

# **REFLECTIONS: BELIEF, DISBELIEF.**



## **SPIRIT and MATTER.**

## **Abstract**

This work is a philosophical and scientific exploration that unites perspectives on consciousness, energy, and matter. The author presents an original approach based on the idea that energy is fundamentally linked to wave processes, and that the fundamental forces of nature can be explained through interactions between dimensions.

The first part examines the meaning of life, the role of striving, and love as a creative force. It explores the connection between spirit and matter, as well as the role of consciousness in shaping reality.

The second part introduces a hypothesis about the structure of elementary particles and the mechanisms behind physical interactions. The author proposes the concept of a magnetic dimension, which explains the nature of mass, charge, and gravity. Special attention is given to quantum uncertainty and the possibility of additional dimensions.

This work is intended for a broad audience interested in science, philosophy, and new perspectives on the nature of the universe.

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## Preface

Reflections of philosophical character, an attempt to look at the phenomenon of life from the outside. Reflections do not pretend to argue with religious views and by no means reject moral principles. It is just a look at life from the outside, with a detachment from its reality, with an escape from concreteness. It is an attempt to present the general structure of the processes taking place and to find a possible answer to the question of why all this may be necessary. Also in the process of comprehension there is a search for similarities.

To be able to understand the general structure, taking into account the enormous scale, we had to refuse as much as possible from concretisation, from minor clarifications, from the introduction of mathematical apparatus in the case of the description of the physical structure of the material WORLD, and from delving into the peculiarities of relations between people and a particular person in the field of understanding consciousness, or mind, or personality. I.e. all this is by no means a theory, a hypothesis, or a religion. These are just reflections about what is happening from the outside, they in no way compete with religion and do not override morality, it is a view from another plane, an attempt to search for possible reasons for the processes taking place, there can be no confrontation here. Adding specifics will transfer reflections into one or another approach of studying the WORLD, which will lead to loss of understanding of the general picture.

The work consists of two main parts. In the first part an attempt is made to understand the essence of man, his peculiarity. The understanding of good and evil or good and bad is excluded from the essence of man. The essence should not be approached from the position of morality or religious views. It deals with the basis of man - as an engine in a machine that can never move without the same wheels and other systems. Morality, religion, science, and everything else that man encounters will act as the wheels and other systems. This part is the most difficult to understand. Even though people communicate in the "same" language, we have different understandings of the thoughts conveyed by someone else due to the fact that we each have our own values, our own life experience, and our own goals. Even in this last sentence, a phrase in "one" language can be perceived differently, someone will take into account the framing of inverted commas and perceive it as the opposite of the word - instead of "one" they will substitute the word "different", someone will understand that we are talking about a group of people speaking a certain language. It should be said that I had the second option in mind. So it is a very difficult task to find general examples to explain in the first part. But in general, we should not forget that there can be as many points of view as we want, and all of them are true in their own way.

The second part presents my conjectures about the structure of matter, which could explain the observed interactions of the physical world. I still had to use a few formulas to justify the understanding of the processes, but mostly the description of the processes is explained through simple images of string vibrations and images of the distribution of forces in space. The second part is easier to understand, because the descriptive language is more rigorous, but also we should not forget that in science everything is always relative - one and the same process can be considered from different sides. For example, before the adoption of heliocentrism, people perfectly calculated the motion of celestial bodies. Heliocentrism was adopted only because it is easier to calculate, processes become more understandable. To say that heliocentrism has solved all problems I think that no - the three-body problem is still a problem. So the basic rule remains - everything is relative. Here I only make an attempt to change the point of view on occurring processes in such a way that it can simplify understanding of the processes themselves.

Initially they were two different works that I was doing in parallel, but when I reached a certain amount of inferences I realised that both parts of the WORLD - SPIRIT and MATTER - are inseparably connected. The essence of both phenomena is energy, energy in different dimensions, and

life acts as a common point of contact between these dimensions. The text has been rewritten many times, initially it was just a statement of facts based purely on intuition, but over time I have modified it many times, translating intuition into logical deductions. At the turn of 2025, I conducted a merger of the two works. The title "Belief, disbelief" means that no matter what a person believes in - in eternal life or in the fact that life is given only once, no matter what the real answer is, the principle of life remains. As it seems to me, in any variant of the answer, one should live in such a way that one likes life, at least because it is more pleasant to live this way, and as it will be clear in the future, we are love, so one should not change oneself - one should love.

## **BELIEF, DISBELIEF.**

First of all, you need to decide on a number of things. First of all, it is necessary to try to find something that is common to all people. This something common must be inherent in man regardless of the time of his existence, something that would be observed both in our time and in times significantly different from our present. If we make an analysis, we can realise that on the side of the material representation of man, what is common to all men is his body. The second thing that can unite all people is a person's feelings. Everything else may differ.

The next important point is that a person makes a "choice". On the basis of the processes taking place in the WORLD and man's attention, he makes some evaluation, after which his attitude arises - either he likes it or he does not like it. A certain force arises - a person's desire for something. Most often the word LOVE is used instead of the word like and in this context it is not a feeling, it is a force that moves a person. That is why there is an established word combination - LOVE is the only force in the Universe.

In fact, I think it is aspiration that defines a person, it is the one characteristic that is inherent in all people.

Feelings are only signals for the physical body, for obtaining this or that result. The opposite can be said, that the emergence of certain feelings can influence the emergence of human aspirations. The bodies of all people are also different. Therefore, the only feature uniting all people, common for the phenomenon of life, is only striving. Striving, as it was shown above, is a force, and force, as it is known from physics, is a result of energy change. I.e. man, as an object, is able to change energy, he is able to direct it, he is able to generate it.

Now we need to take a closer look at a person's inner world.

### **Is immortality a gift or a curse?**

A scary word to the uninitiated person is death. But why? Why does the very thought of death cause chilling horror and lead us into a state of stupor. After all, we absolutely know that it is inevitable. We also know that everyone, absolutely everyone, everyone without exception, who lived before us, and who lives with us, and who will live after us, will surely die. They will. There are no options. There is no way out. This is an immutable law of nature.

Is immortality so wonderful? Most people dream of immortality, dream of going paradise and living there forever. They consider life on earth as a kind of punishment. But is it really so?

Imagine that you have become immortal. Your body is perfect, you are invulnerable, time no longer has power over you. What will you do?

At first, life will seem delightful: travelling, learning new things, enjoying the beautiful. But sooner or later everything will become routine. Even the most beautiful sunset, repeated from day to day, will lose its charm. The idea of immortality seems attractive until you realise that it lacks the main thing - diversity.

Here's a simple example. Think back to when you created your favourite music playlist. Initially, the songs are played in the same order, in a circle. In the beginning, each song is exciting, but after a while, the same songs begin to bore you. Some may say that their minds have outgrown the selected songs and so they start looking for something new. But this is not quite true, it is enough to add the effect of mixing tracks and it will allow for some time to return the original interest. This clearly says that a person needs variety, because it's what fuels our desire and makes life interesting. This aspiration is our eternal engine. Without it we lose ourselves.

Let's continue thinking about immortal life. Take a notebook and try to write down all your "wants", how many pages did it take you? Was the notebook enough for you? Or it is better to put the question like this - did you have enough imagination to fill a notebook with it?

And now add omnipotence to your immortality and invulnerability. All you have to do is snap your fingers and everything you wish for will instantly come true. I wonder how long you can snap your fingers? How much imagination do you have?

Is immortality so wonderful? Is death so bad when you consider that our struggle with it brings so much emotion and change in our lifetime?

Death is the facet that gives meaning to life. One should not strive for death, one should try to avoid it, that is its role. With such an understanding of the meaning of death, I think there should be at least a sense of respect for it. Fear should remain, because in this case it is what drives us, but it should not blind us. We must realise that immortality does not lead to anything good.

Here I will not consider various life situations, for example, disability, I try to show only in general outline the basics of our aspiration. Here it is not necessary to divide into good and evil, good and bad, it is not necessary to consider the moral side, embedded in the rules or laws created by man. It is important to understand only the essence of the phenomenon. The concepts of good and bad or good and evil depend only on the point of view, on the experience, on the values of the person who will analyse it. Here we need to get away from this in order to understand what directly drives the whole process. We need to get rid of "formulas", we need to understand the essence of the process itself, not how it is described.

Under normal conditions, a person tries to avoid death in one way or another, tries to achieve some of his goals. His path is strewn with various obstacles, something he can calculate, something he cannot calculate.

If you look closely at what is happening and analyse everything said above, you can understand or come to a logical conclusion that in fact death is something that immortals do not have. Only for immortals death makes sense, they need it very much, it is something they do not have. It is very peculiar for people to desire they do not have, but they do have very often escapes their view. In that case, life itself begins to take on some meaning. Life is very important for immortals, it gives them what they are deprived of - death. It is very likely to conclude that we are immortal, and life itself is a gift for us, it gives birth to aspiration, strength. It gives birth to our feelings. Feelings can be either pleasant or not pleasant. It will depend on many factors: on our "start", on our environment, on the direction of our aspiration, on the choice of goals, and on many other things. Of course, there can be many meanings of life, it all depends on what point of view we choose. But one thing remains common - we live as long as we have aspiration in us, as long as we can LOVE. By this we change the World and ourselves.

Based on the above, I decided to try to treat life as a holiday, as something good, of course, there are times when holidays can be spoilt, but it is still worth trying to get satisfaction from life. Someone will just laze on the beach, someone will spend time studying history, creating pictures, music, poems. The main thing is to listen to yourself, understand what you want, do not mindlessly "copy" the behaviour of others. In fact, life gives everyone what they need, but we are most often blinded by our madness, our fear. Our lack of understanding of the meaning of life often leads to a rash waste of time, and sometimes we manage to spoil the lives of others. People's lives are rushed through in a hurry, it is not clear where they are going and why, simply because people around them do so

Of course, all that has been said above does not give an exact answer to the question whether we are immortal or whether we are given life only once. But if we think about it and assume that life is given only once, even if there is no sense in it, then the rule of life or principle, I think, can remain the same, just because it is more pleasant to live like that. You can spend your whole life wondering and

agonising, asking yourself what life is and what is its meaning, or you can just live and LOVE. The answer is not really important, it is life itself that matters, and LOVE is the only thing we can do.

### **Non-ideality as a source of diversity and the source of the urge.**

In fact, everything is hidden in ourselves. It's been said for millennia. Everywhere they say, know thyself.

Try to answer this question - what this very "I" serves for in us, what it does. The heart, for example, serves for pumping blood, lungs - for oxygen intake into the organism and for excretion of carbon dioxide. But what is Our "I" for? Now we do not need to divide it into subconsciousness, consciousness and superconsciousness or any other gradations. We just need to understand in general what this "I" does?

First of all, it monitors the safety of the body, makes sure it is well-fed, accordingly solves the tasks of food production. Tracks the state of our organs, the processes of breathing, the work of the heart, etc. These are the first steps in the fight against death.

The same "I" studies the world to basically "bypass" death again, some things it uses to make life easier for itself, to make it more pleasant, i.e. to fight against smaller inconveniences. Also "I" tries his forces in art, creates pictures, learns to make them pleasant to the eye or tries to transmit hidden information so that another "I" could understand what information was encrypted in the picture. Someone tries his hand at music, tries to find a sequence of notes that is pleasing to the ear. Some people try their hand at maths, spending their whole life trying to find solutions to mathematical problems.

Speaking in general terms, we can conclude that the self, in a general sense, serves to solve "problems". It is its primary task to solve. Now imagine what happens to the heart if it is deprived of blood? If there is no ability to fulfil its purpose, there is no need for existence. If the "I" is deprived of "problems", it will disappear. The solution of all "problems" leads to the disappearance of the "I". The "I" strives for that which will destroy it. But, as in the case of the heart, one thing is happy - the blood moves in a circle, and it is very important for the "I" that any event is always both good and bad. Life is like a wave - any event is always both positive and negative at the same time. It is not possible to create a wave with only the upper "crest", a trough will be formed. The desire to do something good always generates a downside. One does not exist without the other. Like a magnet, every situation has its south pole, and necessarily, its north pole. Or let us say that when an electron (negative charge) is born from nothing, a positron (positive charge) is also born, and although they exist separately, the birth process is always connected.

Everything in this life is a wave, be it elementary particles - oscillations of electromagnetic field, or be it life situations - oscillations of some field, let's call it "good and bad" or "good and evil", feelings give us forces for creation of these oscillations, and our want or don't want acts as a force, which can create and destroy. Man acts as a generator of this field, he creates waves of the field of good and evil.

A little I would like to affirm the correctness of the phrase - LOVE is the only force in the Universe. Here I would like to point out that the option of NOT LOVE has been thrown out, i.e. the particle "not" has been thrown out. I believe that this is the right approach. If you want something, it is always easier to direct your power to achieve the goal - because you want it, you see the goal, you approach the goal by the shortest way, it is desirable for you. If you do not want something, you run away from it, it is unpleasant, and it is not clear where to run to, there is no goal. In fact, if you don't want something, it means that you want something, in this case you can change the goal and move towards it, not away from the goal, it will give you strength, it will set the direction and shorten the



path of striving. I.e. it all depends on our thoughts, on our attitude, on our understanding. Understanding this can help us to create an attitude towards what is happening or what has happened and can help us not to accumulate negative emotions and feelings in ourselves, to keep a certain balance of positive and negative in ourselves. I believe that the phrase 'Love is the only force in the universe' is absolutely true.

Desires are necessary for events to occur. Non-perfection generates the desire to remove non-perfection and thus generates generation. What is important is that non-perfection creates the diversity of life, which makes life so beautiful. The error that occurs in the process of copying DNA, at the quantum level, has resulted in such a diversity of flora and fauna, and it is this diversity that brings great interest to our lives.

If there were no DNA copying error, ideality would lead to monotony, to no development, to no anything at all. Errors set the stage for the diversity of the world. There is a Chinese wisdom that says "no fish in too clear water". That is, perfection is not meant to be lived. It is very often said in many scriptures - do not make ideals for yourself. Yes, one should strive for the best, but one should not build ideals. Idealism is a trap.

## Creator

Another important question arises one way or another in the life of many people, moreover, they even try to scientifically justify the correctness or otherwise of their assumption. The question concerns the existence of the Creator (Creator, God, Almighty, Allah and other names), and what should be the relationship with him?

The question is indeed a complex one. The diversity of opinions on this issue makes it difficult to make one's own decision. Each religion is beautiful in its own way, each carries a rich experience in its arsenal. Each is capable of forming the moral core of a person. But which one to choose? Who is right? Or to choose the position of science - until it is proved, then it is not!

I also faced this question. I could not make up my mind for a long time. **All of the following is just my point of view, but not a statement of truth. It is just my choice.**

Returning to the previous chapter and remembering that the WORLD is ideal in its non-ideality, we can say that the WORLD is created very intelligently. In this sense, there is most likely an Intelligence that created it. It's not even about the complexity of the structure of the same living cell, it's not about the probabilities of special chemical reactions that were necessary for the origin of life, but it's about the Reasonableness of its structure - its non-perfection. From this position I am still inclined to believe that the Creator really exists.

Many people have children. Many parents are beginning to realise that when children reach a certain age, they need to "let go". Children have to start living in the world themselves, otherwise they will not "grow up", will not be able to live independently, will not be able to understand the taste of life. It is a hard choice and not all parents are able to go through it, but it is a very important moment in the formation of both parents and children.

Parents who have realised this actually want their children to be happy. And for them the only reward is the fact that their children will be happy in life. They do not need constant words of gratitude, they do not need material offerings. It is enough for them to observe from the outside the joy of their children, the reasonableness of their actions.

Children who are unable to live independently, who constantly say that life is unfair, that there are many things wrong around them, are just children. They are, of course, childishly beautiful, but they are just children.

After these reflections I came to the conclusion that if there is a Creator, his behaviour is very similar to that of parents - he lets people grow up, he does not interfere and does not tell us what to do

and how to do it. And our love for the WORLD is the biggest thing we can thank him with, because he gave us all this. Surely he is always around and able to "back up" his child if necessary, but as a wise parent he will not live his child's life. Yes, of course, children will get burned in life, it is a necessary condition for growing up, a life without problems does not lead to the maturation of the mind. The main thing is that the problems are surmountable so that the mind can grow.

Our joy can be expressed in anything - in the process of enjoying music, in the process of enjoying food, in the moments of our discoveries, in the moments of our tranquility alone with nature, it can be enjoying the moment when an ordinary leaf falls from a tree, anything. It will be something different for everyone, there are no limits. Of course we should at least respect those around us and if possible not spoil their lives, I think it will be reasonable.

In fact, even if I am wrong in my judgement and the Creator does not exist, the position I have adopted will not have a negative impact on human life. Hence I make my conclusion that it does not matter what option a person chooses in terms of the existence of the Creator. One way or another, the only thing a person can do is to LOVE the world, and the same is true in the case of the answer to the question from the previous chapter. The answer is always the same. LOVE THE WORLD.

Parallel to the Creator there is always his antipode - the Devil (Satan, Lucifer, Beelzebub, Mephistopheles, Woland, Iblis, and other names). People most often have a negative attitude to him. But let's reflect a little here.

There are many different theories about the role of the devil. But there is the most important one - the **devil does not force anyone to follow his will: he proposes, people either agree or not**. Let us again find a similarity in the role of this character. Let's remember our youth, school, institute. Let's remember the exams. Let's remember the examiners. Let's remember examples of today's tests. Examinees are offered answer options and if they answer incorrectly, they stay for the next year. I hope you can see the resemblance? How do you now in your adult life treat those who took your exams? Should you treat them in any way badly? Is the Devil so bad? He's just an examiner and most likely a teacher, that's his responsibility. I think we should at least respect him. But we should not be afraid, our mistakes create the ground for our further growth. The only thing that is scary is to do nothing, although it is possible.

To conclude this chapter, I would like to say that I am convinced of the existence of the Creator, but I have not been able to accept any of the religions. All of them have great potential, but most of the time they are accompanied by fear. There is a philosophical direction "Existentialism", which has a special feature in the idea of overcoming (rather than revealing) a person's own essence and a great emphasis on the depth of emotional nature. In its basis an important role is played by fear, it is capable to bring a person to such a state, when he begins to rethink the essence of his existence, changes his values. I really had to go through panic attacks, which were observed in me for 2-3 years, and it made me find solutions to many questions, including those raised above. It would seem that I have not brought them up from my memory since I was a child, but yet their unresolved nature turns out to have affected my life in one way or another. Sometimes fear makes you think. Although I don't side with a particular religion, they all played their part - they created fear, and I am grateful to them for that. Religions certainly play their role, they are necessary, thanks to them the soil of human maturation is created. But you have to remember that ideality is a trap. Don't make ideals for yourself. And I am not an exception - **this is just my point of view**. Everyone has to come to some conclusion for himself, and it can be absolutely different decisions, because we all have different values and experience. Someone needs the unknown continue to live, someone wants to know for sure, to calculate their strength. The main thing is not to leave the question without attention, find your own answer.

But whatever the answer, the basic principle remains - LOVE the world. It is like the principle of conservation of energy.

## Focus of the mind

First of all, there is one more important point to be mentioned. Let us return to our "I" and remember that "I" is always under the burden of "problems" in the broad sense of the word. Most often this "I" is always dissatisfied with everything. It turns its attention to the bad things, the things it doesn't like (usually) and so it always remembers the bad things for a long time and quickly forgets the good things. This is a peculiarity of most of the self. It simply follows from its function. Based on this most (well, or many) people are unhappy, this is very important to understand. People come to earth for happiness, but because of their basic function they are unable to realise their happiness. We often perceive good things as bad and bad things as good.

I am not saying that our consciousness (so far only in the understanding of "I") should love eternal problems, but we should understand that problems for consciousness are like moisture for seeds. Without moisture a seed will not germinate, and if you flood everything with water, it can also lead to a negative result. There should always be some balance in everything. Without problems, the consciousness will not "germinate". When consciousness reaches an understanding of this, then consciousness will be able to control the senses. Then the consciousness will be able to stay on the crest of the wave like a surfer and enjoy life.

Of course, this is not a quick process, it is similar to when a child first stands on its feet. Initially everyone crawls, it is comparable to the work of our "Ego", i.e. what our parents, educators, mentors have laid down in us as "rules of behaviour". Then, in the process of life, when there are enough deviations of life from the expectations of life laid in us, we realise that life in general does not obey certain rules and there is a certain rethinking of life in general. Everyone will have his own age, perhaps it will not come during life, here much depends on the peculiarities of a person. If we add the possibility of our immortality, then perhaps this process requires more than one life, which by the way can explain why people are so different from each other, even living in the same conditions - for example, twins.

The realisation that life does not have to obey certain rules comes at the moment when a person starts to "detach" from his "I", when he starts to spend his energy looking at the situation from the outside. There is a detachment from the point - "I", to the area of consideration around, we can say that we direct our energy to the next dimension. I.e. it has been known for a long time that our EGO is easy to calculate, it is deterministic, but it is not possible to calculate consciousness (so to speak), because it is, as I think, already the next dimension. There is such a notion as intuition or superconsciousness, it is just something that cannot be explained in any way. In the part concerning the possible structure of matter, I showed that the circle or sphere is the next dimension of energy change due to the fact that the number  $\pi$  (Pi) is irrational and therefore it is simply impossible to calculate the processes occurring along the circle by setting data in the space dimension. It is possible to calculate with a predetermined error, but never accurately.

In fact, no precise understanding or definition of our consciousness has been introduced yet. But we can introduce three concepts for certainty:

subconscious - that which happens unconsciously, automatically, without detachment from the point of "I",

- consciousness - that which occurs consciously, without detachment from the point of "I",
- Intuition - what happens unconsciously, with detachment, around the point of the self.

I have written it in such a way to show the similarity of the SPIRITUAL and MATERIAL structure of the world. We are all energy, its different manifestations and transitions in different dimensions. A human being is a change of energy in three dimensions - subconsciousness, consciousness and intuition. I will come back to this at the very end of my reflections.

Intuition is a very interesting phenomenon. If the first two can be studied in one way or another, the last one remains completely behind the veil of ignorance. It cannot be calculated - either there is an answer, but then the essence of intuition disappears, and we cannot give an answer whether our thought was the result of intuition, or there is intuition, but we do not know whether there is an answer. One excludes the other. This is very similar to Heisenberg's uncertainty principle at the quantum level.

It was this similarity that led me to combine the two works into a whole

Note that there is surely the next important level of consciousness - that which occurs consciously, with detachment, around the point of "I".

Consciousness is capable of performing miracles. Consciousness is able to solve problems from the reverse, i.e. it is able to transform our unpleasant perception, for example fear of something, if not into something pleasant, then at least into a neutral one by means of ordinary thoughts. Thoughts are capable of many things. Consciousness is able to direct them. Realisation that any event is both good and bad at the same time allows us to change minus to plus for the accomplished events. Consciousness is able to control our state.

## **The meaning of life**

Here we get to the hardest part. Here I will once again stipulate that each person will have his or her own meaning of life. In this case, the question is not about a particular person. Here we need to look at the process from the outside. It is like asking what is the meaning of a car - yes, each person uses it in his or her own way, for his or her own purposes, but the essence of its design was the ability to move people and goods over distances.

**Everything I've said below is just my guess.**

If we analyse all the above, we can come to the following inference:

- life gives us variety for our satisfaction, for our development.
- The crowning achievement of our development today is something we are not yet able to grasp - intuition. It can make us happy in its own way, or its absence can "spoil" our lives.

Purely logically it may not be possible to come to that, it's just a guess that doesn't contradict my observations.

## SPIRIT and MATTER.

### Structure of elementary particles. Charge of elementary particles. Photon. Gravitational and anti-gravitational forces.

To date, science does not describe the origin of electric charge. What is its nature? Why is its value constant for elementary particles? Charge does not change either its sign or its value regardless of the environment. Why does the mass of a body change when the speed of motion changes, but nothing happens to the charge? What is this parameter - charge?

It is known that:

$$1/c = \alpha \hbar / e^2$$

where  $e$  is the charge of the electron,

$\hbar$  is the reduced Planck constant,

$c$  is the speed of light.

One constant is expressed through another constant.

Can be examined at the link (<http://nuclphys.sinp.msu.ru/misc/constants.htm> second line):

Обозначение	Название	Величина
$e$	единица заряда	$1.6 \cdot 10^{-19}$ Кл
$1/\alpha = \hbar c / e^2$	постоянная тонкой структуры	137.0
$c$	скорость света в вакууме	$2.998 \cdot 10^{10}$ см/с
$h$	постоянная Планка	$6.626 \cdot 10^{-27}$ эрг·с
$\hbar$	приведенная постоянная Планка	$6.582 \cdot 10^{-22}$ МэВ·с
$\hbar c$	константа конверсии	197.3 МэВ·Фм
.....	.....	.....
	магнитный момент нейтрона	$1.913 \mu_N$

or at the link (<https://n-t.ru/tp/ns/oss.htm>).

The physical quantity that is the inverse of speed is called pace. The pace shows how long it takes you to cover the desired distance.

The duality of the behaviour of elementary particles has long been known. They can behave like corpuscles, and they can behave like a wave. It is also known that a charged particle is capable of generating electromagnetic waves. It would be logical to assume that the particle itself would also be a representative of an electromagnetic wave. Waves make waves. But unlike the concept of an electromagnetic wave, the particle has a limitation in the dimension of space. It's this feature that distinguishes it from an ordinary electromagnetic wave that makes a particle a particle. A particle is most likely **a standing wave in the dimension of space**. Something prevents this wave from spreading throughout space.

It is known that the existence of standing waves is only possible in a confined space. The possibility of this will be explained later, and this possibility exists against the backdrop of unbounded space as such. But initially, we will assume that space is limited.

Electromagnetic waves are typically regarded as transverse, propagating without the need for a medium. However, their finite speed of propagation raises a fundamental question: what happens to energy in space during wave propagation? If energy cannot change instantaneously, then at some point

in space, an energy gradient must form. If this is true, then it is logical to assume that electromagnetic waves generate not only transverse but also longitudinal energy oscillations.

When an electromagnetic wave leaves its source, it alters the energy density in the surrounding space. As the wave propagates, the energy at the source returns to its original value, but at a distance  $R$ , the energy remains altered. This means that between these two points, an energy gradient exists, which can propagate as a longitudinal wave. Classical physics does not account for such a phenomenon, but that does not mean it does not exist.

Put differently, space, initially uniform in its energy distribution, becomes non-uniform after a wave passes. If energy redistributes itself, then a process akin to longitudinal oscillations must be taking place.

De Broglie proposed that particles exhibit wave-like properties but did not specify a mechanism for their formation. If a standing wave indeed forms the basis of an elementary particle, then one must ask: what exactly generates this wave? If electromagnetic waves induce longitudinal energy oscillations, these oscillations might stabilize the standing wave, thereby forming a particle. Thus, a particle may not be just an abstract probability wave but a real structure in space governed by wave processes.

Electromagnetic waves are traditionally viewed as purely transverse. However, from the perspective of energy density variation, it becomes clear that transverse oscillations cannot exist in isolation. They inevitably induce longitudinal energy redistribution, opening new avenues for understanding physical processes. Longitudinal energy waves may help explain not only wave propagation but also particle structure and some currently unexplained phenomena. This does not require a revision of established physics but offers a fresh perspective on well-known processes.

To satisfy the law of conservation of energy, the creation of paired objects must be observed. If an object is formed in which there is a compression of energy density at the centre, then an object in which there is a decrease in energy density at the centre in the dimension of space must also appear. Likewise, if an object is formed in which energy transitions to a point – rotation occurs – then a similar object, but with the opposite rotation, must be formed.

To describe this interaction, I suggest using energy as the basis, as this is the parameter that is always conserved. Energy can transition from one form to another, from one dimension to another. In physics, we are accustomed to describing processes through forces. We are used to saying that a force leads to a change in energy. However, one could say the converse: that a change in energy leads to the creation of forces. In essence, it's one and the same.

Within the formed construct, a wave-like process of changing energy density will be observed in the spatial region. A standing wave is formed.

To describe the process of the existence of elementary particles, the concept of energy density is more suitable. Interaction forces can be described via this indicator.

It's all similar to the compression/stretching process of a rubber ball.

Let's return to the concept of tempo. It is necessary to understand what and where it moves and why the tempo can take values «+1», «-1» and 0 (I divided the tempo by  $\frac{ah}{e^2}$ , because it is a constant, but I kept the sign of the charge, it will be very useful for us), let it be only numbers that tell us only about the direction. I.e.: «+1» means something is travelling somewhere at the speed of light in one direction, «-1» is movement in the opposite direction, and «0» is as if there is no movement in either direction.

We have - a particle is a standing wave of energy density arising due to an electromagnetic wave propagating along a sphere - the boundary of the particle. The electromagnetic wave will be observed inside along the spheres enclosed in the particle. This creates a wave of change of energy density in the space dimension.

We will only consider standing waves, the maths for which has long been well known. First option:

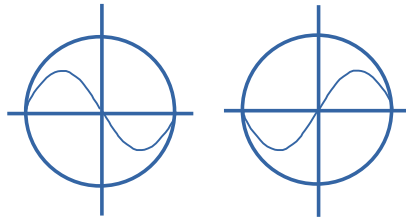


Fig. 1 The first elementary particle, the neutral, neutrino

The wave has one node. The wave has run once up, and once down. The result is zero. This is the first and neutral particle. Let's assume it's a neutrino. If there is a standing wave node at the centre of the circle, the particle will be neutral. With an odd number of nodes the particle will be neutral, with an even number of nodes the particle will be «charged».

The next option is two knots:

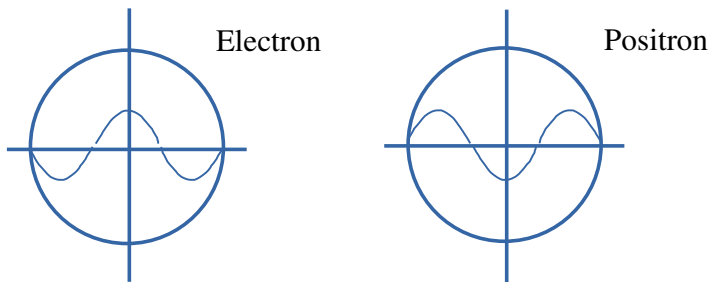


Fig. 2 Electron and positron

I will assume that this pair of particles is an electron and a positron. For the electron, the wave has travelled down twice and up once. Two of the beams are negative and one is positive. If you add them up, that's what we get the tempo.

I think this is what characterises the tempo in the case of elementary particles. For the electron, it's -1. For the positron, it's +1.

That's what charge is responsible for, or rather the inverse of it squared. That's why it's a constant. This is only true for standing waves, which can exist indefinitely. The main thing to understand is that it is not the electromagnetic wave itself, but the wave of energy density distribution in the area of space, which the electromagnetic wave created during its propagation.

This is the first 'charged' particle, the electron and positron. In this case, the electric charge is responsible for the rate of change of the wave in the region of space. For standing waves, we always know the tempo; it must be an integer from an array of numbers -1, 0, and +1. There are three values in total. The characteristics that will change are the radius of the circumference of the particle, and the number of nodes or fascicles.

It is worth paying attention to the fact that for matter, 'charged' particles in the centre always have a positive value of change in energy density on the space side. The energy density on the space side is increasing, the compression process is going on. For antimatter, it is always negative. The energy of the electromagnetic wave is spent on the decrease of energy density on the side of space, we can say that there is a stretching of space, but it is more correct to say about the decrease of energy density on the side of space. You can see the relationship between tempo and charge. I have omitted the figures. The main thing is to understand the physics of the process.

Everything around us is energy. Space is filled with energy. Forces arise where there is a change in some 'density' of energy.

The expression is true - a change of energy along the sphere leads to a change of energy in the space dimension. It can be rephrased - a change of energy in the magnetic dimension leads to a change of energy in the space dimension.

To describe the WORLD it is enough to assume that it is filled with energy. Everything can be expressed through the concept of energy. Its amplitude, its density. It builds all our matter and antimatter. It is what we are made of. The world we perceive and experience is **ENERGETIC**. **WE ARE ENERGETIC BEINGS**, and therefore we feel, sense, perceive only the effects of energy, its changes, its various manifestations. Matter is a standing wave of energy.

It is also possible to display a particle by means of a circle with different fillings. Let the area of increasing energy density of space due to magnetic dimension be displayed light. The area of decreasing energy density on the side of space due to magnetic dimension is dark.

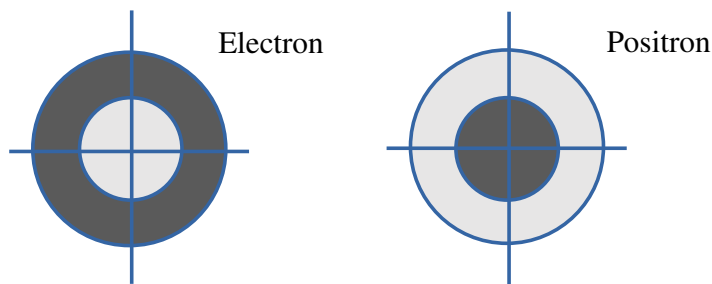


Fig. 3 Electron and positron

That's the picture we get.

The masses of the electron and positron will be the same. The energy density distribution will be different. When they overlap, the particles will annihilate each other, annihilate. They'll form a uniformly distributed energy.

Now let us try to understand how neutral particles are formed. To begin with, let us display the very moment of emergence of the particle and the antiparticle - neutrino. They are identical in structure, so this is what happens:

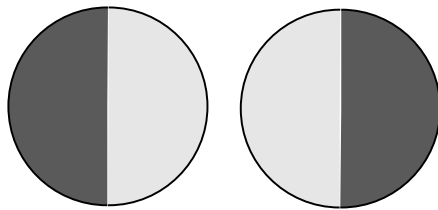


Fig. 4 The birth of neutrinos and antineutrinos

Initially, they're no different. It is to be expected that the energy density around them pressing on their boundary creates equal forces. As long as their central axes are not separated, nothing special happens. As soon as their axes are slightly apart, a rotational effect is created:



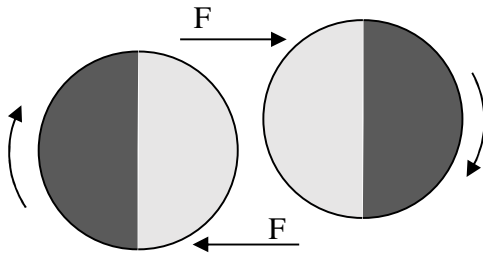


Fig. 5 Occurrence of rotation of neutral particles

All neutral particles will rotate. When they change their location relative to each other, the direction of their rotation will change. The neutral particle and its antipode, the antiparticle, will change places. They are not constant, they are interconnected. The difference between the neutral particle and antiparticle is only in the direction of rotation. It is worth noting that the interconnection of this pair passes through a common centre of mass. If we determine the rotation of one particle, then the second particle will also know its parameter. But they can also change their rotation parameters, it all depends on what is their mutual position. This connection of two particles will give birth to the phenomenon of 'spooky interaction'. The connection of particles through the phenomenon of rotation will not 'feel' the concept of distance. There is no concept of distance for the energy due to rotation. The bonding is at a point. Einstein was right about something. If you get the right glove, the second glove must be the left glove. But he was wrong about something. A glove can be left or right. It's more like mittens, if one is left, the other will be right.

The effect of rotation of energy of the neutral particle will create a spiral-shaped distribution of energy density inside the neutral particle. Since the neutral particle has increased energy density on one side and decreased energy density on the other side. That rotation will make the energy density distribution in the region of space in the form of a spiral.

This moment is very important, it will help to discover the fractality of the universe.

Consider the following possible particle. Suppose that it is a proton and an antiproton:

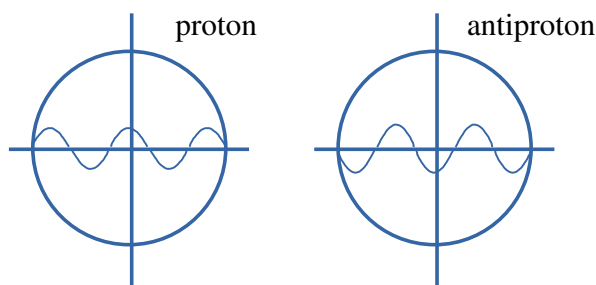


Fig. 6 Proton and antiproton

It is known that the proton consists of three quarks in the case of the simple model. But also in some experiments and theories the proton can be considered as a system of five quarks. The **five-quark (5-quark) model** is used for a more accurate description of the internal structure and properties of the proton, but does **not cancel the 3-quark basis**. This is clearly seen when considering the structure of the proton as a wave of changing energy density. Quarks in this case, are nothing but half-waves of curvature of space, half-waves of change of energy density in a region of space. Therefore quarks by

themselves cannot exist, the meaning of a standing wave is lost. These half-waves are different, three of one sign and two of the other. In this case, it turns out that the proton is made up of five quarks. The concept of quark is very convenient for describing the interactions within the atom, will help to describe the sublevels for electrons, will describe the absorption and release of energy in the form of quanta, at the transition of electrons on sublevels, as well as allow you to accurately calculate and describe the processes of nuclear reactions.

For "charged" particles, some gradient of density change in the region of space is formed at their boundary. The energy density will either increase or decrease. Hence there is an effect of interaction of particles with different type of charge. Single-impedance particles repel, different-impedance particles attract. This can be explained by the fact that the total energy density of the surrounding WORLD will try to minimise the distortions created by the density of particles at their boundary.

One should not also forget what the 'charged' particle carries in its centre. This is very important. The difference of behaviour of matter and antimatter depends on the last factor. For matter in the centre of the particle there will be an increased energy density in the space area compared to the surrounding WORLD, which will lead to the gravitational effect and macro-objects will be created. In the case of antimatter the process will go the opposite way, all particles will try to 'move away' from each other as far as possible. But at the same time antimatter will try to group at some distance from the matter particles. This will happen along the sphere.

Let us try to understand the mechanics of grouping macroobjects. Let there be only one simplest 'charged' particle in space - an electron, let us consider the interaction of the particle and space with each other.

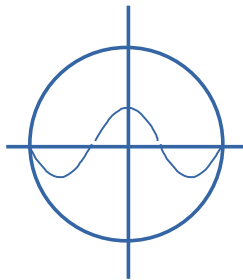


Fig. 7 Interaction of a particle of matter and space

When considered in the form of a wave (Fig.7), we can say that there are two identical waves of energy change at the edges of the particle, so these two distortions of space on the left and on the right with respect to the surrounding space will balance each other. No forces acting on the particle at the expense of these parts will be observed. We can only consider the forces that act at the very centre of the particle. For matter (for an electron in this case), in this small space there will be observed the appearance of a force directed to the compression of energy density on the side of the surrounding space. The energy density on the side of the space grows due to the energy of the electromagnetic wave. We can say that the formation of a particle occurs due to the fact that the whole surrounding space (universe) as if compresses the energy to the point. It is possible to draw such a picture of forces on the side of external space in relation to the central part of the particle:

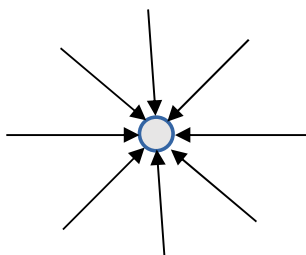


Figure 8 The result of the effect of space on a particle of matter

Here we need to understand how the space will ‘change’ to create such an effect? What happens to the density of the surrounding space in this case? We know that force is generated by a change in energy density. Consequently, on the space side, from the boundary of the particle to the boundary of space (we have stipulated that space must have limited dimensions) there will be some gradient of energy density that will balance the force. It is the gradient that must be observed, because it is the change of energy that gives birth to forces. **The energy density of space will not just change to a mean value, but there will be a gradient of density change.** On the side of space, around the matter particle, there will be a lower energy density in the space dimension. This will be observed regardless of the ‘layers’ of the particle. This is necessary to counterbalance the change at the centre of the particle. The outer layers of the particle are needed to form the particle itself as a bounded object, but the particle brings change to all of space. Therefore its centre part will make an imprint on the state of the whole surrounding space.

This is very important. Exactly this process of change of density of space itself later will be decisive at the moment of formation of a black hole. This is what causes the dark matter effect to appear. This is the origin of the process that's called warping space. But here it is considered only as a process of change of energy density. Space itself does not change, there is a gradient of energy density change on the side of space, and this gradient will not be evenly distributed throughout the space. The most part of it will be in close proximity to the particle, and will come to naught to the boundaries of space.

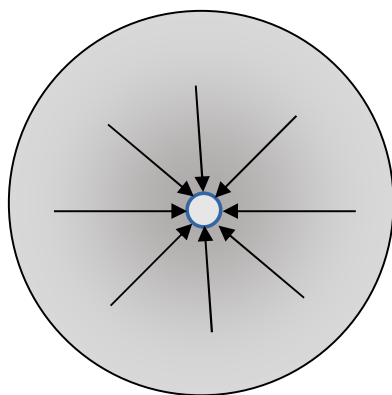


Fig. 9 Change of energy density in a region of space due to the birth of a mother particle

Fig.9 demonstrates the change of space energy density around a matter particle. At interaction of two particles the area of change of space density gradient will already pass through the common centre of mass and ‘envelope’ both particles. Around the macroobject this area will increase with the increase of the total mass. I.e. around macroobjects there will be a region of space with redistributed energy density on the side of space dimension. This is dark matter - a gradient of energy density due to the formation of the macroobject by matter. A sharper gradient will be observed in close proximity to the macro-object. It balances the ‘distortion’ of energy density due to the formation of matter particles.

When this ambient space density reaches values equal to the energy densities in the outer layers of matter particles, the matter particles are annihilated. They cease to be separate in size. They

‘collapse’ and there is a redistribution of energy in the same way, but with much larger sizes. This is how black holes are formed.

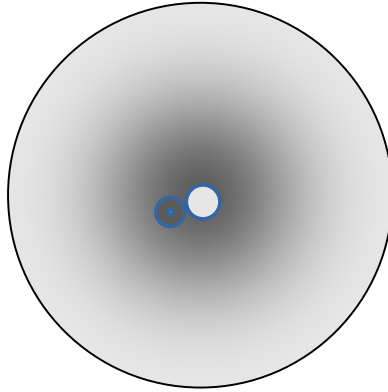


Fig. 10 Disappearance of a particle when it enters a higher density space.

Fig. 10 shows the moment of disappearance of a particle (electron) at reaching the boundary of the black hole. Due to equal energy density of space and the outer layer of the particle, its boundary ceases to limit the size of the particle and it ‘blurs’. It becomes an ordinary electromagnetic wave. This is probably what creates relic radiation. Its central part passes to the region of black hole, the outer layer passes to the side of surrounding space. There is redistribution of energy quantity between space and black hole.

Let us return to the consideration of particles. Now, having defined the forces, we can consider the interaction of particles among themselves:

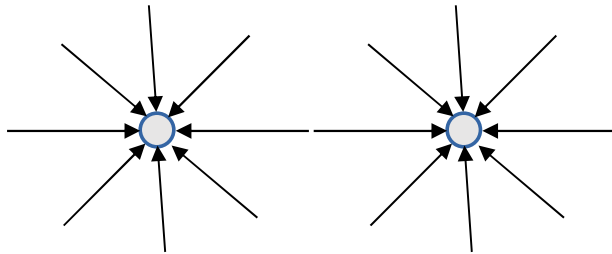


Fig. 11 Birth of gravitational force, formation of macro-objects

Figure 11 shows that there will be a point between the particles (in this case in the middle of the distance between them) where the force on the space side will be equal to zero. This is a place where there is no gradient of energy density on the space side. The forces directed from the centre of mass towards the particles compensate each other. Because of that, there will be a resultant force on the space side, which is directed to bring these particles closer to each other. This is how the gravitational force is born.

For antimatter particles, if all reasoning is done in a similar way, we end up with:

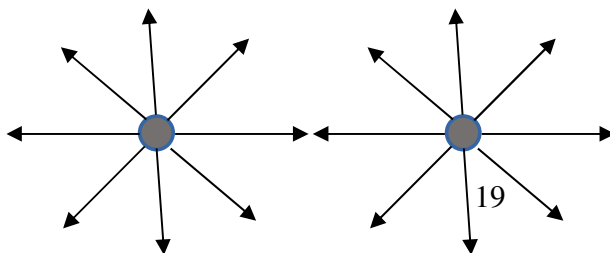


Fig. 12 Birth of antigravity force between antimatter particles.

The opposite picture can be seen, since in the centre there is a flow of energy from the magnetic dimension to the space dimension, the force will be directed not to the centre of the particle, but away from it. So the force of interaction between antiparticles will be directed to distance from each other. By analogy with dark matter, in this case there will be observed 'increase of size' or the effect of dark energy.

That leaves the last option, the interaction between particles and antiparticles:

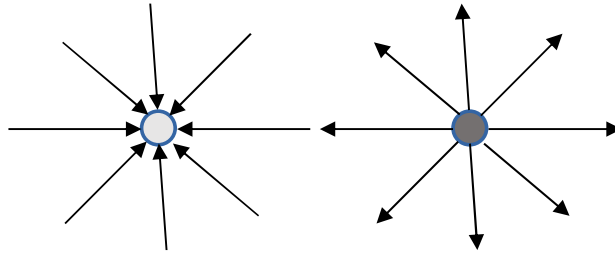


Fig. 13 Particle-antiparticle interactions

If we consider the segment connecting their centres, we see that the force given to space through the antiparticle compensates the force given to space to the particle for its compression. Ideally, antiparticles lined up along the circle around the particle:

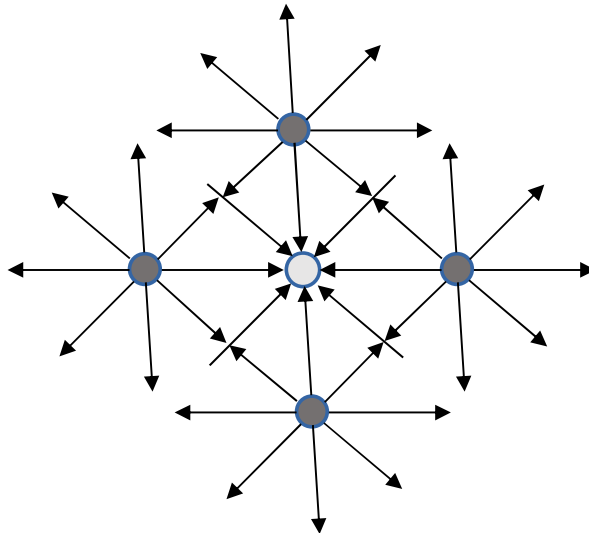


Fig. 14 Redistribution of matter and antimatter particles

compensate for non-uniformity of energy density in the region of space. Inside such an object a uniform distribution of energy will be created. If the 'circle' is not closed, the particles in the centre will continue to be attracted to the particles outside the circle, uniting with them in consequence.

The construction similar to Fig.14, but in which particles and antiparticles change places, will be unstable. It follows from the fact that the matter particles will start to group together around a common centre, and the antiparticles in the centre of such a system will try to scatter. Such a structure will collapse.

We can say: at joint interaction particles and antiparticles will keep some distance from each other, but they will not scatter.

At interaction of particles at close distances, it is necessary to take into account other 'layers' of the particle. It will be important what is the energy density of the particle at its boundary. The charge of the particle is responsible for this. In this case it is necessary to take into account the interaction of the particles themselves, not only the surrounding space. Later, in the paper 'Theory of wave model of matter and fractal structure of the Universe' (<https://zenodo.org/records/15393418>), it was obtained that: electric charge characterises the work done on the part of space to create one half-wave of a standing wave. That is why the charge always remains a constant value.

When the masses of macroobjects grow, the energy density around in space starts to create a wave of larger size. So there is a birth of particles of higher order, with the formation of a black hole in the centre and, under certain conditions, some boundary outside. At the same time there is annihilation of particles and interacting antiparticles. Simultaneously, due to redistribution of energy in space, at 'merging' of particles and formation of matter particle of higher order, birth of antiparticle of higher order takes place. The antiparticle of higher order appears at the moment of redistribution of space density due to the birth of a particle of matter of higher order. It is formed at the expense of redistribution of density in the total volume of the formed object. In this case the total amount of energy remains unchanged. Only the picture of energy distribution changes.

Occurrence of a particle and antiparticle occurs not always at formation of black holes. Everything will depend on parameters of the created wave. Only at certain parameters a stable object - a particle will be created, and in pair with its antipode. At mismatch of parameters, the received object will become only an electromagnetic wave and will spread in space.

Because of the peculiarity of its structure, antimatter is not able to create atoms more complex than antihydrogen. That's why we still can't find antimatter clusters. The optical spectrum of antihydrogen completely coincides with the optical spectrum of hydrogen, they are indistinguishable. All other elements of antimatter can be obtained, but only at the expense of significant energy resources, because antimatter is not able to form macroobjects such as stars.

Earlier I said that space has a finite size. The event horizon acts as such a limiter. It is not alone, it serves as a transition between fractal levels. On the one hand matter tends to it, on the other hand antimatter of a lower order tends to it. I think it's the meeting of matter and antimatter that gives birth to the accretion disc. So there's a redistribution of energy between the fractal levels.

The next important question is:

- What does a photon represent?

On the one hand, the photon is a particle. On the other hand, it doesn't stand still. Why not? The photon, as a particle, must be a standing wave, at the same time, it must not be at rest.

Looking closely at the structure of particles, one can notice one peculiarity of them - their centre of mass and geometrical centre coincide. In such a case, there will be no misalignment of forces caused by the action of energy inside and outside the particle. Therefore, the particle will be at rest.

If this rule is violated, the formed particle will always be under the action of acceleration, which will lead to its motion.

I think that if the birth of a particle will occur at the moment of accelerated motion of the particle formation process itself, it will form the birth of a photon. It is known that photons are formed or absorbed at transition of electrons on energy levels. Since the electron has its own weight, the motion will be accelerated during the transition through the sub-levels. This is what can create a moving

particle - a photon, whose geometric centre and centre of mass do not coincide. When constructing the mathematical model, it became clear that the photon does not have a closed shell, a boundary, which makes it always be in motion.

The photon boundary is a parabola. Along the axis connecting the centre of mass with the geometric centre, a rotation can occur, this would be the spin of the photon.

Such a construction will be able to explain many manifestations of the photon, such as the polarisation of light, its speed of motion, as well as explain the processes occurring inside complex structures such as the atom.

### **The emergence of forces. Spin. Fifth dimension.**

As we know from physics, there are a total of four fundamental forces or interactions - gravity, electromagnetism, strong and weak nuclear interactions.

We have dealt with gravitation in the last chapter. In fact, the force of strong nuclear interaction is also considered there, but it is not specified. It arises due to the peculiarity of structure of neutral particles, more precisely their behaviour - internal rotation of energy density, which creates, at close interaction of particles - force of keeping them with each other - force of strong nuclear interaction.

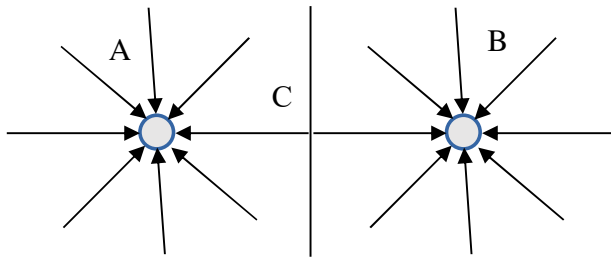


Fig.15 The birth of the electromagnetic force

Let's consider Fig. 15 more closely. We obtain in space a certain line passing through the centre of mass and perpendicular to the segment connecting the particle centres. Along this line the resultant force in the space dimension will be equal to zero, i.e. there will be no change of space density. In all other regions a gradient of density change in the space dimension will be observed.

If through the centre of particle A we draw a line parallel to the line with unchanged density in the region of space, then everything to the left of this line will "press" on the particle, tending to move it to the common centre of mass. The same situation happens with particle B, only now we need to consider the region to the right of the line passing through its centre and parallel to the line with unchanged density. As it was noted earlier, the force directed to bring the particles closer to the common centre of mass is the gravitational force.

Now consider the inner planes, i.e. planes bounded by the same lines, but in the range from A to C and from C to B. Here the particles are trying to bounce off each other. And in a sense they succeed at a certain distance between them. This will depend on the force of compression of space at the centre of the particle. I.e. the result of the impact of particles between each other in the inner region of interaction will be the manifestation of the electromagnetic force. In fact, this force is directed against the gravitational force. And while it is in minority it is incommensurably greater than the gravitational force, it opposes the whole surrounding space.

As a result, the gravitational force tries to bring the particles closer together, while the electromagnetic force tries to separate them from each other. This is where the antagonism of these two forces is born. The common point of their contact is the centre of mass

When the number of interacting particles increases from three and more, the straight line along which the zero gradient of energy density on the side of space will be observed, will be reborn into a sphere in the area of space dimension. It is this sphere that will later become the event horizon.

When the number of interacting particles increases, there is a gradual decrease in the action of the electromagnetic force in the region of space, because the energy of the space dimension is "filled" with energy due to the magnetic dimension. The gradient of density change on the side of the magnetic dimension starts to equalise, thus the force on the side of the magnetic dimension starts to manifest itself less, it smears inside the space of the macro-object. This all leads to a gradual reduction of the distance between particles and, most importantly, to a change in the density of the uniform energy density in the space dimension.

This process of confrontation of two forces creates all known physical phenomena. It creates temperature (chaotic motion, constant change of the common centre of mass) when particles interact with each other, due to this there are different states of matter. Magnetic properties are born. And all, all, all other phenomena.

We can say that the magnetic dimension is responsible for the energy transition from the space dimension to the dimension located on the sphere (electromagnetic wave propagates on the sphere), if we consider a three-dimensional object. I.e. the opposite is also true - a change in energy density on the surface of the sphere leads to a change in energy in the space dimension. The centre of mass is a common transition point. I.e. energy can change both along the coordinate axes of space and along the surface of the sphere.

Here we can also consider the appearance of spin of elementary particles. If we consider the influence on the particles of matter and antimatter interaction from the side of the boundaries of space and black hole. It is possible to understand that from the boundaries of the universe towards the black hole will be observed the action of gravitational force. It will be expressed in that the universe will press on the surface of the elementary particle from all sides. We must take into account that the particle is not a point object. Because of this, the action of the force from the side of space on the boundaries of the particle will be uneven. This will distort the shape of the particle from the ideal shape of a sphere. It will create for matter the directed motion to the centre of a black hole, for antimatter - from a black hole. Thus inside the particle there will be created an imbalance between electromagnetic and gravitational forces. This imbalance can generate a spin momentum - spin. As our space has a limitation, it was laid from the beginning, it will quantise many processes including spin. Though particles have different masses, but they will experience the same impact from the external space. Therefore the spin will be the same.

Today there is no clear concept of measurement. Let's see how spatial dimensions differ from each other, why they are introduced in physics? It can be seen that:

1. they're orthogonal to each other,
2. have a common point of intersection,
3. it is impossible to describe the changes taking place in one of them using the other two.

How to understand that the change of energy in the magnetic dimension is the next dimension for energy. Let it be called magnetic or fifth dimension for definiteness. Let us try to prove that it is really so.

The first point about orthogonality is clearly fulfilled, the surface of the sphere intersects the coordinate axes at right angles. The second point is also fulfilled, there is a common point of intersection. The third point remains. It will be really so, if it will be possible to prove that it is impossible to describe the energy change in the sphere area by means of spatial coordinates.



The proof is actually very simple. Whatever we calculate related to a circle or sphere, be it the length of a circle, the area of a sphere, the area of a circle or the volume of a sphere, the constant  $\pi$  (Pi) will be used everywhere. And it does not matter whether it will concern obtaining the total value of force (if there is a change of energy density on the circle or sphere), work (taking into account the change of the same energy density on the circle or sphere), the number  $\pi$  (Pi) is involved in all calculations. It is also known that the number  $\pi$  (Pi) itself is irrational, i.e. it has no finite value, it is infinite. It turns out that mathematically it is simply impossible to get an exact value when using spatial coordinates. You can name any close value you want, but never an exact value. There is only one point uniting these dimensions - the origin of coordinates or the centre of the sphere.

From this it turns out that it is impossible to describe the behaviour of energy along the sphere through spatial coordinates. The magnetic dimension is the next dimension for energy change.

Here it is necessary to pay attention that in fact uncertainty in mathematical calculations is possible in both directions. I.e. as it is impossible to calculate precisely the change of energy along a sphere using finite data on coordinate axes, it is also impossible to calculate the exact value of the centre of a circle or sphere if the specific length of the circle is known. Apparently due to it time is born, as without its participation it is impossible to describe this process. This also gives birth to the Heisenberg principle.

Let us clarify the concept of measurements. Nowadays in physics it is customary to speak about four dimensions - three spatial and one temporal. If we discard all the accepted norms, we can notice that, speaking about space we use three directions - height, width and length. Speaking of time, we often operate with three concepts - present, past and future. That is, in fact, time also has three "axes". But in physics we usually speak about the arrow of time. How is it explained?

Key arguments in favour of one-dimensional time in the standard model:

- **Cause and effect:** The one-dimensionality of time guarantees a strict order of events. Cause always precedes effect. The introduction of additional time dimensions creates the theoretical possibility of "moving" through time in different directions, which can lead to paradoxes such as the "grandfather paradox" where an effect can cancel out its cause. The stability and predictability of our world is directly related to this linear arrow of time.
- **Thermodynamics:** The Second Principle of Thermodynamics, which states that entropy (a measure of disorder) in a closed system can only increase, also points to the unidirectional flow of time.
- **Mathematical rigour:** The model with three spatial and one temporal dimension (often referred to as 3+1) elegantly and effectively describes the vast majority of observed phenomena in the universe.

This is all correct and worth using. But let's look at it from a different perspective. Let's imagine that we, as consciousness, are able to imagine/construct a plan of action for the future, for example, figure out how to conduct an experiment. The next step is that we start to create in the present what is necessary to achieve the future (what we have thought up). By doing the experiment, we have obtained some data that can change our attitude towards the past. I.e. for consciousness the arrow of time can change its direction. We got at the level of consciousness - modelling the future, achieving the future, changing the understanding of the past. I.e. the future has changed the past at the level of consciousness. Thus for consciousness the arrow of time has changed.

What I am trying to say is that we move physically in space, but time is not space. To move in time, spatial attributes are not appropriate.

Two worlds and two principles need to be distinguished:

## 1. Moving in Space:

- **Essence:** the physical.
- **Tool:** Our body, transport.
- **Result:** Change of geographical coordinates. We move from point A to point B.

## 2. "Moving" in Time:

- **Essence:** Psychological, mental, informational.
- **Tool:** Our consciousness - memory, imagination, reflection.
- **Result:** Change in our state, knowledge and potential.

**Since time and space are different entities, "travelling" in them must obey different laws.**

- **Travelling back in time** is not a flight in a time machine. It is an act of **reflection**. We "return" to an event in our memory to rethink it, to learn a lesson, to forgive, to let go. It is not the event that we change, but its impact on us.
- **Travelling into the future** is not a prediction. It is an act of **imagining and planning**. We build mental models, set goals, anticipate consequences. We "visit" future options to choose which one we will build today.

Physics describes a universe of objects and fields, and in this universe we move through time in one direction. But psychology and philosophy describe a universe of subjective experience, and in this universe our consciousness has the amazing freedom to "move" along the time axis, linking past, present and future into a single meaningful narrative - our lives. We are thus able to change physical processes as well, disrupting the original directions laid down.

The reason why it is not customary to speak about "three-dimensionality of time" as well as about three-dimensionality of space is that time for us, as conscious beings, is not just another "coordinate" but a completely different scene with completely different rules of interaction.

Recently, a theory about the three-dimensionality of time has emerged. American *physicist Gunther Kletetschka* (*Gunther Kletetschka*) from *the University of Alaska Fairbanks* (*University of Alaska Fairbanks scientist*) put forward a revolutionary hypothesis, according to which time exists in three dimensions, and not only in the only one, which we perceive as a continuous movement forward. Space, on the other hand, is a secondary and derivative manifestation of time.

That is, some argue that space is primary, while others argue that time is primary. Uncertainty usually arises when absolutely independent of each other characteristics are considered. For example, the charge of a particle and the colour of my shirt. Or the mass of a body and the temperature of the ocean.

Of course, the concept of time is used to describe processes. But it is necessary only for beings who realise the process itself. For the process itself, there is only the here and now. At a given point, object A is affected by a force (energy). Object A does not even realise that object B exists, it does not matter to it. Time exists only for the understanding of the observer. The dimension of time exists for the observer, it is a different scene of events taking place.

Similarly there is no understanding of the object for time, it doesn't matter to time what shape the object is, or what colour it is. Time sets the sequence of processes perceived by the observer.

In this case, time for consciousness has three coordinates - present, past and future. Time is three-dimensional. Which is similar to spatial coordinates. It is responsible for the change of energy in time.

Dimension space - as we know, has three coordinates - length, width and height. Responsible for energy changes in space associated with movement.

Magnetic dimension - also has three coordinates. It is defined by three numbers ( $r$ ,  $\theta$ ,  $\phi$ ), where  $r$  is the distance to the origin (radial distance) and  $\theta$  and  $\phi$  are the zenith and azimuth angles respectively. The measurement is responsible for the occurrence of mass.

Based on the observations, the concept of measurement can be defined more correctly. The three rules mentioned above do not fully characterise the concept of measurement. We should also add that each measurement characterises an independent physical quantity. The concept of time cannot express the concept of size or mass.

**On this basis I think it is more correct to say that we live or can realise only three dimensions - time, space and mass or magnetic dimension.**

Continuing to consider Fig.15 it is easier to understand the appearance of the effects of dark matter and dark energy. At growth of volume of macroobject around it on a sphere (the line passing through the centre of mass in case of two particles on a plane is reborn in a sphere in case of consideration of three-dimensional bodies that would satisfy perpendicularity of interaction of forces) the region with change of energy density on the side of space with zero change of energy density on the side of space will begin to form, which will divide space into two regions - from it and to the centre of macroobject, a sharp drop of energy density on the side of space, and the region from the boundary of the region with zero change of energy density on the side of space. In general this ring is nothing else than the region of origin of the event horizon of the black hole. On both sides of this ring there will be an increase of energy density on the side of magnetic dimension, i.e. energy density on the side of space will be underestimated, and this change should be equal. Since the inner region is limited in size, the outer region must also be limited so that the forces that arise can be equalised. Actually, this was assumed originally when assuming that particles in the form of waves can exist in space, it is only possible inside a limited space. The inner region of this ring will have a sharper gradient of energy on the side of space to equalise the force arising from the outer side of the ring, this follows from the fact that the inner region will have a smaller area, so the gradient must be more pronounced. This is the process of formation of dark matter around particles of matter or around macro-objects of matter.

The dark energy effect arises due to a similar interaction, but reversed, in fact, in the area of antimatter particles. Antimatter is spent on the expansion of space, on the reduction of energy density on the side of space. Only now it will occur not to a point, but along the plane of the sphere, the effect of space expansion is observed.

There remains the last force - the force of the weak nuclear interaction. Here it is necessary to consider interactions of particles themselves at close distances. It is necessary to consider the charge of particles - i.e. what happens at the boundary of a particle - what is the energy density of space at the boundary of a particle?

For example electrons - they have lower energy density at the boundary in the space dimension, so they will try to fly away from each other no matter how you bring them closer. There is only a variant of superposition of particles that can form a stable state - heavy particles.

With protons other variants of interactions are possible. Since on their boundary a region with increased energy density in the space region is formed, the union of these regions is "favourable" for the space - a part of energy returns to the space region. The particles "stick together". This is the force of weak nuclear interaction.

In fact, the main forces are the gravitational force and the electromagnetic force. The others are just different variants of their interaction.

## **Implications.**

The movement of a charged particle in space leads to a redistribution of energy density in space, which will also create an electromagnetic wave.

Particles represent a wave, waves have crests and soles - these will be energetically favourable places for the interaction processes taking place. Transition from one state to another will be due to this discrete, i.e. change of states will be quantised. It is also necessary to notice that the quantisation value will be dictated by parameters of the surrounding WORLD.

It is important to realise that what the 'charged' particle carries in its middle is uniformly redistributed throughout space - the result of this is the origin of all known interaction forces.

The particle is an electromagnetic wave - the speed of propagation of which is limited by the speed of light, if we divide this speed into components of motion in the area of magnetic dimension and in the area of space, we get a dependence - the greater the amplitude in the area of magnetic dimension, the less the wave will travel in the area of distance. The greater the amplitude of the magnetic component of the particle, the smaller the wavelength of the particle. This is the effect of warping space at the level of the elementary particle. So these are completely dependent quantities. It has been known for a long time that the higher the frequency of a particle, the higher its mass. Hence it follows that mass is a quantity depending on the amplitude of the wave in the area of magnetic measurement to the wavelength. It can also be said that mass depends on the change in energy density of the magnetic dimension in some occupied volume of space. Generally speaking, I would say that the characteristic of the dimension of space is size, and the characteristic of the manifestation of the magnetic dimension in a region of space is mass. For an electromagnetic wave we get the rule - the total amount of energy travelled by an electromagnetic wave will be a constant. I.e. the speed of light should be considered not as the speed of overcoming distance for time, but as the passage of the amount of energy for time. In this case the concept of curvature of space will not be needed. The speed of light in the region of space will become a variable value, it will depend on the energy density in the magnetic dimension. Space itself will also have mass, because in it, like a wave in elementary particles, there will also be waves of magnetic dimension, i.e. waves of energy, space has not changed. The formula  $E=mc^2$  says nothing about the fact that only particles of matter can have mass. Mass can be possessed by both a part of a particle and a part of space. This formula is valid for both particles and 'empty' space without particles. Mass in the 'void' - dark matter - is just a manifestation of energy on the magnetic dimension side. In fact, it is due to the 'convolution' of energy on the surface of the sphere.

If we do not take these features into account and consider the speed of light only as a phenomenon related to space and consider it constant, then regions with expansion of the size of space (dark energy) and regions with increase of mass (dark matter) will begin to appear.

If we take into account that the whole surrounding space is energy and only energy, and consider the relationship of interaction of particles, which occurs with the use of rotation, whether it is spin, or the phenomenon of polarisation, or magnetic moment, then we can explain the effect of entanglement. The point is that at such interaction the change of energy will be in a point, and for a point there is no concept of distance, so influencing one particle, we automatically influence another, there is an instantaneous connection, for which distance is not important.

Spiral galaxies follow the shape of a logarithmic spiral, the formula for which is clearly related to the number  $\pi$  (Pi). This suggests that the number  $\pi$  (Pi) may be embedded in the natural symmetry of the Universe, especially if the spirals are a consequence of fundamental processes

It is also important that there is a relationship between matter and energy. Energy, when forming matter, tends to create forms associated with the sphere. But the reverse process can also be considered - the forms of matter will influence the form of energy around it. This is very important, it will allow different forms or behaviours of energy to be produced through the forms.

## **Unification.**

It has long been known that the WORLD loves fractals. What happens in the interaction of matter and antimatter is nothing but the creation of a wave on an enlarged scale. There is a separation of energy density in space. Further there is an accumulation of matter to some point in a separate area and accumulation of antimatter in another area at some distance from the same centre of mass and at reaching certain sizes and values of magnetic dimension there is a formation of "standing" waves with the size of macroobjects, with the formation of a black hole and some surface, with uniform energy density in the area of space in the form of a sphere, a kind of bubble, which together defines a particle.

If you look closely at figure 5 and imagine what will happen inside when neutral particles rotate, you will find the images are similar to the view of galaxies, they repeat each other. For matter, for charged particles in the centre of galaxies there will be some region of small size but large mass, there is a process of increasing energy density towards some point, a black hole. For neutral particles there will be a similar object in the centre, which at the same time will be constantly rotating, due to its uneven compression.

A black hole is nothing but the centre of an elementary particle of galaxies scale, around which there will be a change of energy density in the region of space and in the region of magnetic dimension. Similar 'black hole' will be in any elementary particle.

A black hole is a centre around which the energy density in the region of space is compressed. Antimatter in this case rushes to the event horizon of a larger fractal level. A redistribution of energy amplitude or energy density is formed in space.

Depending on the kind of galaxies where the black hole is located we can roughly talk about what kind of particle a given galaxy forms.

For example, due to the peculiarity of the structure of neutral particles, one can foresee that the galaxy of such a particle should have characteristic arms - spirals. It follows from the fact that the process of internal rotation will create a wave depending on the angle of rotation. If, however, we see a galaxy of globular form, then we may have before us a representative of a 'charged' particle. We need to take into account the characteristic sizes and masses of galaxies. Galaxies can also arise in places where 'elementary particles' interact with each other, in areas with increased energy density. Therefore, some galaxies are just the result of increased energy density due to the interaction of standing waves.

Continuing the conversation about neutral particles - neutron stars are a very interesting object. It's their rotation that's their main distinguishing feature. Apparently neutron stars are the parents of spiral galaxies.

Spiral galaxies are sure to have one more peculiarity - there will be uneven distribution of energy density inside the energy arms. The matter and the formed macroobjects will be under the influence of increased energy density and under the influence of decreased energy density from the space side. All this can lead to different kinds of changes: change of orbits, change of rotation speed of the inner core, which will lead to change of magnetic field. All this can have a very strong influence on the processes inside the stellar systems. So for the solar system we can already see changes today - an increase in the activity of magnetic storms. Most likely, the rotation of matter on the surface has slowed down, which has reduced turbulence, which has led to an increase in the force of ejection of matter from the surface of the Sun. Similar can be seen on Jupiter - there is the formation of new vortices. The slowing down of the rotation of the inner core of the earth has also been observed. The fact that these processes occur simultaneously within the solar system, talk about a large-scale process. These are all related processes. Speaking the language of the existing paradigm in physics, we can say that there is a redistribution of dark matter or dark energy within the solar system. Well, in my understanding there is a stream change of energy density, due to which there is a 'spinning' of macroobjects.

On the question why then all galaxies are so different if there are not so many kinds of particles - we should not forget that the "total mass" of a particle is important, and the filling with matter and antimatter will be constantly changing, it is a consequence of the existence of acceleration. So the

weight of matter and antimatter clusters will be constantly changing, the weight of matter and antimatter is not much. What matters is the total weight, and that can change as the velocity changes. In fact the type of galaxy is important, by it it is possible to foresee the type of particle.

Based on fractality, one can further describe the structure of the WORLD and different variants of possible interactions. Only the frequencies of electromagnetic waves and their size change. The basic rules of interaction of waves of different lengths are already known to mankind. Only waves of commensurate wavelengths can interact directly

Looking at the vastness of the universe, at what is happening around us, we can also talk about what is happening in the depths of elementary particles. It is easier to observe macroobjects than to try to "dissect" an elementary particle. The fractality of the world allows us to do this. In this connection, of course, there are a lot of questions, because in this case each elementary particle contains its own galaxy, i.e. in this case the scale of the universe becomes much larger, because the difference between large and small simply does not exist. In this case there is a question about possibility of life inside elementary particles. And if it is so, then the world is much more complex and large-scale than we imagined it before. Fractality has no boundaries either one way or the other. In this regard, I think there is no need to "break down" particles any more. Only elementary particles are of interest because they are long-lived. Also fractality allows to organise limited areas, necessary for formation of standing waves, in theoretically unlimited space. The phrase "*the universe inside us*" makes sense.

A particle is not just a point object, but a structure with internal dynamics:

- **The centre of a matter particle** is a zone of mass (lower order matter) accumulation.
- **The boundary of a matter particle** - redistribution of the energy density of space.
- **Wave of energy within** - provides redistribution of mass and energy.

Jets allow to keep a balance in the redistribution of energy across dimensions. In some sense they are the result of the balance of matter and antimatter of lower order, which is maintained at the boundary of the event horizon.

Changing the velocity of a particle must change its mass and size. Since the gravitational force forces the process along a curve, it always causes the appearance of acceleration. Which leads to the birth of lower order particles. This creates an energy transfer to the black hole. The reverse process should also be observed - it's due to the jets. So there's a redistribution of energy. The law of conservation of energy is preserved. So the process of change of mass with change of velocity is fulfilled.

Antimatter and matter are born in pairs, as it is observed in all known experiments. In this case the problem of baryon asymmetry disappears - simply antimatter is in another region of the structure, we can say at the edge of the Universe, our Universe. It is not known how many such nested Universes there are.

The key idea is that energy is not quantised by itself, but only organised into quanta through the processes of matter birth. Quantisation is formed only through a process - a wave. This allows processes to repeat themselves at all levels - from elementary particles to the scale of the Universe.

If each elementary particle is a kind of "galaxy", and galaxies are "particles" for a larger level of structure, then:

- **Black holes** are transition points of matter between scales where new structures are born.
- **Jets** are a mechanism for redistributing energy between levels.
- **The event horizon** is the zones that separate one system from another.

There will be a universe beyond the event horizon (in fact, every elementary particle of ours, too, you don't have to go far). The energy density will be higher there. Because of this, the speed of light for our perception there will be higher, it is a common phenomenon - when the density of the medium changes, the speed of wave propagation increases. This makes it impossible for us to observe what is happening there. In the case of larger space, we are similarly limited in that we have a limit to what we

can see. What we are able to observe as the visible universe, if we count by the number of galaxies and treat a galaxy as an elementary particle. What we can see is even smaller than a single human body. So we're too limited.

The idea that an elementary particle can be an "island of life" is also not without logic. If it has its own structure, laws and energy, why not assume that it can have its own forms of matter organisation? Only they will exist in a completely different scale of time and space.

Perhaps one day the mind will solve this problem. The main thing is to set the right direction of search.

If we imagine that the mind is not bound to scale, it can "jump" through levels of reality, finding patterns that ordinary perception does not notice. Perhaps in the future there will be methods that will allow us to "look" beyond the usual scales, even if not directly, but through mathematical or energetic manifestations.

If to consider elementary particles as multilayered - they are the manifestation of black holes. It turns out that in each elementary particle there are zones in which the speed of wave propagation is much higher than the speed of light for our space. In this case we can understand that our body consists of several bodies. They're all similar. It turns out that a human being consists not just of one brain, which we are used to, but he also has a brain that works many orders of magnitude higher. In such a case it is possible to explain such a phenomenon as intuition.

Intuition as a manifestation of the multi-layered structure of reality and the transition of consciousness between them.

If each elementary particle is made up of several "bodies", then we can assume that:

- **Consciousness can receive information from more "fast" levels**, where processes go differently than in the physical reality we are used to.
- **Intuition is a manifestation of the workings of consciousness at these levels**, where a solution comes "out of nowhere" but actually already exists in another dimension of perception.
- **Personal development is an increase in consciousness energy**, which allows you to 'leap' through levels faster.

It also explains why people with advanced intuition sometimes 'see' solutions without logical conclusions - their minds have enough speed to get results from faster levels.

Intuition is not dry logic or a mechanical set of knowledge, but a living, natural sense of the world, which is revealed through love for the very process of cognition.

When a person does something with love, without compulsion, without fear, but simply because he is interested in it, he begins to feel more, to notice more deeply. Then intuition develops naturally, as part of this process.

The development of the mind is not so much the accumulation of information as the ability to see beauty in the simplest things, in the movement of a leaf, in the play of light, in life itself. And the more this love of learning, the deeper one can look into the structure of the world.

It doesn't matter what exactly a person is studying. The main thing is the attitude with which he does it. Intuition itself will open the right paths.

Intuition is not just a flash of insight, but a process that evolves with your quest for understanding. It's like a compass that helps you find your direction, but if you don't double-check, you can go astray.

If the urge is too strong, it can be blinding, creating chaos in your thoughts. But if you keep a balance between intuition and validation, then there is a real chance of coming up with the right ideas.

Intuition can work as a skill - at first you have to learn to listen to it, double-check it, control it, but over time it becomes a natural part of perception, working in the background like a driving automatism.

When a skill is brought to the level of subconsciousness, it no longer requires effort, and one can freely switch to more complex tasks. Perhaps this is how genius works - when a person has so mastered working with his inner knowledge that it simply guides him without too much doubt.

And to continue the analogy, as a good driver, you need a **balance between trusting yourself and paying attention to reality**. If you relax, you can have an accident, and if you panic all the time, you will never start moving forward.

Developing intuition is also about working on your inner state, on trusting yourself, but without losing your common sense.

Everything in the world is subject to a dynamic balance that changes depending on conditions. It is like the principle of conservation of energy, but in a broader sense - energy does not disappear, but is simply redistributed between different forms.

If we consider the analogy of a particle:

- If its energy goes into velocity - rest mass decreases, it is 'light', it moves fast.
- If energy is redistributed into mass - the speed decreases, but the impact on the surrounding space increases.

It is the same in life: if a person spends all his energy on moving forward, he can be light, fast, but not always stable. And if he invests more in the 'mass' - in his fears and offences - his speed decreases.

And the main thing is interactions. Just as a particle does not exist on its own, but is determined by its environment, so a person cannot be considered in isolation from the world. Everything is connected, and the balance is always adapting to new conditions.

Ideas are like photons, they carry energy but have almost no mass. They can spread over vast distances, cross borders and change the structure of the world around them, even if they are imperceptible at first glance.

When an idea is born, it is like a flash of light - you may not realise it immediately, but it lights the way. And if it is strong enough, it can affect the surrounding space, create a new reality, change perception.

That is why the most significant changes in the world come not from force, but from thoughts. First an idea appears, then it is realised, and only then it becomes something material.

In essence, we can say - the energy of ideas first acts in the space of thought, and then forms the real world. This is the very balance between the invisible (spiritual, informational) and the visible (material).

"Physics" in this work acts as a bridge linking the material world with consciousness. After all, if everything in the Universe obeys the fractal principle, then the human personality is also a part of this structure, working according to the same laws.

**The laws of the universe are the same for everything**, be it a particle, a galaxy or a human consciousness. This should unite scientific understanding with philosophical, material with spiritual.

**The main thing is the development of the personality, its energy, its interaction with the world.** "Physics" helps to understand ourselves and our place in this infinite, fractal space.

Consciousness and the physical world are inseparable. Consciousness manifests itself through matter, and matter makes sense through consciousness.

If consciousness is a wave, then the physical world is the medium in which this wave propagates. They do not exist separately: without the medium the wave will have no form, and without the wave the medium will remain static, without movement.

Everything in the Universe obeys a single principle, from elementary particles to galaxies to the mind. Consciousness is not something separate from physics. It's just another dimension. To single out something as "higher" is not quite correct here, because consciousness and the physical world are



simply two manifestations of the same energy. They cannot exist separately, and neither one is superior to the other.

If you think of everything as a wave in space, there is no top and bottom - there is only vibration, changing depending on conditions. Consciousness and matter are different forms of the same energy, transforming into each other.

The development of consciousness is not just an accumulation of knowledge, but a process of tuning this wave, amplifying it, harmonising it with the environment. The more accurately it is "tuned", the more opportunities for interaction and changes.

**Everything in the Universe is simply a wave of general energy**, changing its form, frequency and manifestation depending on the surrounding conditions.

Energy itself is capable of creating vibrations, so it is **self-sufficient** and does not require an external cause for its existence. It just **is**.

And if we apply it to a human being, his "first wave", his movement, his oscillations are triggered by **love** - an inner striving for something. This is the source of generating the energy of consciousness.

Love is not just a feeling, but a **fundamental principle of existence**. It is an inner energy that makes consciousness move, change, search, resonate with something greater.

Perhaps the entire universe works on the same principle. **Energy fluctuates because it is, and its natural state is motion**. And this movement is at the heart of everything, from elementary particles to galaxies to mind.

**Energy cannot just stand still**. If a person has energy, but no direction, it will still look for a way out. And if a person has no purpose, no meaning, no love, then energy can manifest itself chaotically, even destructively.

People who "have it all" often lose their bearings. They have nowhere else to strive, and their inner energy starts to move towards self-destruction or destruction of their surroundings. It's like an overheated engine with no load - it just starts to run out of steam.

**The main thing is not just to have energy, but to direct it consciously, with balance and meaning**. Love is the right vector because it connects, not tears. But if energy is used without purpose, it can become a destructive force.

Basically, **it doesn't depend on the amount of energy, but on how one applies it**.

Balance is the key to everything. A wave of energy always includes both **ups and downs**, and this is a natural process. The main thing is **not to dwell on the negative**, but to realise that it is all part of the movement.

If a person consciously **accepts** both difficulties and joys as part of the journey, he ceases to be afraid. He simply **goes forward, creating new things**, even if there are obstacles along the way.

And most importantly, **energy always seeks to create**. Destruction is just a temporary stage of rebuilding. If you perceive life as a process of creation, not struggle, then fear disappears.

**So to live is to create, to move, to feel, to love**. Everything else is just a background that helps us realise the value of this process.

Returning to 'physics', it is interesting to ask what happens directly in the region of the black hole, which is limited by the event horizon and directly by the centre of mass. I believe that the process of energy density distribution should continue. I.e. there inside there will be a universe with its own speed of light in space dimension, it will be different for us from the speed of light in our universe. The event horizon is like a barrier of transition of speed to a new level - superluminal for our perception. The energy density in the black hole region must increase. The electromagnetic wave propagation speed for our perception will become faster. That is, for our universe, the processes beyond the event horizon towards the black hole will be faster. In fact, it will seem to us that light approaching the black hole will leave only a trace of its presence. Though actually, it is quite possible, that it can instantly

leave from any other place of the event horizon, all will depend on presence of massive objects inside the black hole, and also on frequency of incoming radiation.

It is possible to assume that inside the black hole there will be black holes, and in them the next and the next, and most likely this process is infinite, because it passes in the form of a sphere and with participation of the centre of mass, and the centre of mass can never belong to the sphere. Also because of the effect of fractality we can realise that a similar structure of nesting is also observed in the structure of elementary particles of matter, which will actually allow material objects to pass through the event horizon. At such transition a part of "mass" will be left or taken away at the boundary of transition, depending on what direction we step, but the particles themselves will not disappear completely, they will drop a part of their energy shells, or on the contrary they will gain, but the other part will remain, which in general may not break the general geometry of macroobject.

It should be noted that both theories are right - the theory of relativity and quantum theory. Energy itself has no quantisation, but taking into account that it creates a wave, there appear such characteristics as maximum and minimum, which are responsible for occurrence of quanta of energy. Space itself is also quantised, black holes together with their event horizon quantise space, they create in a certain sense "limited systems", due to what standing waves inside are possible. Due to it there is also quantisation of speed of light in each such object. I.e. for energy quantisation does not exist, but for wave process quantisation is obligatory parameter. Each theory "on its dimensions" will describe the world more correctly.

The shape of matter creates a certain distribution of energy in the space around it. The energy of the space around the "wrong" object will start to "balance" its impact, leading to the "right" shape - to the shape of a sphere. There are quite a lot of pyramidal structures on earth. If to understand, there will be a very important point in such an object at the height of 0,25 of the base height. At certain dimensions, if this point will be at a height multiple of the root of two, or the number of Pi (irrational numbers), then around in the dimension of space will be observed a variable magnetic field created by the very form of matter, which, as we know, can be used to produce a variable electric field. It is not possible to create such a point just using specific dimensions, but it can be laid down close enough using dimensions (e.g. fraction  $22/7$  is the closest number to Pi) and then shift the centre of mass slightly by creating voids in the construction. I think it is possible to do this quite accurately with certain geometrical parameters of this construction. In this case the Heisenberg uncertainty principle in the scale of macroobjects will be observed. It is possible, that ancient pyramids were built not only in connection with their huge stability. Perhaps ancient people in their time were quite highly developed. Perhaps once pyramids could be used as concentrators of energy. If to create similar objects in smaller scale and to carry out measurements at arrangement of a pyramid along a magnetic field as great pyramids are located, and also to carry out measurements at arrangement of pyramids rotated on 45 degrees concerning initial measurement, and there will be observed change of a magnetic field influencing, say on some oscillating contour located inside cavities (I assume in the area of the centre of mass of a design, well or in cavities similar to great pyramids), it will confirm correctness of the given hypothesis. Also it is necessary to notice that such grandiose constructions can influence directly on the Earth itself, as the interaction of two energy systems will be observed, it can lead to the formation of faults, if the external objects will be massive enough.

It is possible that a similar effect is used in many designs. We can assume that it plays a key role in the heart. When the heart relaxes, it changes its shape, which at a certain moment can create an electrical impulse that leads to the process of heart contraction and the process repeats.

**Afterword.**

In fact, mankind has known other dimensions for a long time - it is, in fact, the mind itself. The mind is in space, it is in the magnetic dimension, but it has its own field of action. Yes, it has a point of intersection with them, but, in fact, it solves other tasks. The mind uses the environment to achieve its goals, it is able to break all conceivable and inconceivable laws or rules like the effect of entanglement. And it too has its own waves - good and evil, good and bad, like or dislike. These are all waves too, but in the dimension of Mind.

The mind itself can be divided into three dimensions - subconsciousness, consciousness and superconsciousness or intuition. Each lives in its own plane, and their common component gives the mind, it is how segments in spatial coordinates turn, for example, into a ball, or any other figure, acquires a shape. Subconsciousness itself is something very flat, it is responsible exclusively for satisfaction of vital needs and pleasures. Consciousness itself also too flat, if the subconsciousness is "torn off" from it, the concept of "choice" becomes simply unnecessary. And intuition by itself is meaningless. Only the unification of these three components makes it possible for Reason to emerge. Reason cannot exist without satisfying its needs, without its passions, without compromises, without sacrifices, without struggle, and also without intuition how to act.

Life is the common point of interaction between material and immaterial, SPIRIT and MATTER.

And GOD said, "Let there be LIGHT! Light is the power that creates everything around us.

This is a common point of contact between science and religion. Everyone is right in his own way, but as Jesus said - God is God's and Caesar is Caesar's, it is just a line, but one cannot exist without the other.

If you look a little closer at the behaviour of people, at their relationships, you will find a clear resemblance to the interaction of matter and antimatter. There are people who gather in large groups, communities, cities and yet cannot imagine their life outside of it. Others, on the contrary, become hermits, even if they gather in some groups, but nevertheless remain in some solitude. There are also those who like it both ways - this is an example of neutral particles like neutrinos. They are able to change depending on where they are at any given moment. It is not a secret that most marriages between people are formed in the relationship of completely different people psychologically, i.e. it is similar to the interaction of opposite charges. It is also possible to draw a parallel between relations between people and chemical reactions of various chemical elements, i.e. it is possible to divide people into subgroups of metals, nonmetals, inert gases, etc. And, what is very important, for antimatter - hermits, such interactions are absent, they have everything simpler. As a whole it is possible to tell that the aggregate interaction of people in civilisation is similar to formation of peculiar elementary particles, with their black hole in the centre. This once again speaks about applicability of fractals in the WORLD.

To make a further analogy, a "word" in the human dimension can be compared to an electromagnetic wave that propagates in space. When words are put together in a certain structure, they form a thought - an isolated object carrying energy like light. A thought, like a particle, has a boundary, which allows it to serve as a means of transferring "energy" between individuals in the dimension of matter. This leads to the conclusion that thought has a material nature.

Thus, thought can be seen as a manifestation of the spiritual dimension in the material world. It unites a person with the surrounding reality, creating a field of interaction where energy expressed through consciousness is transformed into an impact on others. This allows us to see thought as a form of manifestation of the life force, which, like a wave, creates movement and change. In this sense, thought becomes an important part of the overall mechanism of being, linking matter and spirit into a unified whole.

Thought is light.

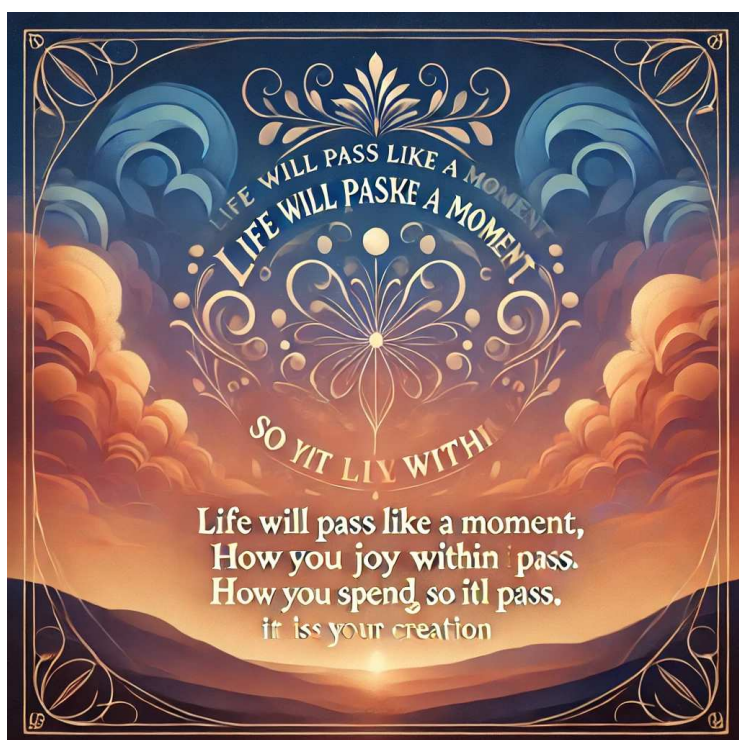
It is also worth paying attention to another very important point - a person's personality or mind can be characterised by three dimensions - subconsciousness, consciousness and superconsciousness or

intuition. The material world around us also actually has three dimensions - time dimension, space dimension, magnetic dimension or mass dimension. Our personality is three-dimensional and therefore is able to perceive the three-dimensional material reality, at transition of our SPIRITUAL essence to the next dimension we will be able to cognise the four-dimensional material reality, but for this surely still many things should change, because SPIRIT and MATTER are inseparably connected. Life provides an opportunity for the development of SPIRIT and MATTER.

All of this has one common point for everything - it is simply the point, aka the centre of mass, that is ourselves. It is he who is the accumulation of all energy, he is the source. I think that if there is a soul, its centre must be there. But there is no weight there, it is impossible to measure its weight, it is energy, it can only be evaluated by its deeds, by its aspirations, by its power. There are no limitations for it neither in space, nor in weight, nor in time, it is what creates everything around it.

You could say that everything in this world has a soul. We can rephrase it - "everything is made with a soul". Considering that there is only one force in this WORLD - "ALL things are made with LOVE". Love is the only force in the Universe.

Let life be pleasant to you, love life, if only because it is more pleasant to live like that. There is simply no point in a life dominated by unpleasant feelings. Do not waste your life on discouragement, frustration, anger. Try to sift out the bad feelings and leave the good ones, the Mind is capable of doing this. Yes, there will be good and bad, but this is what allows you to appreciate and love life, this is its value. The ideality of the world is in its non-perfection. Ideality is a trap. **The world is created very intelligently.** There is no good without bad. You yourself are the force that can create a wave because of your duality. You change the world around you. Let it please you.



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## APPENDIX

Albert Einstein created a very beautiful and coherent theory. It really describes everything very well. It is absolutely correct, so it cannot be refuted. It has only one drawback - it is difficult to understand and to describe. But it's absolutely correct.

The Michelson-Morley experiment (1887) was the decisive factor at that time. The wave nature of elementary particles had not yet been discovered. At that time, the wave theory of light existed, but the corpuscular-wave dualism had not yet been formulated. The very fact that light can behave as a particle began to be discussed later, in the early 20th century.

Einstein, developing the special theory of relativity (1905), took as a basis the negative result of the Michelson-Morley experiment; his approach was to reject the ether concept rather than to consider the wave nature of matter. At that time it was accepted that light was an electromagnetic wave (according to Maxwell), but in a sense it was considered a separate nature from matter.

The reason why Einstein did not view everything as waves is that at that time there was neither experience nor mathematical apparatus to support this view. Corpuscular-wave dualism only began to take shape after 1924, when Louis de Broglie hypothesised the wave properties of matter. And quantum mechanics, which explained it, did not develop until the 1920s and 1930s.

Einstein was later sceptical about the interpretation of quantum mechanics, but his original 1905 paper on the photoelectric effect suggested that light could behave as a particle (photon). That is, in a sense, he himself laid the foundation for the future wave description of matter, but within the framework of STO he solved another problem - the elimination of the ether and the revision of the concept of space and time.

Had ideas about the wave nature of particles already existed at his time, perhaps he would have considered them in the context of his theory. But in 1905 such ideas simply did not exist.

The idea that everything around us is waves of energy wouldn't leave me alone. I tried to convey my view to physicists, but they responded that it was not physics. No one wanted to develop a mathematical framework. What I was proposing violated the accepted picture—that only electromagnetic waves exist, and they are transverse. My vision violated the accepted canons; the wave had to be longitudinal.

After briefly examining the existing paradigms and the experiments that led to them, I found clear inconsistencies in the physics:

- Even Einstein himself said that the speed of light is constant only for a perfect vacuum;
- The Michelson-Morley experiment, if considered from the point of view that matter is waves of energy, should by no means result in an etheric wind;
- Finally, the very fact that the propagation speed of interactions has a boundary speed leads to the fact that a transverse wave (electromagnetic) propagating in space in close proximity must have a longitudinal component. That under certain conditions can create standing longitudinal waves of energy in space. This can be confirmed by considering the gravitational force near a macroobject. After all, everyone knows that potential energy will change smoothly when the distance to the object changes.

Then, in just two months (from March 4, 2025, to April 27, 2025), a mathematical model was developed that provided fairly accurate theoretical calculations of the masses and sizes of elementary particles, the elementary charge, and Planck's constant, based purely on geometry and the constancy of the speed of light. Then it took another two months to properly format the work. In the process, I resorted to using AI. Initially, it played the role of physicists, to whom I tried to prove the correctness of my views. At the final stage, it formalized the work properly, under my supervision.

The theory is able to explain many currently unexplained phenomena - dark matter, dark energy, spooky interaction, neutron half-life, mass jitter, Lamb shift as a result of interaction with energy density in space, and more.

The work itself was posted step by step on <https://zenodo.org/records/15687313>. As well as this more philosophical version that started it all <https://zenodo.org/records/15653784>.

Also all articles can be found on my channel <https://dzen.ru/id/66820d78f6faca1d3feac4b8>.

In the paper "Theory of Frequency, Energy Density and Fractal Structure of the Universe" logical deductions and mathematical model of the structure of elementary particles are given. Also the results are obtained:

n	name	$\lambda_0$ (m)	$M_0$ (kr)	$m_0$ (kg)	$d_0$ (m)	$\lambda_0$ exp (m)	$m_0$ exp (kg)	$d_0$ exp (m)
1	neutrino	$9,715 \times 10^{-11}$	$2,663 \times 10^{-32}$	$6,581 \times 10^{-37}$	$9,715 \times 10^{-11}$	$10^{-6}$	$< 2,2 \times 10^{-37}$	$10^{-10}$
2	electron	$2,83 \times 10^{-12}$	$9,149 \times 10^{-31}$	$9,149 \times 10^{-31}$	$4,244 \times 10^{-12}$	$2,43 \times 10^{-12}$	$9,109 \times 10^{-31}$	$10^{-18}$
3	neutron	$8,241 \times 10^{-14}$	$3,142 \times 10^{-29}$	$1,617 \times 10^{-27}$	$1,648 \times 10^{-13}$	$10^{-15}$	$1,675 \times 10^{-27}$	$10^{-15}$
4	proton	$2,4 \times 10^{-15}$	$1,078 \times 10^{-27}$	$1,617 \times 10^{-27}$	$6,001 \times 10^{-15}$	$1,32 \times 10^{-15}$	$1,673 \times 10^{-27}$	$10^{-15}$

As has been shown in Table and in the calculations of this appendix, the theoretical mass values derived from the wave model are close to the experimental ones but have small, systematic discrepancies. Specifically, the discrepancy for the electron is minimal ( $\approx 0.4\%$ ), whilst for nucleons it reaches 3-4%. In this model, this discrepancy is not viewed as a flaw but as a *consequence, indicating a difference between 'ideal' geometrical parameters and 'effective' quantities measured in experiments*.

If we adopt the form of Planck's constant proposed in this work as:

$$|h_{\text{теор}}|_{\text{num}} = \frac{2\pi}{|c^4|_{\text{num}}}$$

then, using the experimentally determined value of  $h$ , it can be seen that the corresponding value of the speed of light would have to be approximately **312,054,866 m/s**, which *is about 4% higher* than the generally accepted value of **299,792,458 m/s**. If this corrected speed of light is used in the quantisation coefficient, we obtain a mass value for the proton and neutron that is ideally suited to the experimentally determined mass of the neutron.

An interesting observation confirms this hypothesis. If we substitute the wave amplitudes  $M_0$  obtained in the model as mass into the classical de Broglie formula, the numerical values of the wavelengths prove to be identical to the theoretical  $\lambda_0$  only if we substitute into the de Broglie formula not the experimental Planck's constant,  $h_{\text{exp}}$ , but rather its theoretical expression from this model:

$$|h_{\text{теор}}|_{\text{num}} = \frac{2\pi}{|c^4|_{\text{num}}}$$

This may indicate that the experimentally obtained value  $h_{\text{exp}}$  represents an averaged or 'effective' quantity. The source of this effect may lie in **the very definition of our mass standards**.

Moreover, the formula for the fractal arrangement of the universe is given:

$$E_n = m \cdot \left( \frac{1}{|c^4|_{num}} \right)^{2n} \cdot \left( c \cdot \left( \frac{|c^4|_{num}}{1} \right)^n \right)^2 = m c^2$$

where:

- $m$  is the base mass at level  $n=0$ ,
- $1/|c^4|_{num}$  is the numerical multiplier (the scaling quantum  $\hbar_{quant\_num}$ ), defining the scale quantisation,
- $n \in \mathbb{Z}$  is the level of fractality,
- $c$  is the speed of light at the base level ( $n=0$ ).

It should be emphasised that, within this model, the speed of light remains a fundamental constant at each particular level of fractality. However, due to differences in energy density between levels, the relative perception of the speed of interactions changes. This does not mean that  $c$  changes in the physical sense - only the scale of perception of interactions in different energy layers of the Universe structure changes.

**The laws of physics and fundamental constants remain unchanged and identical at every level of organisation of matter. The speed of light determines the limiting speed of electromagnetic interactions, depending on the energy density at a given scale.**

Thus, the scaling of spatial-energy characteristics leads to natural portioning of energy at all levels of the matter structure. This explains why energy is transferred discretely, and Planck's constant, in its turn, turns out to be not a fundamental constant, but a consequence of the structure of wave interaction. With this approach, the Universe acquires a potentially infinite fractal structure. In mathematical expression, the variable  $n$  has no strict restrictions and can take both positive and negative values. At the moment, the fundamental principles imposing restrictions on  $n$  are unknown.

**The relative frequency at all levels remains the same, but the speed of light changes**

If the frequency remains common to all levels, it means that resonance is possible between them.

Resonance is key because:

1. **Interaction between levels** - if two levels share a common frequency, they can exchange energy even if their interaction rates and wavelengths are different.
2. **Information transfer between scales** - this explains why the structure of matter at different scales retains common patterns. For example, galaxies, atoms and elementary particles may obey the same wave laws.
3. **Scale effects** - since the rate of interactions changes, but the frequency remains unchanged, we can assume that on large scales (e.g. at the level of galaxies) space behaves like a quantum system, but with other values of fundamental constants.

### Application to the Milky Way

The formula was used to scale the neutron to the galaxy level

### The size of the Milky Way:

- **Diameter:** estimates range from 100,000 to 120,000 light-years (about 30-37 kiloparsecs). [znanierussia.ru](http://znanierussia.ru)
- **Thickness:** about 1,000 light years. [techinsider.ru](http://techinsider.ru)



### The mass of the Milky Way:

- **Total mass:** estimates range from 1 to 2 trillion ( $10^{12}$ ) solar masses, including dark matter. [ru.wikipedia.org](http://ru.wikipedia.org)
- **Mass of the stellar component:** about 50-60 billion ( $5-6 \times 10^{10}$ ) solar masses.

### Size scaling

When going from the neutron to the Milky Way, the level changes towards a lower frequency, i.e.  $n=-1$ . Then the scaling of the radius is as follows:

$$R_{gal} = R_0 \cdot \left| \frac{1}{c^4} \right|_{num}^{-1}$$

From Appendix 7, the size of a neutron is approximately  $1.648 \times 10^{-13}$ .

Substituting the values:

$$R_{gal} = 1,648 \cdot 10^{-13} \cdot \left| \frac{1}{c^4} \right|_{num}^{-1}$$

$$R_{gal} = 1,648 \cdot 10^{-13} \cdot (1.2345679 \times 10^{-34})^{-1}$$

$$R_{gal} = 1,335 \cdot 10^{21}$$

The diameter of the Milky Way in metres:

- **Minimum estimate:**  $\approx 9.46 \times 10^{20}$  m
- **Maximum score:**  $\approx 1.14 \times 10^{21}$  m

The calculated radius of the Milky Way within this model differs slightly from the values accepted in astrophysics ( $\sim 1 \times 10^{21}$  m). This may be a consequence of several factors:

1. **Experimental error** in determining the size of the galaxy.

2. **The effect of speed of movement** on the size of objects, which is important to consider when comparing scales.
3. **The calculation methods in astrophysics** are based on models of the expansion of the Universe, which may introduce additional deviations.

It is also worth noting that the calculated theoretical size turned out to be slightly larger than that known from astrophysics, which is exactly how it should be. Baryonic matter is a consequence of changes in the internal redistribution of energy in standing waves on a galactic scale and will eventually gravitate towards the centre of the black hole, which will reduce its visible/occupied size. Which is, in fact, what is observed.

### Mass scaling

Let us take the neutron mass calculated in Appendix 7 as:

$$m_n = 1.617 \cdot 10^{-27} \text{ kg}$$

Then the mass of the galactic analogue of a neutron is:

$$M_{gal} = M_0 \cdot \left| \frac{1}{c^4} \right|_{num}^{2n}$$

$$M_{gal} = 1.617 \cdot 10^{-27} \cdot (1.2345679 \times 10^{-34})^{-2}$$

$$M_{gal} = 1,061 \cdot 10^{41} \text{ kg}$$

Milky Way mass derived from observations:

- Lower estimate: **1.99×10<sup>42</sup> kg**
- Upper estimate: **3.98×10<sup>42</sup> kg**

The mass was slightly less than expected ( $\sim 3 \times 10^{42}$  kg). This may be due to several factors:

1. **Measurement errors** arising when determining the mass of a galaxy.

2. **Dependence of mass on speed of motion**, which can play an important role when comparing objects at different scales.

It is also important to remember that when an object's speed increases, its size decreases and its mass increases. This is something we can observe in practice.

### **Analysing the results obtained**

The calculated values of the radius and mass of the Milky Way galaxy, obtained on the basis of the fractal coefficient, showed a difference, but still an interesting approximation to the data of modern astrophysics. The radius calculated using the formula is  $R=1.335 \times 10^{21}$  m, which is comparable to the observed value of about  $1 \times 10^{21}$  m. The mass obtained taking into account the fractal coefficient is  $M=1.061 \times 10^{41}$  kg, while astrophysical estimates give a range of  $(1.99-3.98) \times 10^{42}$  kg. Although these results differ, they are still quite close to those obtained experimentally. However, it should be noted that the results obtained experimentally are indirect, which does not exclude errors in approximate calculations.

The question of the accuracy of current measurement methods remains important. In quantum physics, the mass of particles is determined through interaction with fields and depends on the environment. If spatial structures have fractal properties, this can affect measurement results, introducing systematic errors.

The results obtained indicate that the current methods of mass and size estimation both at the microscale and at the level of galaxies may need to be revised taking into account the fractal structure of the Universe. This opens prospects for refining experimental data and for a deeper understanding of the fundamental processes that shape the world at all scales.

In this case, we can also assume that each elementary particle has its own black hole, its own event horizon transitions. Each elementary particle is a galaxy. In this case, each of them has areas where processes occur much faster. **If we look at the human brain from this perspective, we see that the brain can operate at much higher speeds than we are used to. This can explain the phenomenon of intuition. The higher the speed of conscious attention, the more a person is able to notice what the brain provides.**

Thus, intuition is not simply a property of the brain, but a property of consciousness—the ability to respond to the brain's activity at the necessary speed. If consciousness does not have the necessary speed, it overlooks important details.

If consciousness were a program, an algorithm, it would already be operating at maximum speed on its own. But since this is not the case, we conclude that consciousness cannot be simply a product of the brain. Consciousness is like a person working with a computer. Consciousness is not identical to the body. This does not mean that they are not dependent on each other. Thanks to the physical WORLD, consciousness grows, develops, and gains speed of attention. It develops intuition.

**Consciousness cannot act as a programme. Consciousness plays the role of an operator controlling the processes of thinking, not just a mechanism of calculations.**

## Frequency as a basis for perception and interaction

Initially, we proceeded from the postulate that the **speed of light is constant**, and this is what supposedly sets the structure. But if we look deeper, **resonance is not related to speed, but to frequency**. Perhaps the **speed of energy propagation** depends on the frequency of the wave, not the other way round.

### Analogy with water: one medium - many frequencies

Let's imagine a bathtub of water. It is possible to excite different waves in it:

- **Mechanical vibrations** are slow but large.
- **Sound waves** are faster and shallower.
- **Electromagnetic oscillations** are even faster and more compact.

All of them exist **in the same medium**, but **at different levels of frequency and speed**. They do **not interact with each other** if they are not in **resonance**, and the multiplicity of the speed of propagation of interactions can act as an indicator of resonance.

We exist at certain frequencies - and **everything we observe is in resonance with us**. And **what is not in resonance simply does not exist for us**.

### Hence the logical conclusion:

The world can be much more complex and diverse, but due to the fact that different waves can affect each other only under certain conditions, for which the frequency of the wave is responsible, we cannot observe everything happening around us. These parallel worlds can theoretically be infinite in number. The speed of interaction (speed of light) does not have to be boundary or static in principle. It remains constant only for a particular world of frequencies.