43.22: "SuperHyperGraph-Based Books": | Featured Tweets #65

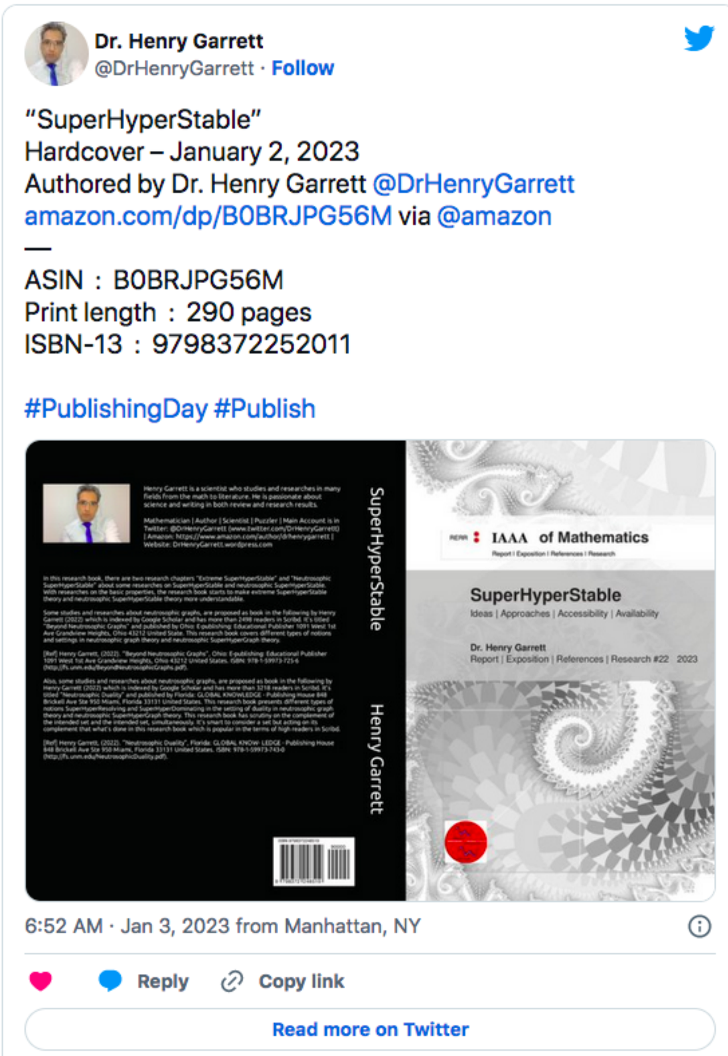


Figure 43.23: "SuperHyperGraph-Based Books": | Featured Tweets #65

Figure 43.24: "SuperHyperGraph-Based Books": | Featured Tweets #65

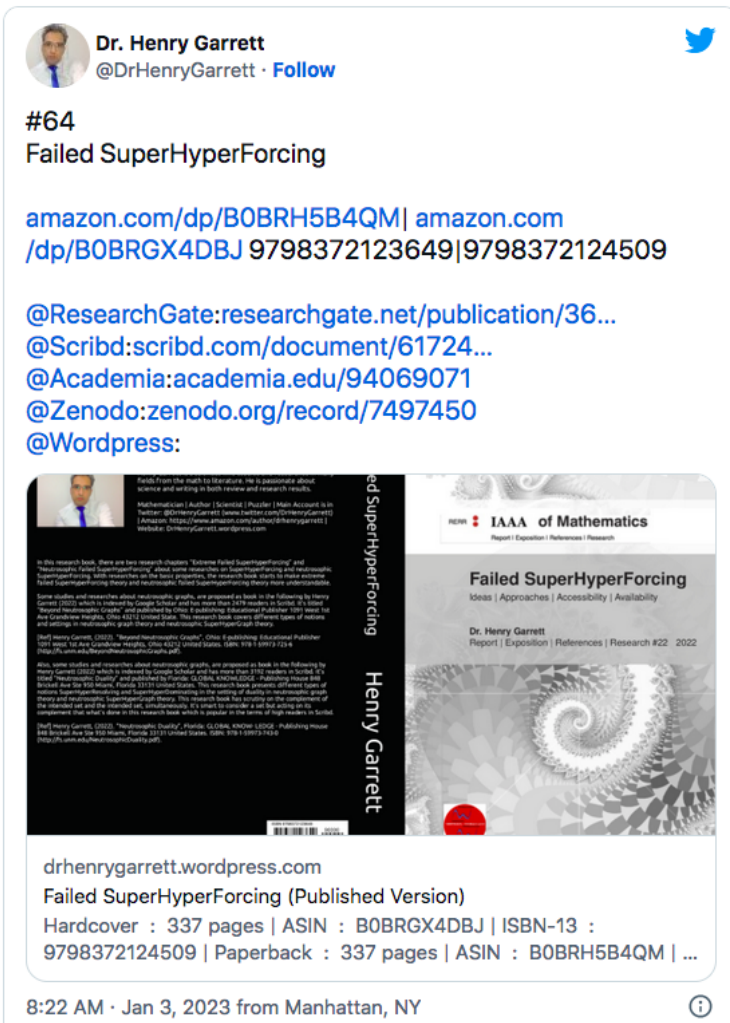


Figure 43.25: "SuperHyperGraph-Based Books": | Featured Tweets #64

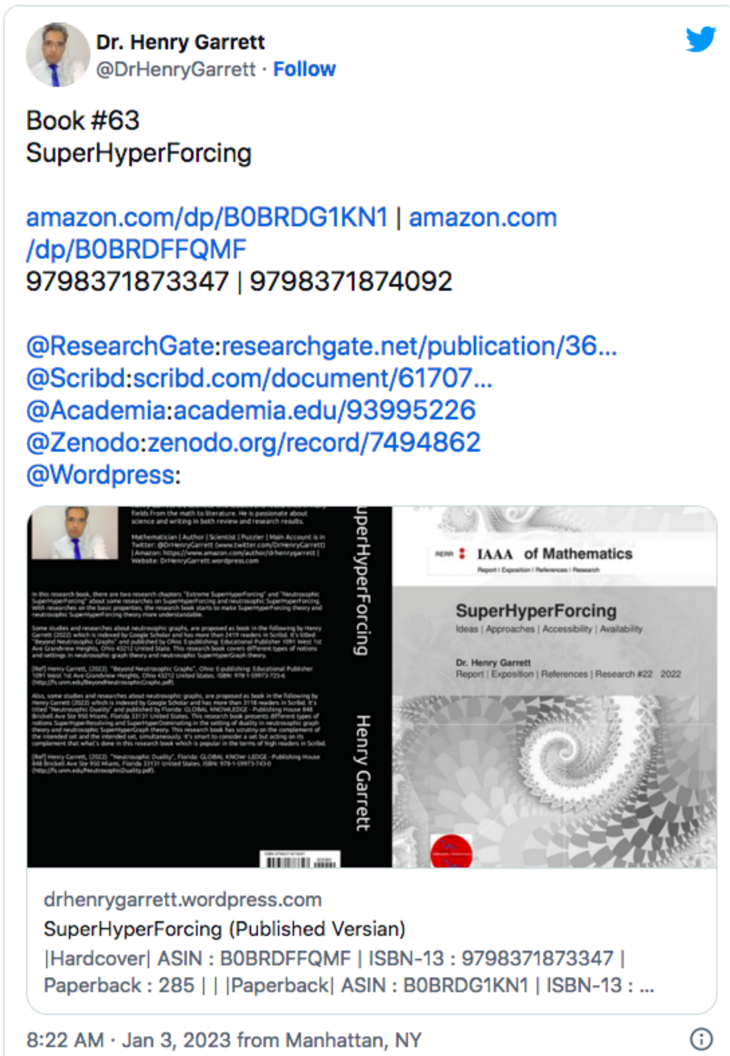


Figure 43.26: “SuperHyperGraph-Based Books”: | Featured Tweets #63

Figure 43.27: "SuperHyperGraph-Based Books": | Featured Tweets #62

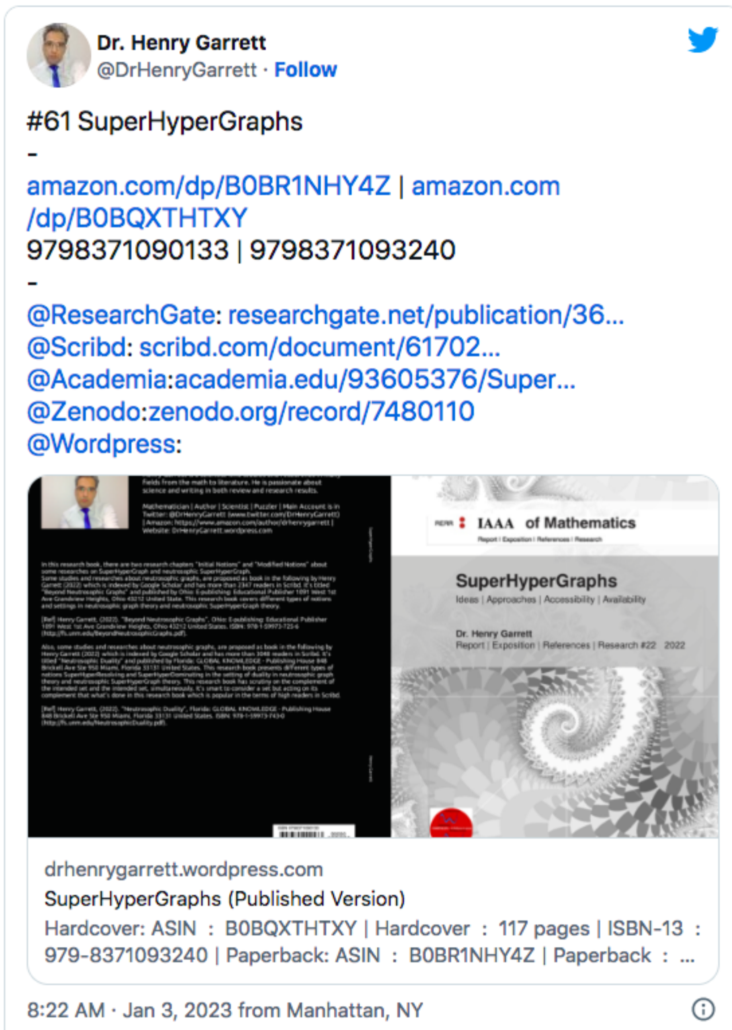


Figure 43.28: “SuperHyperGraph-Based Books”: | Featured Tweets #61

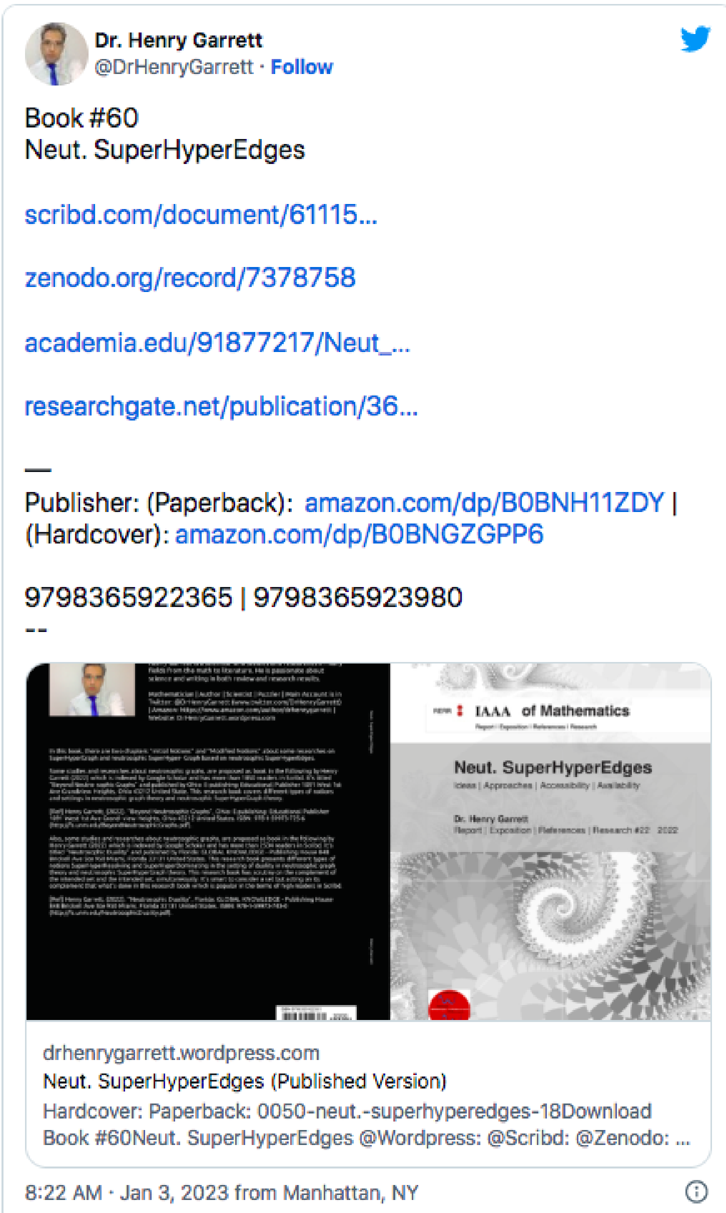


Figure 43.29: "SuperHyperGraph-Based Books": | Featured Tweets #60

CHAPTER 44

CV

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

Henry Garrett | CV

- **Status:** Known As Henry Garrett With Highly Productive Style.
- **Fields:** Combinatorics, Algebraic Structures, Algebraic Hyperstructures, Fuzzy Logic
- **Prefers:** Graph Theory, Domination, Metric Dimension, Neutrosophic Graph Theory, Neutrosophic Domination, Lattice Theory, Groups and Hypergroups
- **Activities:** Traveling, Painting, Writing, Reading books and Papers

Professional Experiences

2017 - Present | Continuous Member | AMS

- I tried to show them that Science is not only interesting, it's beautiful and exciting.
- Participating in the academic space of the largest mathematical Society gave me valuable experiences. The use of Bulletin and Notice of the American Mathematical Society is another benefit of this presence.

2017 - 2019 | Continuous Member | EMS

- The use Newsletter of the European Mathematical Society is benefit of this membership.
- I am interested in giving a small, though small, effect on math epidemic progress

Awards and Achievements

Sep 2022 | Award: Selected as an Editorial Board Member to JMTCM | JMTCM

- Award: Selected as an Editorial Board Member to Journal of Mathematical Techniques and Computational Mathematics(JMTCM)
- Journal of Mathematical Techniques and Computational Mathematics(JMTCM)

Jun 2022 | Award: Selected as an Editorial Board Member to JCTCSR | JCTCSR

- Award: Selected as an Editorial Board Member to Journal of Current Trends in Computer Science Research(JCTCSR)
- Journal of Current Trends in Computer Science Research(JCTCSR)

Jan 23, 2022 | Award: Diploma By Neutrosophic Science International Association | Neutrosophic Science International Association

- Award: Distinguished Achievements
- Honorary Memebrship

Journal Referee

Sep 2022 | Editorial Board Member to JMTCM | JMTCM

- Editorial Board Member to Journal of Mathematical Techniques and Computational Mathematics(JMTCM)
- Journal of Mathematical Techniques and Computational Mathematics(JMTCM)

Jun 2022 | Editorial Board Member to JCTCSR | JCTCSR

- Editorial Board Member to Journal of Current Trends in Computer Science Research(JCTCSR)
- Journal of Current Trends in Computer Science Research(JCTCSR)

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

Publications: Articles

2023 0126 | Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer's Recognition as the Model in The Setting of (Neutrosophic) SuperHyperGraphs — Manuscript

- Henry Garrett,"Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer's Recognition as the Model in The Setting of (Neutrosophic) SuperHyperGraphs", Preprints 2023, 2023010308 (doi: 10.20944/preprints202301.0308.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0125 | Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Neutrosophic Failed SuperHyperClique inside Neutrosophic SuperHyperGraphs Titled Cancer's Recognition — Manuscript

- Henry Garrett,"Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Neutrosophic Failed SuperHyperClique inside Neutrosophic SuperHyperGraphs Titled Cancer's Recognition", Preprints 2023, 2023010282 (doi: 10.20944/preprints202301.0282.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0124 | Neutrosophic Version Of Separates Groups Of Cells In Cancer's Recognition On Neutrosophic SuperHyperGraphs — Manuscript

- Henry Garrett,"Neutrosophic Version Of Separates Groups Of Cells In Cancer's Recognition On Neutrosophic SuperHyperGraphs", Preprints 2023, 2023010267 (doi: 10.20944/preprints202301.0267.v1).).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0123 | The Shift Paradigm To Classify Separately The Cells and Affected Cells Toward The Totality Under Cancer's Recognition By New Multiple Definitions On the Sets Polynomials Alongside Numbers In The (Neutrosophic) SuperHyperMatching Theory Based on SuperHyperGraph and Neutrosophic SuperHyperGraph — Manuscript

- Henry Garrett, "The Shift Paradigm To Classify Separately The Cells and Affected Cells Toward The Totality Under Cancer's Recognition By New Multiple Definitions On the Sets Polynomials Alongside Numbers In The (Neutrosophic) SuperHyperMatching Theory Based on SuperHyperGraph and Neutrosophic SuperHyperGraph", Preprints 2023, 2023010265 (doi: 10.20944/preprints202301.0265.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0122 | Breaking the Continuity and Uniformity of Cancer In The Worst Case of Full Connections With Extreme Failed SuperHyperClique In Cancer's Recognition Applied in (Neutrosophic) SuperHyperGraphs — Manuscript

- Henry Garrett,"Breaking the Continuity and Uniformity of Cancer In The Worst Case of Full Connections With Extreme Failed SuperHyperClique In Cancer's Recognition Applied in (Neutrosophic) SuperHyperGraphs", Preprints 2023, 2023010262,(doi: 10.20944/preprints202301.0262.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0121 | Neutrosophic Failed SuperHyperStable as the Survivors on the Cancer's Neutrosophic Recognition Based on Uncertainty to All Modes in Neutrosophic SuperHyperGraphs — Manuscript

- Henry Garrett, "Neutrosophic Failed SuperHyperStable as the Survivors on the Cancer's Neutrosophic Recognition Based on Uncertainty to All Modes in Neutrosophic SuperHyperGraphs", Preprints 2023, 2023010240 (doi: 10.20944/preprints202301.0240.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0120 | Extremism of the Attacked Body Under the Cancer's Circumstances Where Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs — Manuscript

- Henry Garrett, "Extremism of the Attacked Body Under the Cancer's Circumstances Where Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs", Preprints 2023, 2023010224, (doi: 10.20944/preprints202301.0224.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0119 | SuperHyperMatching By (R-)Definitions And Polynomials To Monitor Cancer's Recognition In Neutrosophic SuperHyperGraphs — Manuscript

- Henry Garrett,"SuperHyperMatching By (R-)Definitions And Polynomials To Monitor Cancer's Recognition In Neutrosophic SuperHyperGraphs", ResearchGate 2023,(doi: 10.13140/RG.2.2.35061.65767).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2023 0118 | The Focus on The Partitions Obtained By Parallel Moves In The Cancer's Extreme Recognition With Different Types of Extreme SuperHyperMatching Set and Polynomial on (Neutrosophic) SuperHyperGraphs Manuscript

- Henry Garrett,"The Focus on The Partitions Obtained By Parallel Moves In The Cancer's Extreme Recognition With Different Types of Extreme SuperHyperMatching Set and Polynomial on (Neutrosophic) SuperHyperGraphs", ResearchGate 2023,(doi: 10.13140/RG.2.2.18494.15680).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0117 | Indeterminacy On The All Possible Connections of Cells In Front of Cancer's Attacks In The Terms of Neutrosophic Failed SuperHyperClique on Cancer's Recognition called Neutrosophic SuperHyperGraphs Manuscript

- Henry Garrett,"Extreme Failed SuperHyperClique Decides the Failures on the Cancer's Recognition in the Perfect Connections of Cancer's Attacks By SuperHyperModels Named (Neutrosophic) SuperHyperGraphs", ResearchGate 2023,(doi: 10.13140/RG.2.2.15897.70243).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0116 | Extreme Failed SuperHyperClique Decides the Failures on the Cancer's Recognition in the Perfect Connections of Cancer's Attacks By SuperHyperModels Named (Neutrosophic) SuperHyperGraphs Manuscript

- Henry Garrett,"Extreme Failed SuperHyperClique Decides the Failures on the Cancer's Recognition in the Perfect Connections of Cancer's Attacks By SuperHyperModels Named (Neutrosophic) SuperHyperGraphs", ResearchGate 2023, (doi: 10.13140/RG.2.2.32530.73922).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0115 | (Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs Manuscript

- Henry Garrett, "(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs", Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0114 | Perfect Directions Toward Idealism in Cancer's Neutrosophic Recognition Forwarding Neutrosophic SuperHyperClique on Neutrosophic SuperHyperGraphs Manuscript

- Henry Garrett,"Perfect Directions Toward Idealism in Cancer's Neutrosophic Recognition Forwarding Neutrosophic SuperHyperClique on Neutrosophic SuperHyperGraphs", ResearchGate 2023, (doi: 10.13140/RG.2.2.30092.80004).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0113 | Demonstrating Complete Connections in Every Embedded Regions and Sub-Regions in the Terms of Cancer's Recognition and (Neutrosophic) SuperHyperGraphs With (Neutrosophic) SuperHyperClique Manuscript

- Henry Garrett,"Demonstrating Complete Connections in Every Embedded Regions and Sub-Regions in the Terms of Cancer's Recognition and (Neutrosophic) SuperHyperGraphs With (Neutrosophic) SuperHyperClique", ResearchGate 2023, (doi: 10.13140/RG.2.2.23172.19849).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0112 | Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs Manuscript

- Henry Garrett, "Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs", Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0111 | Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints Manuscript

- Henry Garrett, "Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints", Preprints 2023, 2023010088 (doi: 10.20944/preprints202301.0088.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0110 | Different Neutrosophic Types of Neutrosophic Regions titled neutrosophic Failed SuperHyperStable in Cancer's Neutrosophic Recognition modeled in the Form of Neutrosophic SuperHyperGraphs Manuscript

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

➤ Henry Garrett,"Different Neutrosophic Types of Neutrosophic Regions titled neutrosophic Failed SuperHyperStable in Cancer's Neutrosophic Recognition modeled in the Form of Neutrosophic SuperHyperGraphs", ResearchGate 2023, (doi: 10.13140/RG.2.2.17385.36968).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0109 | 0039 | Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph Manuscript

➤ Garrett, Henry. "0039 | Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph." CERN European Organization for Nuclear Research - Zenodo, Nov. 2022. CERN European Organization for Nuclear Research, https://doi.org/10.5281/zenodo.6319942. https://oa.mg/work/10.5281/zenodo.6319942

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0108 | 0049 | (Failed)1-Zero-Forcing Number in Neutrosophic Graphs Manuscript

➤ Garrett, Henry. "0049 | (Failed)1-Zero-Forcing Number in Neutrosophic Graphs." CERN European Organization for Nuclear Research - Zenodo, Feb. 2022. CERN European Organization for Nuclear Research, https://doi.org/10.13140/rg.2.2.35241.26724. https://oa.mg/work/10.13140/rg.2.2.35241.26724

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0107 | Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond Manuscript

➤ Henry Garrett, "Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond", Preprints 2023, 2023010044

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0106 | (Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs Manuscript

➤ Henry Garrett, "(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs", Preprints 2023, 2023010043 (doi: 10.20944/preprints202301.0043.v1).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0105 | Super Hyper Dominating and Super Hyper Resolving on Neutrosophic Super Hyper Graphs and Their Directions in Game Theory and Neutrosophic Super Hyper Classes Article

➤ Henry Garrett, "Super Hyper Dominating and Super Hyper Resolving on Neutrosophic Super Hyper Graphs and Their Directions in Game Theory and Neutrosophic Super Hyper Classes", J Math Techniques Comput Math 1(3) (2022) 242-263.

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0104 | Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs Manuscript

➤ Henry Garrett,"Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs", ResearchGate 2023, (doi: 10.13140/RG.2.2.28945.92007).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0103 | Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints Manuscript

➤ Henry Garrett,"Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints", ResearchGate 2023, (doi: 10.13140/RG.2.2.11447.80803).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2023 0102 | (Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs Manuscript

➤ Henry Garrett,"(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs", ResearchGate 2023, (doi: 10.13140/RG.2.2.35774.77123).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2022 0101 | Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond Manuscript

- Henry Garrett,“Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond”, ResearchGate 2022, (doi: 10.13140/RG.2.2.36141.77287).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0100 | (Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs Manuscript

- Henry Garrett,“(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs”, ResearchGate 2022, (doi: 10.13140/RG.2.2.29430.88642).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0099 | Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs Manuscript

- Henry Garrett,“Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs”, ResearchGate 2022, (doi: 10.13140/RG.2.2.11369.16487).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0098 | (Neutrosophic) SuperHyperModeling of Cancer's Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances Manuscript

- Henry Garrett, “(Neutrosophic) SuperHyperModeling of Cancer's Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances”, Preprints 2022, 2022120549 (doi: 10.20944/preprints202212.0549.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0098 | (Neutrosophic) SuperHyperModeling of Cancer's Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances Manuscript

- Henry Garrett, “(Neutrosophic) SuperHyperModeling of Cancer's Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances”, ResearchGate 2022, (doi: 10.13140/RG.2.2.19380.94084).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0097 | (Neutrosophic) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer's Recognitions And Related (Neutrosophic) SuperHyperClasses Manuscript

- Henry Garrett, “(Neutrosophic) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer's Recognitions And Related (Neutrosophic) SuperHyperClasses”, Preprints 2022, 2022120540 (doi: 10.20944/preprints202212.0540.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0097 | (Neutrosophic) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer's Recognitions And Related (Neutrosophic) SuperHyperClasses Manuscript

- Henry Garrett, “(Neutrosophic) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer's Recognitions And Related (Neutrosophic) SuperHyperClasses”, ResearchGate 2022, (doi: 10.13140/RG.2.2.14426.41923).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0096 | SuperHyperGirth on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer's Recognitions Manuscript

- Henry Garrett, “SuperHyperGirth on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer's Recognitions”, Preprints 2022, 2022120500 (doi: 10.20944/preprints202212.0500.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0096 | SuperHyperGirth on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer's Recognitions Manuscript

- Henry Garrett, “SuperHyperGirth on SuperHyperGraph and Neutrosophic SuperHyperGraph With SuperHyperModeling of Cancer's Recognitions”, ResearchGate 2022 (doi: 10.13140/RG.2.2.20993.12640).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2022 0095 | Some SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs and SuperHyperGraphs Alongside Applications in Cancer's Treatments Manuscript

》 Henry Garrett,"Some SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs and SuperHyperGraphs Alongside Applications in Cancer's Treatments", Preprints 2022, 2022120324 (doi: 10.20944/preprints202212.0324.v1).

》 Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0095 | Some SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs And SuperHyperGraphs Alongside Applications in Cancer's Treatments Manuscript

》 Henry Garrett, "Some SuperHyperDegrees and Co-SuperHyperDegrees on Neutrosophic SuperHyperGraphs And SuperHyperGraphs Alongside Applications in Cancer's Treatments", ResearchGate 2022 (doi: 10.13140/RG.2.2.23123.04641).

》 Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0094 | SuperHyperDominating and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses Manuscript

》 Henry Garrett, "SuperHyperDominating and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses", Preprints 2022, 2022110576 (doi: 10.20944/preprints202211.0576.v1).

》 Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0094 | SuperHyperDominating and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses Manuscript

》 Henry Garrett, "SuperHyperDominating and SuperHyperResolving on Neutrosophic SuperHyperGraphs And Their Directions in Game Theory and Neutrosophic SuperHyperClasses", ResearchGate 2022 (doi: 10.13140/RG.2.2.23324.56966).

》 Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0093 | Neutrosophic Co-degree and Neutrosophic Degree alongside Chromatic Numbers in the Setting of Some Classes Related to Neutrosophic Hypergraphs Article

》 Henry Garrett, "Neutrosophic Co-degree and Neutrosophic Degree alongside Chromatic Numbers in the Setting of Some Classes Related to Neutrosophic Hypergraphs", J Curr Trends Comp Sci Res 1(1) (2022) 06-14.
PDF,Abstract,Issue.

》 Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0092 | Recognition of the Pattern for Vertices to Make Dimension by Resolving in some Classes of Neutrosophic Graphs Manuscript

》 Henry Garrett, "Recognition of the Pattern for Vertices to Make Dimension by Resolving in some Classes of Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.27281.51046).

》 Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0091 | Regularity of Every Element to Function in the Type of Domination in Neutrosophic Graphs Manuscript

》 Henry Garrett, "Regularity of Every Element to Function in the Type of Domination in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.22861.10727).

》 Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0090 | Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG) Manuscript

》 Henry Garrett, "Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG)", ResearchGate 2022 (doi: 10.13140/RG.2.2.25385.88160).

》 Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0089 | Basic Neutrosophic Notions Concerning Neutrosophic SuperHyperDominating and Neutrosophic SuperHyperResolving in Neutrosophic SuperHyperGraph Manuscript

》 Henry Garrett, "Basic Neutrosophic Notions Concerning Neutrosophic SuperHyperDominating and Neutrosophic SuperHyperResolving in Neutrosophic SuperHyperGraph", ResearchGate 2022 (doi: 10.13140/RG.2.2.29173.86244).

》 Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0088 | Seeking Empty Subgraphs To Determine Different Measurements in Some Classes of Neutrosophic Graphs Manuscript

- Henry Garrett, "Seeking Empty Subgraphs To Determine Different Measurements in Some Classes of Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.30448.53766).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0087 | Impacts of Isolated Vertices To Cover Other Vertices in Neutrosophic Graphs Manuscript

- Henry Garrett, "Impacts of Isolated Vertices To Cover Other Vertices in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.16185.44647).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0086 | Perfect Locating of All Vertices in Some Classes of Neutrosophic Graphs Manuscript

- Henry Garrett, "Perfect Locating of All Vertices in Some Classes of Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.23971.12326).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0085 | Complete Connections Between Vertices in Neutrosophic Graphs Manuscript

- Henry Garrett, "Complete Connections Between Vertices in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.28860.10885).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0084 | Unique Distance Differentiation By Collection of Vertices in Neutrosophic Graphs Manuscript

- Henry Garrett, "Unique Distance Differentiation By Collection of Vertices in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.17692.77449).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0083 | Single Connection Amid Vertices From Two Given Sets Partitioning Vertex Set in Some Classes of Neutrosophic Graphs Manuscript

- Henry Garrett, "Single Connection Amid Vertices From Two Given Sets Partitioning Vertex Set in Some Classes of Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.32189.33764).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0082 | Separate Joint-Sets Representing Separate Numbers Where Classes of Neutrosophic Graphs and Applications are Cases of Study Manuscript

- Henry Garrett, "Separate Joint-Sets Representing Separate Numbers Where Classes of Neutrosophic Graphs and Applications are Cases of Study", ResearchGate 2022 (doi: 10.13140/RG.2.2.22666.95686).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0081 | Repetitive Joint-Sets Featuring Multiple Numbers For Neutrosophic Graphs Manuscript

- Henry Garrett, "Repetitive Joint-Sets Featuring Multiple Numbers For Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.15113.93283).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0080 | Dual-Resolving Numbers Excerpt from Some Classes of Neutrosophic Graphs With Some Applications Manuscript

- Henry Garrett, "Dual-Resolving Numbers Excerpt from Some Classes of Neutrosophic Graphs With Some Applications", ResearchGate 2022 (doi: 10.13140/RG.2.2.14971.39200).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0079 | Dual-Dominating Numbers in Neutrosophic Setting and Crisp Setting Obtained From Classes of Neutrosophic Graphs Manuscript

- Henry Garrett, "Dual-Dominating Numbers in Neutrosophic Setting and Crisp Setting Obtained From Classes of Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.19925.91361).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0078 | Neutrosophic Path-Coloring Numbers BasedOn Endpoints In Neutrosophic Graphs Manuscript

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

➤ Henry Garrett, "Neutrosophic Path-Coloring Numbers BasedOn Endpoints In Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.27990.11845).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0077 | Neutrosophic Dominating Path-Coloring Numbers in New Visions of Classes of Neutrosophic Graphs Manuscript

➤ Henry Garrett, "Neutrosophic Dominating Path-Coloring Numbers in New Visions of Classes of Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.32151.65445).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0076 | Path Coloring Numbers of Neutrosophic Graphs Based on Shared Edges and Neutrosophic Cardinality of Edges With Some Applications from Real-World Problems Manuscript

➤ Henry Garrett, "Path Coloring Numbers of Neutrosophic Graphs Based on Shared Edges and Neutrosophic Cardinality of Edges With Some Applications from Real-World Problems", ResearchGate 2022 (doi: 10.13140/RG.2.2.30105.70244).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0075 | Neutrosophic Collapsed Numbers in the Viewpoint of Neutrosophic Graphs Manuscript

➤ Henry Garrett, "Neutrosophic Collapsed Numbers in the Viewpoint of Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.27962.67520).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0074 | Bulky Numbers of Classes of Neutrosophic Graphs Based on Neutrosophic Edges Manuscript

➤ Henry Garrett, "Bulky Numbers of Classes of Neutrosophic Graphs Based on Neutrosophic Edges", ResearchGate 2022 (doi: 10.13140/RG.2.2.24204.18564).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0073 | Dense Numbers and Minimal Dense Sets of Neutrosophic Graphs Manuscript

➤ Henry Garrett, "Dense Numbers and Minimal Dense Sets of Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.28044.59527).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0072 | Connectivities of Neutrosophic Graphs in the terms of Crisp Cycles Manuscript

➤ Henry Garrett, "Connectivities of Neutrosophic Graphs in the terms of Crisp Cycles", ResearchGate 2022 (doi: 10.13140/RG.2.2.31917.77281).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0071 | Strong Paths Defining Connectivities in Neutrosophic Graphs Manuscript

➤ Henry Garrett, "Strong Paths Defining Connectivities in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.17311.43682).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0070 | Finding Longest Weakest Paths assigning numbers to some Classes of Neutrosophic Graphs Manuscript

➤ Henry Garrett, "Finding Longest Weakest Paths assigning numbers to some Classes of Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.35579.59689).

➤ Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

April 12, 2022 0069 | Properties of SuperHyperGraph and Neutrosophic SuperHyperGraph Article

➤ Henry Garrett, "Properties of SuperHyperGraph and Neutrosophic SuperHyperGraph", Neutrosophic Sets and Systems 49 (2022) 531-561 (doi: 10.5281/zenodo.6456413). (http://fs.unm.edu/NSS/NeutrosophicSuperHyperGraph34.pdf). (https://digitalrepository.unm.edu/nss_journal/vol49/iss1/34).

➤ Available at NSS, NSS Gallery, UNM Digital Repository, Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0068 | Relations and Notions amid Hamiltonicity and Eulerian Notions in Some Classes of Neutrosophic Graphs Manuscript

- Henry Garrett, “Relations and Notions amid Hamiltonicity and Eulerian Notions in Some Classes of Neutrosophic Graphs”, ResearchGate 2022 (doi: 10.13140/RG.2.2.35579.59689).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0067 | Eulerian Results In Neutrosophic Graphs With Applications Manuscript

- Henry Garrett, “Eulerian Results In Neutrosophic Graphs With Applic- ations”, ResearchGate 2022 (doi: 10.13140/RG.2.2.34203.34089).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0066 | Finding Hamiltonian Neutrosophic Cycles in Classes of Neutrosophic Graphs Manuscript

- Henry Garrett, “Finding Hamiltonian Neutrosophic Cycles in Classes of Neutrosophic Graphs”, ResearchGate 2022 (doi: 10.13140/RG.2.2.29071.87200).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0065 | Extending Sets Type-Results in Neutrosophic Graphs Manuscript

- Henry Garrett, “Extending Sets Type-Results in Neutrosophic Graphs”, ResearchGate 2022 (doi: 10.13140/RG.2.2.13317.01767).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0064 | Some Polynomials Related to Numbers in Classes of (Strong) Neutrosophic Graphs Manuscript

- Henry Garrett, “Some Polynomials Related to Numbers in Classes of (Strong) Neutrosophic Graphs”, ResearchGate 2022 (doi: 10.13140/RG.2.2.36280.83204).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0063 | Finding Shortest Sequences of Consecutive Vertices in Neutrosophic Graphs Manuscript

- Henry Garrett, “Finding Shortest Sequences of Consecutive Vertices in Neutrosophic Graphs”, ResearchGate 2022 (doi: 10.13140/RG.2.2.22924.59526).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0062 | Neutrosophic Girth Based On Crisp Cycle in Neutrosophic Graphs Manuscript

- Henry Garrett, “Neutrosophic Girth Based On Crisp Cycle in Neutrosophic Graphs”, ResearchGate 2022 (doi: 10.13140/RG.2.2.14011.69923).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0061 | e-Matching Number and e-Matching Polynomials in Neutrosophic Graphs Manuscript

- Henry Garrett, “e-Matching Number and e-Matching Polynomials in Neutrosophic Graphs”, ResearchGate 2022 (doi: 10.13140/RG.2.2.32516.60805).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0060 | Matching Polynomials in Neutrosophic Graphs Manuscript

- Henry Garrett, “Matching Polynomials in Neutrosophic Graphs”, ResearchGate 2022 (doi: 10.13140/RG.2.2.33630.72002).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0059 | Some Results in Classes Of Neutrosophic Graphs Manuscript

- Henry Garrett, “Some Results in Classes Of Neutrosophic Graphs”, Preprints 2022, 2022030248 (doi: 10.20944/preprints202203.0248.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0058 | Matching Number in Neutrosophic Graphs Manuscript

- Henry Garrett, “Matching Number in Neutrosophic Graphs”, ResearchGate 2022 (doi: 10.13140/RG.2.2.18609.86882).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2022 | 0057 | Fuzzy Dominating Number Based On Fuzzy Bridge And Applicaions | Article

- M. Hamidi, and M. Nikfar, "Fuzzy Dominating Number Based On Fuzzy Bridge And Applicaions", Fuzzy Systems and its Applications 4(2) (2022) 205-229 (https://doi.org/10.22034/jfsa.2022.306606.1092).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

Oct 2018 | 0056 | The Effects of Mathematics on Computer Sciences | Conference Article

- M. Nikfar, "The Effects of Mathematics on Computer Sciences", Second Conference on the Education and Applications of Mathematics, Kermanshah, Iran, 2018 (https://en.civilica.com/doc/824659).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 | 0055 | (Failed) 1-clique Number in Neutrosophic Graphs | Manuscript

- Henry Garrett, "(Failed) 1-Clique Number in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.14241.89449).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 | 0054 | Failed Clique Number in Neutrosophic Graphs | Manuscript

- Henry Garrett, "Failed Clique Number in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.36039.16800).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 | 0053 | Clique Number in Neutrosophic Graphs | Manuscript

- Henry Garrett, "Clique Number in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.28338.68800).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 | 0052 | (Failed) 1-independent Number in Neutrosophic Graphs | Manuscript

- Henry Garrett, "(Failed) 1-Independent Number in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.30593.12643).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 | 0051 | Failed Independent Number in Neutrosophic Graphs | Manuscript

- Henry Garrett, "Failed Independent Number in Neutrosophic Graphs", Preprints 2022, 2022020334 (doi: 10.20944/preprints202202.0334.v2)
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 | 0051 | Failed Independent Number in Neutrosophic Graphs | Manuscript

- Henry Garrett, "Failed Independent Number in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.31196.05768).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 | 0050 | Independent Set in Neutrosophic Graphs | Manuscript

- Henry Garrett, "Independent Set in Neutrosophic Graphs", Preprints 2022, 2022020334 (doi: 10.20944/preprints202202.0334.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 | 0050 | Independent Set in Neutrosophic Graphs | Manuscript

- Henry Garrett, "Independent Set in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.17472.81925).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 | 0049 | (Failed)1-Zero-Forcing Number in Neutrosophic Graphs | Manuscript

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

- Henry Garrett, "(Failed)1-Zero-Forcing Number in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.35241.26724).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0048 | Failed Zero-Forcing Number in Neutrosophic Graphs Manuscript

- Henry Garrett, "Failed Zero-Forcing Number in Neutrosophic Graphs", Preprints 2022, 2022020343 (doi: 10.20944/preprints202202.0343.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0048 | Failed Zero-Forcing Number in Neutrosophic Graphs Manuscript

- Henry Garrett, "Failed Zero-Forcing Number in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.24873.47209).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0047 | Zero Forcing Number in Neutrosophic Graphs Manuscript

- Henry Garrett, "Zero Forcing Number in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.32265.93286).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0046 | Quasi-Number in Neutrosophic Graphs Manuscript

- Henry Garrett, "Quasi-Number in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.18470.60488).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0045 | Quasi-Degree in Neutrosophic Graphs Manuscript

- Henry Garrett, "Quasi-Degree in Neutrosophic Graphs", Preprints 2022, 2022020100 (doi: 10.20944/preprints202202.0100.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0045 | Quasi-Degree in Neutrosophic Graphs Manuscript

- Henry Garrett, "Quasi-Degree in ResearchGate 2022 (doi: 10.13140/RG.2.2.25460.01927).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0044 | Co-Neighborhood in Neutrosophic Graphs Manuscript

- Henry Garrett, "Co-Neighborhood in Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.17687.44964).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0043 | Global Powerful Alliance in Strong Neutrosophic Graphs Manuscript

- Henry Garrett, "Global Powerful Alliance in Strong Neutrosophic Graphs", Preprints 2022, 2022010429 (doi: 10.20944/preprints202201.0429.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0043 | Global Powerful Alliance in Strong Neutrosophic Graphs Manuscript

- Henry Garrett, "Global Powerful Alliance in Strong Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.31784.24322).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0042 | Global Offensive Alliance in Strong Neutrosophic Graphs Manuscript

- Henry Garrett, "Global Offensive Alliance in Strong Neutrosophic Graphs", Preprints 2022, 2022010429 (doi: 10.20944/preprints202201.0429.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2022 0042 | Global Offensive Alliance in Strong Neutrosophic Graphs Manuscript

- Henry Garrett, "Global Offensive Alliance in Strong Neutrosophic Graphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.26541.20961).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0041 | Three Types of Neutrosophic Alliances based on Connectedness and (Strong) Edges Manuscript

- Henry Garrett, "Three Types of Neutrosophic Alliances based on Connectedness and (Strong) Edges", Preprints 2022, 2022010239 (doi: 10.20944/preprints202201.0239.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0041 | Three Types of Neutrosophic Alliances based on Connectedness and (Strong) Edges Manuscript

- Henry Garrett, "Three Types of Neutrosophic Alliances based on Connectedness and (Strong) Edges", ResearchGate 2022 (doi: 10.13140/RG.2.2.18486.83521).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0040 | Three types of neutrosophic alliances based of connectedness and (strong) edges (In-Progress) Manuscript

- Henry Garrett, "Three types of neutrosophic alliances based of connectedness and (strong) edges (In-Progress)", ResearchGate 2022 (doi: 10.13140/RG.2.2.27570.12480).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0039 | Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph Manuscript

- Henry Garrett, "Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph", Preprints 2022, 2022010145 (doi: 10.20944/preprints202201.0145.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0039 | Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph Manuscript

- Henry Garrett, "Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph", ResearchGate 2022 (doi: 10.13140/RG.2.2.18909.54244/1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0038 | Co-degree and Degree of classes of Neutrosophic Hypergraphs Manuscript

- Henry Garrett, "Co-degree and Degree of classes of Neutrosophic Hypergraphs", Preprints 2022, 2022010027 (doi: 10.20944/preprints202201.0027.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2022 0038 | Co-degree and Degree of classes of Neutrosophic Hypergraphs Manuscript

- Henry Garrett, "Co-degree and Degree of classes of Neutrosophic Hypergraphs", ResearchGate 2022 (doi: 10.13140/RG.2.2.32672.10249).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0037 | Dimension and Coloring alongside Domination in Neutrosophic Hypergraphs Manuscript

- Henry Garrett, "Dimension and Coloring alongside Domination in Neutrosophic Hypergraphs", Preprints 2021, 2021120448 (doi: 10.20944/preprints202112.0448.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0037 | Dimension and Coloring alongside Domination in Neutrosophic Hypergraphs Manuscript

- Henry Garrett, "Dimension and Coloring alongside Domination in Neutrosophic Hypergraphs", ResearchGate 2021 (doi: 10.13140/RG.2.2.13070.28483).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0036 | Different Types of Neutrosophic Chromatic Number Manuscript

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

- Henry Garrett, "Different Types of Neutrosophic Chromatic Number", Preprints 2021, 2021120335 (doi: 10.20944/preprints202112.0335.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0036 | Different Types of Neutrosophic Chromatic Number Manuscript

- Henry Garrett, "Different Types of Neutrosophic Chromatic Number", ResearchGate 2021 (doi: 10.13140/RG.2.2.19068.46723).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0035 | Neutrosophic Chromatic Number Based on Connectedness Manuscript

- Henry Garrett, "Neutrosophic Chromatic Number Based on Connectedness", Preprints 2021, 2021120226 (doi: 10.20944/preprints202112.0226.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0035 | Neutrosophic Chromatic Number Based on Connectedness Manuscript

- Henry Garrett, "Neutrosophic Chromatic Number Based on Connectedness", ResearchGate 2021 (doi: 10.13140/RG.2.2.18563.84001).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0034 | Chromatic Number and Neutrosophic Chromatic Number Manuscript

- Henry Garrett, "Chromatic Number and Neutrosophic Chromatic Number", Preprints 2021, 2021120177 (doi: 10.20944/preprints202112.0177.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0034 | Chromatic Number and Neutrosophic Chromatic Number Manuscript

- Henry Garrett, "Chromatic Number and Neutrosophic Chromatic Number", ResearchGate 2021 (doi: 10.13140/RG.2.2.36035.73766).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0033 | Metric Dimension in fuzzy(neutrosophic) Graphs #12 Manuscript

- Henry Garrett, "Metric Dimension in fuzzy(neutrosophic) Graphs #12", ResearchGate 2021 (doi: 10.13140/RG.2.2.20690.48322).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0032 | Metric Dimension in fuzzy(neutrosophic) Graphs #11 Manuscript

- Henry Garrett, "Metric Dimension in fuzzy(neutrosophic) Graphs #11", ResearchGate 2021 (doi: 10.13140/RG.2.2.29308.46725).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0031 | Metric Dimension in fuzzy(neutrosophic) Graphs #10 Manuscript

- Henry Garrett, "Metric Dimension in fuzzy(neutrosophic) Graphs #10", ResearchGate 2021 (doi: 10.13140/RG.2.2.21614.54085).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0030 | Metric Dimension in fuzzy(neutrosophic) Graphs #9 Manuscript

- Henry Garrett, "Metric Dimension in fuzzy(neutrosophic) Graphs #9", ResearchGate 2021 (doi: 10.13140/RG.2.2.34040.16648).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0029 | Metric Dimension in fuzzy(neutrosophic) Graphs #8 Manuscript

- Henry Garrett, "Metric Dimension in fuzzy(neutrosophic) Graphs #8", ResearchGate 2021 (doi: 10.13140/RG.2.2.19464.96007).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2021 0028 | Metric Dimension in fuzzy(neutrosophic) Graphs-VII Manuscript

- Henry Garrett, “Metric Dimension in fuzzy(neutrosophic) Graphs-VII”, ResearchGate 2021 (doi: 10.13140/RG.2.2.14667.72481).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0028 | Metric Dimension in fuzzy(neutrosophic) Graphs-VII Manuscript

- Henry Garrett, “Metric Dimension in fuzzy(neutrosophic) Graphs-VII”, Preprints 2021, 2021110142 (doi: 10.20944/preprints202111.0142.v7).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0027 | Metric Dimension in fuzzy(neutrosophic) Graphs-VI Manuscript

- Henry Garrett, “Metric Dimension in fuzzy(neutrosophic) Graphs-VI”, Preprints 2021, 2021110142 (doi: 10.20944/preprints202111.0142.v6).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0026 | Metric Dimension in fuzzy(neutrosophic) Graphs-V Manuscript

- Henry Garrett, “Metric Dimension in fuzzy(neutrosophic) Graphs-V”, Preprints 2021, 2021110142 (doi: 10.20944/preprints202111.0142.v5).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0025 | Metric Dimension in fuzzy(neutrosophic) Graphs-IV Manuscript

- Henry Garrett, “Metric Dimension in fuzzy(neutrosophic) Graphs-IV”, Preprints 2021, 2021110142 (doi: 10.20944/preprints202111.0142.v4).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0024 | Metric Dimension in fuzzy(neutrosophic) Graphs-III Manuscript

- Henry Garrett, “Metric Dimension in fuzzy(neutrosophic) Graphs-III”, Preprints 2021, 2021110142 (doi: 10.20944/preprints202111.0142.v3).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0023 | Metric Dimension in fuzzy(neutrosophic) Graphs-II Manuscript

- Henry Garrett, “Metric Dimension in fuzzy(neutrosophic) Graphs-II”, Preprints 2021, 2021110142 (doi: 10.20944/preprints202111.0142.v2).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0022 | Metric Dimension in Fuzzy Graphs and Neutrosophic Graphs Manuscript

- Henry Garrett, “Metric Dimension in Fuzzy Graphs and Neutrosophic Graphs”, Preprints 2021, 2021110142 (doi: 10.20944/preprints202111.0142.v1)
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0021 | Valued Number And Set Manuscript

- Henry Garrett, “Valued Number And Set”, Preprints 2021, 2021080229 (doi: 10.20944/preprints202108.0229.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0020 | Notion of Valued Set Manuscript

- Henry Garrett, “Notion of Valued Set”, Preprints 2021, 2021070410 (doi: 10.20944/preprints202107.0410.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0019 | Set And Its Operations Manuscript

- Henry Garrett, “Set And Its Operations”, Preprints 2021, 2021060508 (doi: 10.20944/preprints202106.0508.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2021 0018 | Metric Dimensions Of Graphs Manuscript

- Henry Garrett, "Metric Dimensions Of Graphs", Preprints 2021, 2021060392 (doi: 10.20944/preprints202106.0392.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0017 | New Graph Of Graph Manuscript

- Henry Garrett, "New Graph Of Graph", Preprints 2021, 2021060323 (doi: 10.20944/preprints202106.0323.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0016 | Numbers Based On Edges Manuscript

- Henry Garrett, "Numbers Based On Edges", Preprints 2021, 2021060315 (doi: 10.20944/preprints202106.0315.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0015 | Locating And Location Number Manuscript

- Henry Garrett, "Locating And Location Number", Preprints 2021, 2021060206 (doi: 10.20944/preprints202106.0206.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0014 | Big Sets Of Vertices Manuscript

- Henry Garrett, "Big Sets Of Vertices", Preprints 2021, 2021060189 (doi: 10.20944/preprints202106.0189.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0013 | Matroid And Its Outlines Manuscript

- Henry Garrett, "Matroid And Its Outlines", Preprints 2021, 2021060146 (doi: 10.20944/preprints202106.0146.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0012 | Matroid And Its Relations Manuscript

- Henry Garrett, "Matroid And Its Relations", Preprints 2021, 2021060080 (doi: 10.20944/preprints202106.0080.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2021 0011 | Metric Number in Dimension Manuscript

- Henry Garrett, "Metric Number in Dimension", Preprints 2021, 2021060004 (doi: 10.20944/preprints202106.0004.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2018 0010 | A Study on Domination in two Fuzzy Models Manuscript

- M. Nikfar, "A Study on Domination in two Fuzzy Models", Preprints 2018, 2018040119 (doi: 10.20944/preprints201804.0119.v2).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2019 0009 | Nikfar Domination Versus Others: Restriction, Extension Theorems and Monstrous Examples Manuscript

- M. Nikfar, "Nikfar Domination Versus Others: Restriction, Extension Theorems and Monstrous Examples", Preprints 2019, 2019010024 (doi: 10.20944/preprints201901.0024.v3).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2019 0008 | Nikfar Dominations: Definitions, Theorems, and Connections Manuscript

- M. Nikfar, "Nikfar Dominations: Definitions, Theorems, and Connections", ResearchGate 2019 (doi: 10.13140/RG.2.2.28955.31526/1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2019 0007 | Nikfar Domination in Fuzzy Graphs Manuscript

- M. Nikfar, "Nikfar Domination in Fuzzy Graphs", Preprints 2019, 2019010024 (doi: 10.20944/preprints201901.0024.v2).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2019 0006 | Nikfar Domination in Fuzzy Graphs Manuscript

- M. Nikfar, "Nikfar Domination in Fuzzy Graphs", Preprints 2019, 2019010024 (doi: 10.20944/preprints201901.0024.v2).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2018 0005 | The Results on Vertex Domination in Fuzzy Graphs Manuscript

- M. Nikfar, "The Results on Vertex Domination in Fuzzy Graphs", Preprints 2018, 2018040085 (doi: 10.20944/preprints201804.0085.v2).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2019 0004 | Nikfar Domination in Fuzzy Graphs Manuscript

- M. Nikfar, "Nikfar Domination in Fuzzy Graphs", Preprints 2019, 2019010024 (doi: 10.20944/preprints201901.0024.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2019 0003 | Nikfar Domination in Neutrosophic Graphs Manuscript

- M. Nikfar, "Nikfar Domination in Neutrosophic Graphs", Preprints 2019, 2019010025 (doi: 10.20944/preprints201901.0025.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2018 0002 | Vertex Domination in t-Norm Fuzzy Graphs Manuscript

- M. Nikfar, "Vertex Domination in t-Norm Fuzzy Graphs", Preprints 2018, 2018040119 (doi: 10.20944/preprints201804.0119.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

2018 0001 | The Results on Vertex Domination in Fuzzy Graphs Manuscript

- M. Nikfar, "The Results on Vertex Domination in Fuzzy Graphs", Preprints 2018, 2018040085 (doi: 10.20944/preprints201804.0085.v1).
- Available at Twitter, ResearchGate, Scribd, Academia, Zenodo, LinkedIn

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

Publications: Books

2023 0069 | SuperHyperMatching Amazon

- ASIN : B0BSDPXX1P Publisher : Independently published (January 15, 2023) Language : English Paperback : 582 pages ISBN-13 : 979-8373872683 Item Weight : 3.6 pounds Dimensions : 8.5 x 1.37 x 11 inches
- ASIN : B0BSDC1L66 Publisher : Independently published (January 16, 2023) Language : English Hardcover : 548 pages ISBN-13 : 979-8373875424 Item Weight : 3.3 pounds Dimensions : 8.25 x 1.48 x 11 inches

2023 0068 | Failed SuperHyperClique Amazon

- ASIN : B0BRZ67NYN Publisher : Independently published (January 10, 2023) Language : English Paperback : 454 pages ISBN-13 : 979-8373274227 Item Weight : 2.83 pounds Dimensions : 8.5 x 1.07 x 11 inches
- ASIN : B0BRYZTK24 Publisher : Independently published (January 10, 2023) Language : English Hardcover : 460 pages ISBN-13 : 979-8373277273 Item Weight : 2.78 pounds Dimensions : 8.25 x 1.27 x 11 inches

2023 0067 | SuperHyperClique Amazon

- ASIN : B0BRWK4S1Y Publisher : Independently published (January 8, 2023) Language : English Paperback : 376 pages ISBN-13 : 979-8373040471 Item Weight : 2.36 pounds Dimensions : 8.5 x 0.89 x 11 inches
- ASIN : B0BRM24YJX Publisher : Independently published (January 8, 2023) Language : English Hardcover : 388 pages ISBN-13 : 979-8373041935 Item Weight : 2.36 pounds Dimensions : 8.25 x 1.1 x 11 inches

2023 0066 | Failed SuperHyperStable Amazon

- ASIN : B0BRNG7DC8 Publisher : Independently published (January 4, 2023) Language : English Paperback : 304 pages ISBN-13 : 979-8372597976 Item Weight : 1.93 pounds Dimensions : 8.5 x 0.72 x 11 inches
- ASIN : B0BRLVN39L Publisher : Independently published (January 4, 2023) Language : English Hardcover : 306 pages ISBN-13 : 979-8372599765 Item Weight : 1.89 pounds Dimensions : 8.25 x 0.91 x 11 inches

2023 0065 | SuperHyperStable Amazon

- ASIN : B0BRDG5Z4Y Publisher : Independently published (January 2, 2023) Language : English Paperback : 294 pages ISBN-13 : 979-8372248519 Item Weight : 1.93 pounds Dimensions : 8.27 x 0.7 x 11.69 inches
- ASIN : B0BRJPG56M Publisher : Independently published (January 2, 2023) Language : English Hardcover : 290 pages ISBN-13 : 979-8372252011 Item Weight : 1.79 pounds Dimensions : 8.25 x 0.87 x 11 inches

2023 0064 | Failed SuperHyperForcing Amazon

- ASIN : B0BRH5B4QM Publisher : Independently published (January 1, 2023) Language : English Paperback : 337 pages ISBN-13 : 979-8372123649 Item Weight : 2.13 pounds Dimensions : 8.5 x 0.8 x 11 inches
- ASIN : B0BRGX4DBJ Publisher : Independently published (January 1, 2023) Language : English Hardcover : 337 pages ISBN-13 : 979-8372124509 Item Weight : 2.07 pounds Dimensions : 8.25 x 0.98 x 11 inches

2022 0063 | SuperHyperForcing Amazon

- ASIN : B0BRDG1KN1 Publisher : Independently published (December 30, 2022) Language : English Paperback : 285 pages ISBN-13 : 979-8371873347 Item Weight : 1.82 pounds Dimensions : 8.5 x 0.67 x 11 inches
- ASIN : B0BRDFFQMF Publisher : Independently published (December 30, 2022) Language : English Hardcover : 285 pages ISBN-13 : 979-8371874092 Item Weight : 1.77 pounds Dimensions : 8.25 x 0.86 x 11 inches

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2022 0062 | SuperHyperAlliances Amazon

› ASIN : B0BR6YC3HG Publisher : Independently published (December 27, 2022) Language : English Paperback : 189 pages ISBN-13 : 979-8371488343 Item Weight : 1.24 pounds Dimensions : 8.5 x 0.45 x 11 inches

› ASIN : B0BR7CBTC6 Publisher : Independently published (December 27, 2022) Language : English Hardcover : 189 pages ISBN-13 : 979-8371494849 Item Weight : 1.21 pounds Dimensions : 8.25 x 0.64 x 11 inches

2022 0061 | SuperHyperGraphs Amazon

› ASIN : B0BR1NHY4Z Publisher : Independently published (December 24, 2022) Language : English Paperback : 117 pages ISBN-13 : 979-8371090133 Item Weight : 13 ounces Dimensions : 8.5 x 0.28 x 11 inches

› ASIN : B0BQXTHTXY Publisher : Independently published (December 24, 2022) Language : English Hardcover : 117 pages ISBN-13 : 979-8371093240 Item Weight : 12.6 ounces Dimensions : 8.25 x 0.47 x 11 inches

2022 0060 | Neut. SuperHyperEdges Amazon

› ASIN : B0BNH11ZDY Publisher : Independently published (November 27, 2022) Language : English Paperback : 107 pages ISBN-13 : 979-8365922365 Item Weight : 12 ounces Dimensions : 8.5 x 0.26 x 11 inches

› ASIN : B0BNGZGPP6 Publisher : Independently published (November 27, 2022) Language : English Hardcover : 107 pages ISBN-13 : 979-8365923980 Item Weight : 11.7 ounces Dimensions : 8.25 x 0.45 x 11 inches

2022 0059 | Neutrosophic k-Number Amazon

› ASIN : B0BF3P5X4N Publisher : Independently published (September 14, 2022) Language : English Paperback : 159 pages ISBN-13 : 979-8352590843 Item Weight : 1.06 pounds Dimensions : 8.5 x 0.38 x 11 inches

› ASIN : B0BF2XCDZM Publisher : Independently published (September 14, 2022) Language : English Hardcover : 159 pages ISBN-13 : 979-8352593394 Item Weight : 1.04 pounds Dimensions : 8.25 x 0.57 x 11 inches

2022 0058 | Neutrosophic Schedule Amazon

› ASIN : B0BBJWJJZF Publisher : Independently published (August 22, 2022) Language : English Paperback : 493 pages ISBN-13 : 979-8847885256 Item Weight : 3.07 pounds Dimensions : 8.5 x 1.16 x 11 inches

› ASIN : B0BBJLPWKH Publisher : Independently published (August 22, 2022) Language : English Hardcover : 493 pages ISBN-13 : 979-8847886055 Item Weight : 2.98 pounds Dimensions : 8.25 x 1.35 x 11 inches

2022 0057 | Neutrosophic Wheel Amazon

› ASIN : B0BBJRHXXG Publisher : Independently published (August 22, 2022) Language : English Paperback : 195 pages ISBN-13 : 979-8847865944 Item Weight : 1.28 pounds Dimensions : 8.5 x 0.46 x 11 inches

› ASIN : B0BBK3KG82 Publisher : Independently published (August 22, 2022) Language : English Hardcover : 195 pages ISBN-13 : 979-8847867016 Item Weight : 1.25 pounds Dimensions : 8.25 x 0.65 x 11 inches

2022 0056 | Neutrosophic t-partite Amazon

› ASIN : B0BBJLZCHS Publisher : Independently published (August 22, 2022) Language : English Paperback : 235 pages ISBN-13 : 979-8847834957 Item Weight : 1.52 pounds Dimensions : 8.5 x 0.56 x 11 inches

› ASIN : B0BBJDFGJS Publisher : Independently published (August 22, 2022) Language : English Hardcover : 235 pages ISBN-13 : 979-8847838337 Item Weight : 1.48 pounds Dimensions : 8.25 x 0.75 x 11 inches

2022 0055 | Neutrosophic Bipartite Amazon

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

- ASIN : B0BB5Z9GHW Publisher : Independently published (August 22, 2022) Language : English Paperback : 225 pages ISBN-13 : 979-8847820660 Item Weight : 1.46 pounds Dimensions : 8.5 x 0.53 x 11 inches
- ASIN : B0BBGG9RDZ Publisher : Independently published (August 22, 2022) Language : English Hardcover : 225 pages ISBN-13 : 979-8847821667 Item Weight : 1.42 pounds Dimensions : 8.25 x 0.72 x 11 inches

2022 0054 | Neutrosophic Star Amazon

- ASIN : B0BB5ZHSSZ Publisher : Independently published (August 22, 2022) Language : English Paperback : 215 pages ISBN-13 : 979-8847794374 Item Weight : 1.4 pounds Dimensions : 8.5 x 0.51 x 11 inches
- ASIN : B0BBC4BL9P Publisher : Independently published (August 22, 2022) Language : English Hardcover : 215 pages ISBN-13 : 979-8847796941 Item Weight : 1.36 pounds Dimensions : 8.25 x 0.7 x 11 inches

2022 0053 | Neutrosophic Cycle Amazon

- ASIN : B0BB62NZQK Publisher : Independently published (August 22, 2022) Language : English Paperback : 343 pages ISBN-13 : 979-8847780834 Item Weight : 2.17 pounds Dimensions : 8.5 x 0.81 x 11 inches
- ASIN : B0BB65QMKQ Publisher : Independently published (August 22, 2022) Language : English Hardcover : 343 pages ISBN-13 : 979-8847782715 Item Weight : 2.11 pounds Dimensions : 8.25 x 1 x 11 inches

2022 0052 | Neutrosophic Path Amazon

- ASIN : B0BB67WCXL Publisher : Independently published (August 8, 2022) Language : English Paperback : 315 pages ISBN-13 : 979-8847730570 Item Weight : 2 pounds Dimensions : 8.5 x 0.74 x 11 inches
- ASIN : B0BB5Z9FXL Publisher : Independently published (August 8, 2022) Language : English Hardcover : 315 pages ISBN-13 : 979-8847731263 Item Weight : 1.95 pounds Dimensions : 8.25 x 0.93 x 11 inches

2022 0051 | Neutrosophic Complete Amazon

- ASIN : B0BB6191KN Publisher : Independently published (August 8, 2022) Language : English Paperback : 227 pages ISBN-13 : 979-8847720878 Item Weight : 1.47 pounds Dimensions : 8.5 x 0.54 x 11 inches
- ASIN : B0BB5RRQN7 Publisher : Independently published (August 8, 2022) Language : English Hardcover : 227 pages ISBN-13 : 979-8847721844 Item Weight : 1.43 pounds Dimensions : 8.25 x 0.73 x 11 inches

2022 0050 | Neutrosophic Dominating Amazon

- ASIN : B0BB5QV8WT Publisher : Independently published (August 8, 2022) Language : English Paperback : 357 pages ISBN-13 : 979-8847592000 Item Weight : 2.25 pounds Dimensions : 8.5 x 0.84 x 11 inches
- ASIN : B0BB61WL9M Publisher : Independently published (August 8, 2022) Language : English Hardcover : 357 pages ISBN-13 : 979-8847593755 Item Weight : 2.19 pounds Dimensions : 8.25 x 1.03 x 11 inches

2022 0049 | Neutrosophic Resolving Amazon

- ASIN : B0BBCJMRH8 Publisher : Independently published (August 8, 2022) Language : English Paperback : 367 pages ISBN-13 : 979-8847587891 Item Weight : 2.31 pounds Dimensions : 8.5 x 0.87 x 11 inches
- ASIN : B0BBCB6DFC Publisher : Independently published (August 8, 2022) Language : English Hardcover : 367 pages ISBN-13 : 979-8847589987 Item Weight : 2.25 pounds Dimensions : 8.25 x 1.06 x 11 inches

2022 0048 | Neutrosophic Stable Amazon

➤ ASIN : B0B7QGTNFW Publisher : Independently published (July 28, 2022) Language : English Paperback : 133 pages ISBN-13 : 979-8842880348 Item Weight : 14.6 ounces Dimensions : 8.5 x 0.32 x 11 inches

➤ ASIN : B0B7QJWQ35 Publisher : Independently published (July 28, 2022) Language : English Hardcover : 133 pages ISBN-13 : 979-8842881659 Item Weight : 14.2 ounces Dimensions : 8.25 x 0.51 x 11 inches

2022 0047 | Neutrosophic Total Amazon

➤ ASIN : B0B7GLB23F Publisher : Independently published (July 25, 2022) Language : English Paperback : 137 pages ISBN-13 : 979-8842357741 Item Weight : 14.9 ounces Dimensions : 8.5 x 0.33 x 11 inches

➤ ASIN : B0B6XVTDYC Publisher : Independently published (July 25, 2022) Language : English Hardcover : 137 pages ISBN-13 : 979-8842358915 Item Weight : 14.6 ounces Dimensions : 8.25 x 0.52 x 11 inches

2022 0046 | Neutrosophic Perfect Amazon

➤ ASIN : B0B7CJHCYZ Publisher : Independently published (July 22, 2022) Language : English Paperback : 127 pages ISBN-13 : 979-8842027330 Item Weight : 13.9 ounces Dimensions : 8.5 x 0.3 x 11 inches

➤ ASIN : B0B7C732Z1 Publisher : Independently published (July 22, 2022) Language : English Hardcover : 127 pages ISBN-13 : 979-8842028757 Item Weight : 13.6 ounces Dimensions : 8.25 x 0.49 x 11 inches

2022 0045 | Neutrosophic Joint Set Amazon

➤ ASIN : B0B6L8WJ77 Publisher : Independently published (July 15, 2022) Language : English Paperback : 139 pages ISBN-13 : 979-8840802199 Item Weight : 15 ounces Dimensions : 8.5 x 0.33 x 11 inches

➤ ASIN : B0B6L9GJWR Publisher : Independently published (July 15, 2022) Language : English Hardcover : 139 pages ISBN-13 : 979-8840803295 Item Weight : 14.7 ounces Dimensions : 8.25 x 0.52 x 11 inches

August 30, 2022 0044 | Neutrosophic Duality GLOBAL KNOWLEDGE - Publishing House&Amazon&Google Scholar&UNM

➤ Neutrosophic Duality, GLOBAL KNOWLEDGE - Publishing House:
GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0
Henry Garrett, (2022). "Neutrosophic Duality", Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (http://fs.unm.edu/NeutrosophicDuality.pdf).

➤ ASIN : B0B4SJ8Y44 Publisher : Independently published (June 22, 2022) Language : English Paperback : 115 pages ISBN-13 : 979-8837647598 Item Weight : 12.8 ounces Dimensions : 8.5 x 0.27 x 11 inches
ASIN : B0B46B4CXT Publisher : Independently published (June 22, 2022) Language : English Hardcover : 115 pages ISBN-13 : 979-8837649981 Item Weight : 12.5 ounces Dimensions : 8.25 x 0.46 x 11 inches

GLOBAL KNOWLEDGE - Publishing House: http://fs.unm.edu/NeutrosophicDuality.pdf
UNM: http://fs.unm.edu/NeutrosophicDuality.pdf
Google Scholar: https://books.google.com/books?id=dWWkEAAAQBAJ
Paperback: https://www.amazon.com/dp/B0B4SJ8Y44
Hardcover: https://www.amazon.com/dp/B0B46B4CXT

2022 0043 | Neutrosophic Path-Coloring Amazon

➧ ASIN : B0B3F2BZC4 Publisher : Independently published (June 7, 2022) Language : English Paperback : 161 pages ISBN-13 : 979-8834894469 Item Weight : 1.08 pounds Dimensions : 8.5 x 0.38 x 11 inches

➧ ASIN : B0B3FGPGQ3 Publisher : Independently published (June 7, 2022) Language : English Hardcover : 161 pages ISBN-13 : 979-8834895954 Item Weight : 1.05 pounds Dimensions : 8.25 x 0.57 x 11 inches

2022 0042 | Neutrosophic Density Amazon

➧ ASIN : B0B19CDX7W Publisher : Independently published (May 15, 2022) Language : English Paperback : 145 pages ISBN-13 : 979-8827498285 Item Weight : 15.7 ounces Dimensions : 8.5 x 0.35 x 11 inches

➧ ASIN : B0B14PLPGL Publisher : Independently published (May 15, 2022) Language : English Hardcover : 145 pages ISBN-13 : 979-8827502944 Item Weight : 15.4 ounces Dimensions : 8.25 x 0.53 x 11 inches

2022 0041 | Properties of SuperHyperGraph and Neutrosophic SuperHyperGraph Google Commerce Ltd

➧ Publisher Infinite Study Seller Google Commerce Ltd Published on Apr 27, 2022 Pages 30 Features Original pages Best for web, tablet, phone, eReader Language English Genres Antiques & Collectibles / Reference Content protection This content is DRM free GooglePlay

➧ Properties of SuperHyperGraph and Neutrosophic SuperHyperGraph Front Cover Henry Garrett Infinite Study, 27 Apr 2022 - Antiques & Collectibles - 30 pages GoogleBooks
Henry Garrett, "Properties of SuperHyperGraph and Neutrosophic SuperHyperGraph", Neutrosophic Sets and Systems 49 (2022) 531-561 (doi: 893 10.5281/zenodo.6456413). (http://fs.unm.edu/NSS/NeutrosophicSuperHyperGraph34.pdf).

2022 0040 | Neutrosophic Connectivity Amazon

➧ ASIN : B09YQJG2ZV Publisher : Independently published (April 26, 2022) Language : English Paperback : 121 pages ISBN-13 : 979-8811310968 Item Weight : 13.4 ounces Dimensions : 8.5 x 0.29 x 11 inches

➧ ASIN : B09YQJG2DZ Publisher : Independently published (April 26, 2022) Language : English Hardcover : 121 pages ISBN-13 : 979-8811316304 Item Weight : 13.1 ounces Dimensions : 8.25 x 0.48 x 11 inches

2022 0039 | Neutrosophic Cycles Amazon

➧ ASIN : B09X4KVLQG Publisher : Independently published (April 8, 2022) Language : English Paperback : 169 pages ISBN-13 : 979-8449137098 Item Weight : 1.12 pounds Dimensions : 8.5 x 0.4 x 11 inches

➧ ASIN : B09X4LZ3HL Publisher : Independently published (April 8, 2022) Language : English Hardcover : 169 pages ISBN-13 : 979-8449144157 Item Weight : 1.09 pounds Dimensions : 8.25 x 0.59 x 11 inches

2022 0038 | Girth in Neutrosophic Graphs Amazon

➧ ASIN : B09WQ5PFV8 Publisher : Independently published (March 29, 2022) Language : English Paperback : 163 pages ISBN-13 : 979-8442380538 Item Weight : 1.09 pounds Dimensions : 8.5 x 0.39 x 11 inches

➧ ASIN : B09WQQGXPZ Publisher : Independently published (March 29, 2022) Language : English Hardcover : 163 pages ISBN-13 : 979-8442386592 Item Weight : 1.06 pounds Dimensions : 8.25 x 0.58 x 11 inches

2022 0037 | Matching Number in Neutrosophic Graphs Amazon

➧ ASIN : B09W7FT8GM Publisher : Independently published (March 22, 2022) Language : English Paperback : 153 pages ISBN-13 : 979-8437529676 Item Weight : 1.03 pounds Dimensions : 8.5 x 0.36 x 11 inches

➧ ASIN : B09W4HF99L Publisher : Independently published (March 22, 2022) Language : English Hardcover : 153 pages ISBN-13 : 979-8437539057 Item Weight : 1 pounds Dimensions : 8.25 x 0.55 x 11 inches

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2022 0036 | Clique Number in Neutrosophic Graph Amazon

- ASIN : B09TV82Q7T Publisher : Independently published (March 7, 2022) Language : English Paperback : 155 pages ISBN-13 : 979-8428585957 Item Weight : 1.04 pounds Dimensions : 8.5 x 0.37 x 11 inches
- ASIN : B09TZBPWJG Publisher : Independently published (March 7, 2022) Language : English Hardcover : 155 pages ISBN-13 : 979-8428590258 Item Weight : 1.01 pounds Dimensions : 8.25 x 0.56 x 11 inches

2022 0035 | Independence in Neutrosophic Graphs Amazon

- ASIN : B09TF227GG Publisher : Independently published (February 27, 2022) Language : English Paperback : 149 pages ISBN-13 : 979-8424231681 Item Weight : 1 pounds Dimensions : 8.5 x 0.35 x 11 inches
- ASIN : B09TL1LSKD Publisher : Independently published (February 27, 2022) Language : English Hardcover : 149 pages ISBN-13 : 979-8424234187 Item Weight : 15.7 ounces Dimensions : 8.25 x 0.54 x 11 inches

2022 0034 | Zero Forcing Number in Neutrosophic Graphs Amazon

- ASIN : B09SW2YVKB Publisher : Independently published (February 18, 2022) Language : English Paperback : 147 pages ISBN-13 : 979-8419302082 Item Weight : 15.8 ounces Dimensions : 8.5 x 0.35 x 11 inches
- ASIN : B09SWLK7BG Publisher : Independently published (February 18, 2022) Language : English Hardcover : 147 pages ISBN-13 : 979-8419313651 Item Weight : 15.5 ounces Dimensions : 8.25 x 0.54 x 11 inches

2022 0033 | Neutrosophic Quasi-Order Amazon

- ASIN : B09S3RXQ5C Publisher : Independently published (February 8, 2022) Language : English Paperback : 107 pages ISBN-13 : 979-8414541165 Item Weight : 12 ounces Dimensions : 8.5 x 0.26 x 11 inches
- ASIN : B09S232DQH Publisher : Independently published (February 8, 2022) Language : English Hardcover : 107 pages ISBN-13 : 979-8414545446 Item Weight : 11.7 ounces Dimensions : 8.25 x 0.43 x 11 inches

Jan 29, 2022 0032 | Beyond Neutrosophic Graphs E-publishing&Amazon&Google Scholar&UNM

- Beyond Neutrosophic Graphs, E-publishing:
Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States
ISBN 978-1-59973-725-6
Henry Garrett, (2022). "Beyond Neutrosophic Graphs", Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 978-1-59973-725-6 (http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf).
- ASIN : B0BBCQJQG5 Publisher : Independently published (August 8, 2022) Language : English Paperback : 257 pages ISBN-13 : 979-8847564885 Item Weight : 1.65 pounds Dimensions : 8.5 x 0.61 x 11 inches
ASIN : B0BBC4BJZ5 Publisher : Independently published (August 8, 2022) Language : English Hardcover : 257 pages ISBN-13 : 979-8847567497 Item Weight : 1.61 pounds Dimensions : 8.25 x 0.8 x 11 inches
E-publishing: Educational Publisher: http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf
UNM: http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf
Google Scholar:https://books.google.com/books?id=cWWkEAAAQBAJ
Paperback: https://www.amazon.com/gp/product/B0BBCQJQG5
Hardcover: https://www.amazon.com/Beyond-Neutrosophic-Graphs-Henry-Garrett/dp/B0BBC4BJZ5

2022 0031 | Neutrosophic Alliances Amazon

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

› ASIN : B09RB5XLVB Publisher : Independently published (January 26, 2022) Language : English Paperback : 87 pages ISBN-13 : 979-8408627646 Item Weight : 10.1 ounces Dimensions : 8.5 x 0.21 x 11 inches

› ASIN : B09R39MTSW Publisher : Independently published (January 26, 2022) Language : English Hardcover : 87 pages ISBN-13 : 979-8408632459 Item Weight : 9.9 ounces Dimensions : 8.25 x 0.4 x 11 inches

2022 0030 | Neutrosophic Hypergraphs Amazon

› ASIN : B09PMBKVD4 Publisher : Independently published (January 7, 2022) Language : English Paperback : 79 pages ISBN-13 : 979-8797327974 Item Weight : 9.3 ounces Dimensions : 8.5 x 0.19 x 11 inches

› ASIN : B09PP8VZ3D Publisher : Independently published (January 7, 2022) Language : English Hardcover : 79 pages ISBN-13 : 979-8797331483 Item Weight : 9.1 ounces Dimensions : 8.25 x 0.38 x 11 inches

2022 0029 | Collections of Articles Amazon

› -

› ASIN : B09PHHDDQK Publisher : Independently published (January 2, 2022) Language : English Hardcover : 543 pages ISBN-13 : 979-8794267204 Item Weight : 3.27 pounds Dimensions : 8.25 x 1.47 x 11 inches

2022 0028 | Collections of Math Amazon

› -

› ASIN : B09PHBWT5D Publisher : Independently published (January 1, 2022) Language : English Hardcover : 461 pages ISBN-13 : 979-8793793339 Item Weight : 2.8 pounds Dimensions : 8.25 x 1.28 x 11 inches

2022 0027 | Collections of US Amazon

› -

› ASIN : B09PHBT924 Publisher : Independently published (December 31, 2021) Language : English Hardcover : 261 pages ISBN-13 : 979-8793629645 Item Weight : 1.63 pounds Dimensions : 8.25 x 0.81 x 11 inches

2021 0026 | Neutrosophic Chromatic Number Amazon

› ASIN : B09NRD25MG Publisher : Independently published (December 20, 2021) Language : English Paperback : 67 pages ISBN-13 : 979-8787858174 Item Weight : 8.2 ounces Dimensions : 8.5 x 0.16 x 11 inches Language : English

› -

2021 0025 | Simple Ideas Amazon

› ASIN : B09MYTN6NT Publisher : Independently published (December 9, 2021) Language : English Paperback : 45 pages ISBN-13 : 979-8782049430 Item Weight : 6.1 ounces Dimensions : 8.5 x 0.11 x 11 inches

› -

2021 0024 | Neutrosophic Graphs Amazon

› ASIN : B09MYXVNF9 Publisher : Independently published (December 7, 2021) Language : English Paperback : 55 pages ISBN-13 : 979-8780775652 Item Weight : 7 ounces Dimensions : 8.5 x 0.13 x 11 inches

› -

2021 0023 | List Amazon

› ASIN : B09M554XCL Publisher : Independently published (November 20, 2021) Language : English Paperback : 49 pages ISBN-13 : 979-8770762747 Item Weight : 6.4 ounces Dimensions : 8.5 x 0.12 x 11 inches

› -

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2021 0022 | Theorems Amazon

- ASIN : B09KDZXGPR Publisher : Independently published (October 28, 2021) Language : English Paperback : 51 pages ISBN-13 : 979-8755453592 Item Weight : 6.7 ounces Dimensions : 8.5 x 0.12 x 11 inches
- -

2021 0021 | Dimension Amazon

- ASIN : B09K2BBQG7 Publisher : Independently published (October 25, 2021) Language : English Paperback : 55 pages ISBN-13 : 979-8753577146 Item Weight : 7 ounces Dimensions : 8.5 x 0.13 x 11 inches
- -

2021 0020 | Beyond The Graph Theory Amazon

- ASIN : B09KDZXGPR Publisher : Independently published (October 28, 2021) Language : English Paperback : 51 pages ISBN-13 : 979-8755453592 Item Weight : 6.7 ounces Dimensions : 8.5 x 0.12 x 11 inches
- -

2021 0019 | Located Heart And Memories Amazon

- ASIN : B09F14PL8T Publisher : Independently published (August 31, 2021) Language : English Paperback : 56 pages ISBN-13 : 979-8468253816 Item Weight : 7 ounces Dimensions : 8.5 x 0.14 x 11 inches
- -

2021 0018 | Number Graphs And Numbers Amazon

- ASIN : B099BQRSF8 Publisher : Independently published (July 14, 2021) Language : English Paperback : 32 pages ISBN-13 : 979-8537474135 Item Weight : 4.8 ounces Dimensions : 8.5 x 0.08 x 11 inches
- -

2021 0017 | First Place Is Reserved Amazon

- ASIN : B098CWD5PT Publisher : Independently published (June 30, 2021) Language : English Paperback : 55 pages ISBN-13 : 979-8529508497 Item Weight : 7 ounces Dimensions : 8.5 x 0.13 x 11 inches
- -

2021 0016 | Detail-oriented Groups And Ideas Amazon

- ASIN : B098CYYG3Q Publisher : Independently published (June 30, 2021) Language : English Paperback : 69 pages ISBN-13 : 979-8529401279 Item Weight : 8.3 ounces Dimensions : 8.5 x 0.17 x 11 inches
- -

2021 0015 | Definition And Its Necessities Amazon

- ASIN : B098DHRJFD Publisher : Independently published (June 30, 2021) Language : English Paperback : 79 pages ISBN-13 : 979-8529321416 Item Weight : 9.3 ounces Dimensions : 8.5 x 0.19 x 11 inches
- -

2021 0014 | Words And Their Directionss Amazon

- ASIN : B098CYS8G2 Publisher : Independently published (June 30, 2021) Language : English Paperback : 65 pages ISBN-13 : 979-8529393758 Item Weight : 8 ounces Dimensions : 8.5 x 0.16 x 11 inches
- -

2021 0013 | Tattooed Heart But Forever Amazon

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

- ASIN : B098CR8HM6 Publisher : Independently published (June 30, 2021) Language : English Paperback : 45 pages ISBN-13 : 979-8728873891 Item Weight : 6.1 ounces Dimensions : 8.5 x 0.11 x 11 inches
- -

2021 0012 | Metric Number In Dimension Amazon

- ASIN : B0913597TV Publication date : March 24, 2021 Language : English File size : 28445 KB Text-to-Speech : Enabled Enhanced typesetting : Enabled X-Ray : Not Enabled Word Wise : Not Enabled Print length : 48 pages Lending : Not Enabled Kindle
- -

2021 0011 | Domination Theory And Beyond Amazon

- ASIN : B098DMMZ87 Publisher : Independently published (June 30, 2021) Language : English Paperback : 188 pages ISBN-13 : 979-8728100775 Item Weight : 1.23 pounds Dimensions : 8.5 x 0.45 x 11 inches
- -

2021 0010 | Vital Glory Amazon

- ASIN : B08PVNJYRM Publication date : December 6, 2020 Language : English File size : 1544 KB Simultaneous device usage : Unlimited Text-to-Speech : Enabled Screen Reader : Supported Enhanced typesetting : Enabled X-Ray : Not Enabled Word Wise : Enabled Print length : 24 pages Lending : Enabled Kindle
- -

2021 0009 | Análisis de modelos y orientación más allá AmazonUK&MoreBooks

- Análisis de modelos y orientación más allá Planteamiento y problemas en dos modelos Ediciones Nuestro Conocimiento (2021-04-06) eligible for voucher ISBN-13: 978-620-3-59902-2 ISBN-10:6203599026EAN:9786203599022Book language:Blurb/Shorttext:El enfoque para la resolución de problemas es una selección obvia para hacer la investigación y el análisis de la situación que puede provocar las perspectivas vagas que queremos no ser para extraer ideas creativas y nuevas que queremos ser. Estudio simultáneamente dos modelos. Este estudio se basa tanto en la investigación como en la discusión que el autor piensa que puede ser útil para entender y hacer crecer nuestra fantasía y la realidad juntas.Publishing house: Ediciones Nuestro Conocimiento Website: https://sciencia-scripts.com By (author) : Henry Garrett Number of pages:64Published on:2021-04-06Stock:Available Category: Mathematics Price:39.90 Keywords:Dos modelos, optimización de rutas y transporte, Two Models, Optimizing Routes and Transportation
  MoreBooks
  https://www.morebooks.shop/store/gb/book/análisis-de-modelos-y-orientación-más-allá/isbn/978-620-3-59902-2
- Product details Publisher : Ediciones Nuestro Conocimiento (6 April 2021) Language : Spanish ISBN-10 : 6203599026 ISBN-13 : 978-6203599022 Dimensions : 15 x 0.4 x 22 cm
  Paperback:
  https://www.amazon.co.uk/Análisis-modelos-orientación-allá-Planteamiento/dp/6203599026

2021 0008 | Анализ моделей и руководство за пределами Amazon&MoreBooks

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

› Анализ моделей и руководство за пределами Подход и проблемы в двух моделях Sciencia Scripts (2021-04-06) eligible for voucher ISBN-13: 978-620-3-59908-4 ISBN-10:6203599085EAN:9786203599084Book language: Russian Blurb/Shorttext:Подход к решению проблем является очевидным выбором для проведения исследований и анализа ситуации, которая может вызвать смутные перспективы, которыми мы не хотим быть для извлечения творческих и новых идей, которыми мы хотим быть. Я одновременно изучаю две модели. Это исследование основано как на исследовании, так и на обсуждении, которое, по мнению автора, может быть полезным для понимания и развития наших фантазий и реальности вместе.Publishing house: Sciencia Scripts Website: https://sciencia-scripts.com By (author) : Генри Гарретт Number of pages:68Published on:2021-04-06Stock:Available Category: Mathematics Price:39.90 Keywords:Две модели, оптимизация маршрутов и транспорта, Two Models, Optimizing Routes and Transportation
MoreBooks
https://www.morebooks.shop/store/gb/book/анализ-моделей-и-руководство-за-пределами/isbn/978-620-3-59908-4

› Анализ моделей и руководство за пределами: Подход и проблемы в двух моделях (Russian Edition) Publisher : Sciencia Scripts (April 6, 2021) Language : Russian Paperback : 68 pages ISBN-10 : 6203599085 ISBN-13 : 978-6203599084 Item Weight : 5.3 ounces Dimensions : 5.91 x 0.16 x 8.66 inches

2021 | 0007 | Análise e Orientação de Modelos Além | Amazon | MoreBooks | Walmart

› Análise e Orientação de Modelos Além Abordagem e Problemas em Dois Modelos Edições Nosso Conhecimento (2021-04-06) eligible for voucher ISBN-13: 978-620-3-59907-7 ISBN-10:6203599077EAN:9786203599077Book language:Blurb/Shorttext:A abordagem para resolver problemas é uma seleção óbvia para fazer pesquisa e análise da situação, que pode trazer as perspectivas vagas que queremos não ser para extrair idéias criativas e novas idéias que queremos ser. Eu estudo simultaneamente dois modelos. Este estudo é baseado tanto na pesquisa como na discussão que o autor pensa que pode ser útil para compreender e fazer crescer juntos a nossa fantasia e realidade.Publishing house: Edições Nosso Conhecimento Website: https://sciencia-scripts.com By (author) : Henry Garrett Number of pages:64Published on:2021-04-06Stock:Available Category: Mathematics Price:39.90 Keywords:Dois Modelos, Otimização de Rotas e Transporte, Two Models, Optimizing Routes and Transportation
MoreBooks:
https://www.morebooks.shop/store/gb/book/análise-e-orientação-de-modelos-além/isbn/978-620-3-59907-7
Henry Garrett Análise e Orientação de Modelos Além (Paperback) About this item
Product details
A abordagem para resolver problemas é uma seleção óbvia para fazer pesquisa e análise da situação, que pode trazer as perspectivas vagas que queremos não ser para extrair idéias criativas e novas idéias que queremos ser. Eu estudo simultaneamente dois modelos. Este estudo é baseado tanto na pesquisa como na discussão que o autor pensa que pode ser útil para compreender e fazer crescer juntos a nossa fantasia e realidade. Análise e Orientação de Modelos Além (Paperback) We aim to show you accurate product information. Manufacturers, suppliers and others provide what you see here, and we have not verified it. See our disclaimer
Specifications
Language Portuguese Publisher KS Omniscriptum Publishing Book Format Paperback Number of Pages 64 Author Henry Garrett Title Análise e Orientação de Modelos Além ISBN-13 9786203599077 Publication Date April, 2021 Assembled Product Dimensions (L x W x H) 9.00 x 6.00 x 1.50 Inches ISBN-10 6203599077 Walmart

› Análise e Orientação de Modelos Além: Abordagem e Problemas em Dois Modelos (Portuguese Edition) Publisher : Edições Nosso Conhecimento (April 6, 2021) Language : Portuguese Paperback : 64 pages ISBN-10 : 6203599077 ISBN-13 : 978-6203599077 Item Weight : 3.67 ounces Dimensions : 5.91 x 0.15 x 8.66 inches

2021 | 0006 | Analizy modelowe i wytyczne wykraczające poza | Amazon&MoreBooks

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

➽ Analizy modelowe i wytyczne wykraczające poza Podejście i problemy w dwóch modelach Wydawnictwo Nasza Wiedza (2021-04-06) eligible for voucher ISBN-13: 978-620-3-59906-0 ISBN-10:6203599069EAN:9786203599060Book language:Blurb/Shorttext:Podejście do rozwiązywania problemów jest oczywistym wyborem do prowadzenia badań i analizowania sytuacji, które mogą wywoływać niejasne perspektywy, których nie chcemy dla wydobycia kreatywnych i nowych pomysłów, które chcemy. I jednocześnie studiować dwa modele. Badanie to oparte jest zarówno na badaniach jak i dyskusji, które zdaniem autora mogą być przydatne do zrozumienia i rozwoju naszych fantazji i rzeczywistości razem.Publishing house: Wydawnictwo Nasza Wiedza Website: https://sciencia-scripts.com By (author) : Henry Garrett Number of pages:64Published on:2021-04-06Stock:Available Category: Mathematics Price:39.90 Keywords:Dwa modele, optymalizacja tras i transportu, Two Models, Optimizing Routes and Transportation
MoreBooks:
https://www.morebooks.shop/store/gb/book/analizy-modelowe-i-wytyczne-wykraczające-poza/isbn/978-620-3-59906-0

➽ Analizy modelowe i wytyczne wykraczające poza: Podejście i problemy w dwóch modelach (Polish Edition) Publisher : Wydawnictwo Nasza Wiedza (April 6, 2021) Language : Polish Paperback : 64 pages ISBN-10 : 6203599069 ISBN-13 : 978-6203599060 Item Weight : 3.67 ounces Dimensions : 5.91 x 0.15 x 8.66 inches

2021 0005 | Modelanalyses en begeleiding daarna Amazon&MoreBooks

➽ Modelanalyses en begeleiding daarna Aanpak en problemen in twee modellen Uitgeverij Onze Kennis (2021-04-06) eligible for voucher ISBN-13: 978-620-3-59905-3 ISBN-10:6203599050EAN:9786203599053Book language:Blurb/Shorttext:De aanpak voor het oplossen van problemen is een voor de hand liggende keuze voor het doen van onderzoek en het analyseren van de situatie die de vage perspectieven kan oproepen die we niet willen zijn voor het extraheren van creatieve en nieuwe ideeën die we willen zijn. Ik bestudeer tegelijkertijd twee modellen. Deze studie is gebaseerd op zowel onderzoek als discussie waarvan de auteur denkt dat ze nuttig kunnen zijn voor het begrijpen en laten groeien van onze fantasieën en de werkelijkheid samen.Publishing house: Uitgeverij Onze Kennis Website: https://sciencia-scripts.com By (author) : Henry Garrett Number of pages:64Published on:2021-04-06Stock:Available Category: Mathematics Price:39.90 Keywords:Twee modellen, optimalisering van routes en transport, Two Models, Optimizing Routes and Transportation
MoreBooks

➽ Modelanalyses en begeleiding daarna: Aanpak en problemen in twee modellen (Dutch Edition) Publisher : Uitgeverij Onze Kennis (April 6, 2021) Language : Dutch Paperback : 64 pages ISBN-10 : 6203599050 ISBN-13 : 978-6203599053 Item Weight : 3.99 ounces Dimensions : 5.91 x 0.15 x 8.66 inches

2021 0004 | Analisi dei modelli e guida oltre Amazon | MoreBooks | Walmart

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

➤ Analisi dei modelli e guida oltre Approccio e problemi in due modelli Edizioni Sapienza (2021-04-06) eligible for voucher ISBN-13: 978-620-3-59904-6 ISBN-10:6203599042EAN:9786203599046Book language:Blurb/Shorttext:L'approccio per risolvere i problemi è una selezione ovvia per fare ricerca e analisi della situazione che può suscitare le prospettive vaghe che non vogliamo essere per estrarre idee creative e nuove che vogliamo essere. Studio contemporaneamente due modelli. Questo studio si basa sia sulla ricerca che sulla discussione che l'autore pensa possa essere utile per capire e far crescere insieme la nostra fantasia e la realtà.Publishing house: Edizioni Sapienza Website: https://sciencia-scripts.com By (author) : Henry Garrett Number of pages:60Published on:2021-04-06Stock:Available Category: Mathematics Price:39.90 Keywords:Due modelli, ottimizzazione dei percorsi e del trasporto, Two Models, Optimizing Routes and Transportation
MoreBooks Henry Garrett Analisi dei modelli e guida oltre (Paperback) About this item
Product details
L'approccio per risolvere i problemi è una selezione ovvia per fare ricerca e analisi della situazione che può suscitare le prospettive vaghe che non vogliamo essere per estrarre idee creative e nuove che vogliamo essere. Studio contemporaneamente due modelli. Questo studio si basa sia sulla ricerca che sulla discussione che l'autore pensa possa essere utile per capire e far crescere insieme la nostra fantasia e la realtà. Analisi dei modelli e guida oltre (Paperback) We aim to show you accurate product information. Manufacturers, suppliers and others provide what you see here, and we have not verified it. See our disclaimer Specifications
Publisher KS Omniscriptum Publishing Book Format Paperback Number of Pages 60 Author Henry Garrett Title Analisi dei modelli e guida oltre ISBN-13 9786203599046 Publication Date April, 2021 Assembled Product Dimensions (L x W x H) 9.00 x 6.00 x 1.50 Inches ISBN-10 6203599042 Walmart

➤ Analisi dei modelli e guida oltre: Approccio e problemi in due modelli (Italian Edition) Publisher : Edizioni Sapienza (April 6, 2021) Language : Italian Paperback : 60 pages ISBN-10 : 6203599042 ISBN-13 : 978-6203599046 Item Weight : 3.53 ounces Dimensions : 5.91 x 0.14 x 8.66 inches

2021 0003 | Analyses de modèles et orientations au-delà Amazon | MoreBooks | Walmart

➤ Analyses de modèles et orientations au-delà Approche et problèmes dans deux modèles Editions Notre Savoir (2021-04-06) eligible for voucher eligible for voucher ISBN-13: 978-620-3-59903-9 ISBN-10:6203599034EAN:9786203599039Book language: French Blurb/Shorttext:L'approche pour résoudre les problèmes est une sélection évidente pour faire la recherche et l'analyse de la situation qui peut éliciter les perspectives vagues que nous ne voulons pas être pour extraire des idées créatives et nouvelles que nous voulons être. J'étudie simultanément deux modèles. Cette étude est basée à la fois sur la recherche et la discussion, ce qui, selon l'auteur, peut être utile pour comprendre et développer nos fantasmes et la réalité ensemble.Publishing house: Editions Notre Savoir Website: https://sciencia-scripts.com By (author) : Henry Garrett Number of pages:64Published on:2021-04-06Stock:Available Category: Mathematics Price:39.90 Keywords:Two Models, Optimizing Routes and Transportation, Deux modèles, optimisation des itinéraires et des transports
MoreBooks:
https://www.morebooks.shop/store/gb/book/analyses-de-modèles-et-orientations-au-delà/isbn/978-620-3-59903-9
Henry Garrett Analyses de modèles et orientations au-delà (Paperback) About this item
Product details
L'approche pour résoudre les problèmes est une sélection évidente pour faire la recherche et l'analyse de la situation qui peut éliciter les perspectives vagues que nous ne voulons pas être pour extraire des idées créatives et nouvelles que nous voulons être. J'étudie simultanément deux modèles. Cette étude est basée à la fois sur la recherche et la discussion, ce qui, selon l'auteur, peut être utile pour comprendre et développer nos fantasmes et la réalité ensemble. Analyses de modèles et orientations au-delà (Paperback) We aim to show you accurate product information. Manufacturers, suppliers and others provide what you see here, and we have not verified it. See our disclaimer Specifications
Language French Publisher KS Omniscriptum Publishing Book Format Paperback Number of Pages 64 Author Henry Garrett Title Analyses de modèles et orientations au-delà ISBN-13 9786203599039 Publication Date April, 2021 Assembled Product Dimensions (L x W x H) 9.00 x 6.00 x 1.50 Inches ISBN-10 6203599034 Walmart

➤ Analyses de modèles et orientations au-delà: Approche et problèmes dans deux modèles (French Edition) Publisher : Editions Notre Savoir (April 6, 2021) Language : French Paperback : 64 pages ISBN-10 : 6203599034 ISBN-13 : 978-6203599039 Item Weight : 3.67 ounces Dimensions : 5.91 x 0.15 x 8.66 inches

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

2021 0002 | Modell-Analysen und Anleitungen darüber hinaus Amazon | MoreBooks | Walmart | eBay

➧ eligible for voucher ISBN-13: 978-620-3-59901-5 ISBN-10:6203599018EAN:9786203599015Book language: German Blurb/Shorttext:Die Herangehensweise zur Lösung von Problemen ist eine offensichtliche Auswahl für die Forschung und Analyse der Situation, die die vagen Perspektiven, die wir nicht sein wollen, für die Extraktion von kreativen und neuen Ideen, die wir sein wollen, hervorbringen kann. Ich studiere gleichzeitig zwei Modelle. Diese Studie basiert sowohl auf der Forschung als auch auf der Diskussion, von der der Autor denkt, dass sie für das Verständnis und das Zusammenwachsen unserer Fantasie und Realität nützlich sein kann.Publishing house: Verlag Unser Wissen Website: https://sciencia-scripts.com By (author) : Henry Garrett Number of pages:68Published on:2021-04-06Stock:Available Category: Mathematics Price:39.90 Keywords:Zwei Modelle, Optimierung von Routen und Transport, Two Models, Optimizing Routes and Transportation

MoreBooksHenry Garrett Modell-Analysen und Anleitungen darüber hinaus (Paperback)
About this item
Product details
Die Herangehensweise zur Lösung von Problemen ist eine offensichtliche Auswahl für die Forschung und Analyse der Situation, die die vagen Perspektiven, die wir nicht sein wollen, für die Extraktion von kreativen und neuen Ideen, die wir sein wollen, hervorbringen kann. Ich studiere gleichzeitig zwei Modelle. Diese Studie basiert sowohl auf der Forschung als auch auf der Diskussion, von der der Autor denkt, dass sie für das Verständnis und das Zusammenwachsen unserer Fantasie und Realität nützlich sein kann. Modell-Analysen und Anleitungen darüber hinaus (Paperback) We aim to show you accurate product information. Manufacturers, suppliers and others provide what you see here, and we have not verified it. See our disclaimer Specifications
Language German Publisher KS Omniscriptum Publishing Book Format Paperback Number of Pages 68 Author Henry Garrett Title Modell-Analysen und Anleitungen darüber hinaus ISBN-13 9786203599015 Publication Date April, 2021 Assembled Product Dimensions (L x W x H) 9.00 x 6.00 x 1.50 Inches ISBN-10 6203599018
Walmart
Seller assumes all responsibility for this listing. Item specifics Condition: New: A new, unread, unused book in perfect condition with no missing or damaged pages. See the ... Read moreabout the condition ISBN: 9786203599015 EAN: 9786203599015 Publication Year: 2021 Type: Textbook Format: Paperback Language: German Publication Name: Modell-Analysen Und Anleitungen Daruber Hinaus Item Height: 229mm Author: Henry Garrett Publisher: Verlag Unser Wissen Item Width: 152mm Subject: Mathematics Item Weight: 113g Number of Pages: 68 Pages About this product Product Information Die Herangehensweise zur Loesung von Problemen ist eine offensichtliche Auswahl fur die Forschung und Analyse der Situation, die die vagen Perspektiven, die wir nicht sein wollen, fur die Extraktion von kreativen und neuen Ideen, die wir sein wollen, hervorbringen kann. Ich studiere gleichzeitig zwei Modelle. Diese Studie basiert sowohl auf der Forschung als auch auf der Diskussion, von der der Autor denkt, dass sie fur das Verstandnis und das Zusammenwachsen unserer Fantasie und Realitat nutzlich sein kann. Product Identifiers Publisher Verlag Unser Wissen ISBN-13 9786203599015 eBay Product ID (ePID) 11049032082 Product Key Features Publication Name Modell-Analysen Und Anleitungen Daruber Hinaus Format Paperback Language German Subject Mathematics Publication Year 2021 Type Textbook Author Henry Garrett Number of Pages 68 Pages Dimensions Item Height 229mm Item Width 152mm Item Weight 113g Additional Product Features Title_Author Henry Garrett
eBay

➧ Modell-Analysen und Anleitungen darüber hinaus: Ansatz und Probleme in zwei Modellen (German Edition) Publisher : Verlag Unser Wissen (April 6, 2021) Language : German Paperback : 68 pages ISBN-10 : 6203599018 ISBN-13 : 978-6203599015 Item Weight : 3.99 ounces Dimensions : 5.91 x 0.16 x 8.66 inches Paperback

2021 0001 | Model Analyses and Guidance Beyond Amazon&MoreBooks

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

- Model Analyses and Guidance Beyond Approach and Problems in Two Models LAP LAMBERT Academic Publishing (2020-12-02) eligible for voucher ISBN-13: 978-620-3-19506-4 ISBN-10:6203195065EAN:9786203195064Book language: English Blurb/Shorttext:Approach for solving problems is an obvious selection for doing research and analysis the situation which may elicit the vague perspectives which we want not to be for extracting creative and new ideas which we want to be. I simultaneously study two models. This study is based both research and discussion which the author thinks that may be useful for understanding and growing our fantasizing and reality together.Publishing house: LAP LAMBERT Academic Publishing Website: https://www.lap-publishing.com/ By (author) : Henry Garrett Number of pages:52Published on:2020-12-02Stock:Available Category: Mathematics Price:39.90 Keywords:Two Models, Optimizing Routes and Transportation
MoreBooks

- Model Analyses and Guidance Beyond: Approach and Problems in Two Models Publisher : LAP LAMBERT Academic Publishing (December 2, 2020) Language : English Paperback : 52 pages ISBN-10 : 6203195065 ISBN-13 : 978-6203195064 Item Weight : 3.39 ounces Dimensions : 5.91 x 0.12 x 8.66 inches

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

Participating in Seminars

I've participated in all virtual conferences which are listed below [Some of them without selective process].

–https://web.math.princeton.edu/ pds/onlinetalks/talks.html
. . .

Also, I've participated in following events [Some of them without selective process]:

-The Hidden NORMS seminar
-Talk Math With Your Friends (TMWYF)
-MATHEMATICS COLLOQUIUM: https://www.csulb.edu/mathematics-statistics/mathematics-colloquium
-Lathisms: Cafe Con Leche
-Big Math network
. . .

I'm in mailing list in following [Some of them without selective process] organizations:

-[Algebraic-graph-theory] AGT Seminar (lists-uwaterloo-ca)
-Combinatorics Lectures Online (https://web.math.princeton.edu/ pds/onlinetalks/talks.html)
-Women in Combinatorics
-CMSA-Seminar (unsw-au)
-OURFA2M2 Online Undergraduate Resource Fair for the Advancement and Alliance of Marginalized Mathematicians
...

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

Social Accounts

I've listed my accounts below.

-My website [Covering all my contributions containing articles and books as free access to download with PDF extension and more]: https://drhenrygarrett.wordpress.com

-Amazon [Some of my all books, here]: https://www.amzn.com/author/drhenrygarrett

-Twitter: @DrHenryGarrett (www.twitter.com/DrHenryGarrett)

– ResearchGate: https://www.researchgate.net/profile/Henry-Garrett-2

-Academia: https://independent.academia.edu/drhenrygarrett/

-Scribd: https://www.scribd.com/user/596815491/Henry-Garrett

-Scholar: https://scholar.google.com/citations?hl=enuser=SUjFCmcAAAAJview$_op = list_workssortby = pubdate$

$- LinkedIn : https : //www.linkedin.com/in/drhenrygarrett/$

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

References

2017-2022 Dr. Henry Garrett WEBSITE

- Department of Mathematics, Independent Researcher, Manhattan, NY, USA.
- E-mail address: DrHenryGarrett@gmail.com

2017-2022 Dr. Henry Garrett WEBSITE

- Department of Mathematics, Independent Researcher, Manhattan, NY, USA.
- E-mail address: HenryGarrettNY@gmail.com

Henry Garrett · Independent Researcher · Department of Mathematics · DrHenryGarrett@gmail.com · Manhattan, NY, USA

Mathematician | Author | Scientist | Puzzler | Main Account is in Twitter: @DrHenryGarrett (www.twitter.com/DrHenryGarrett) | Amazon: https://www.amazon.com/author/drhenrygarrett | Website: DrHenryGarrett.wordpress.com

In this scientific research book, there are some scientific research chapters on "Extreme [redacted] SuperHyper[redacted]" and "Neutrosophic [redacted] SuperHyper[redacted]" about some scientific researches on [redacted] SuperHyper[redacted] by two (Extreme/Neutrosophic) notions, namely, Extreme [redacted] SuperHyper[redacted] and Neutrosophic [redacted] SuperHyper[redacted]. With scientific researches on the basic properties, the scientific research book starts to make Extreme [redacted] SuperHyper[redacted] theory and Neutrosophic [redacted] SuperHyper[redacted] theory more (Extremely/Neutrosophicly) understandable.

Some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in the following by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3230 readers in Scribd. It's titled "Beyond Neutrosophic Graphs" and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory.

[Ref] Henry Garrett, (2022). "Beyond Neutrosophic Graphs", Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 978-1-59973-725-6 (http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf).

Also, some scientific studies and scientific researches about neutrosophic graphs, are proposed as book in the following by Henry Garrett (2022) which is indexed by Google Scholar and has more than 4117 readers in Scribd. It's titled "Neutrosophic Duality" and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and SuperHyperDominating in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It's smart to consider a set but acting on its complement that what's done in this research book which is popular in the terms of high readers in Scribd.

[Ref] Henry Garrett, (2022). "Neutrosophic Duality", Florida: GLOBAL KNOW- LEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (http://fs.unm.edu/NeutrosophicDuality.pdf).