

Emergence of cancer by exchanging fields of microgravity between earth's DNA and dark DNAs in extra dimensions

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Recently, it has been shown that in the absence of gravity, microgravity let us to explore some new fields which have direct effects on the communications between cells and their growth. We show that the origin of these fields may be some DNA-like structures interior of the earth's core. These structures have a long around 10^9 times the diameter of the earth which are compacted in very smaller places like the core of the earth. This compacting is very similar to the compacting of DNAs interior of cells and leads to the emergence of high temperature and pressure. We measure temperature around DNA-like structures and show that it is in good agreement with predicted temperature of core. Also, we calculate number of microstates of DNA-like structures in microgravity. We will show that DNA-like structures of the core exchange microstates and fields with dark part of DNA in extra dimensions. This dark DNA includes missing genes that are needed for the animal's life and their chemical products can be observed in the activity of body. In microgravity, the absence of gravity lets to DNA-like structures to recover more states of dark DNAs. These extra states accelerate the production of extra cells and may lead to the cancer. To show this, we inject tumor cells into two fertilized eggs and incubate them for 58h. Then, we put one of them in a devices similar to clinostat and try to provide the conditions of incubation in microgravity. We consider the growth of tumor cells under microgravity and compare with normal conditions. We observe that fields of microgravity increase the velocity of production of tumor cells. This experiment confirms our theory that in the absence of gravity, communications between DNA-like structure of the earth and dark DNA leads to the an increase in number of microstates of cancerous cells.

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I. INTRODUCTION

Many of the underlying causes of human disease result from the effects of physical/mechanical forces acting on living cells. However, the constant overriding force of gravity precludes our ability to identify the full spectrum of cellular responses to mechanical forces that dictate the transition between homeostasis and disease. Recently, it has been argued that the microgravity environment of spaceflight affords a new tool to investigate influences of various forces on life that are often obscured on Earth by the presence of gravity - and understand how these forces are manifest in structural/functional processes in cells and organisms [2, 3, 14]. For example, a laboratory has used the microgravity research platform to provide novel insight into the mechanisms of infectious disease from both the host and pathogen perspective. From their first microgravity experiments, it has been discovered that spaceflight culture increased the virulence of the foodborne pathogen Salmonella, yet genes that were differentially regulated included functional categories and signaling pathways that were not expressed in a manner consistent with an increased virulence phenotype as compared to conventional culture conditions [14]. In another research, it has been show that cell and tissue culture studies in true spaceflight or in the Rotating Wall Vessel (RWV) spaceflight analogue bioreactor offer dynamic approaches to engineer high fidelity, physiologically relevant 3-D tissue models with a vast array of biomedical applications. The applications of tissue engineering research in true spaceflight and the RWV were as diverse as the number of cell types that can be cultured using these platforms, and hold the potential to help us better understand organogenesis and normal tissue development using cell lines, stem cells, and primary cells, as well as disease pathologies, including infectious disease, immunological disorders, and cancer[2]. In another work, to evaluate the potential impact of the spaceflight environment on the regulation of molecular pathways mediating cellular stress responses, investigators have performed a first-of-its-kind pilot study to assess spaceflight-related gene-expression changes in the whole blood of astronauts. Using an array comprised of 234 well-characterized stress-response genes, they have profiled transcriptomic changes in six astronauts (four men and two women) from blood preserved before and immedi-

ately following the spaceflight. Differentially regulated transcripts included those important for DNA repair, oxidative stress, and protein folding/degradation, including HSP90AB1, HSP27, GPX1, XRCC1, BAG-1, HHR23A, FAP48, and C-FOS [3]. Now, the question arises that what type of fields are appeared in the absence of gravity? We response to this question by re-considering structure of DNAs and the earth.

Recently, Hargreaves and his colleagues have encountered a dark part of DNA when sequencing the genome of the sand rat (*Psammomys obesus*), a species of gerbil that lives in deserts. In particular they wanted to study the gerbils genes related to the production of insulin, to understand why this animal is particularly susceptible to type 2 diabetes. But when they looked for a gene called Pdx1 that controls the secretion of insulin, they found it was missing, as were 87 other genes surrounding it. Some of these missing genes, including Pdx1, are essential and without them an animal cannot survive. The first clue was that, in several of the sand rats body tissues, they found the chemical products that the instructions from the missing genes would create. This would only be possible if the genes were present somewhere in the genome, indicating that they werent really missing but just hidden [4]. So where are they? We can response to this question in extra dimensions. Until now, some investigations have been done on the effects of extra genes in extra dimensions. For example, it has been shown that DNA teleportation is possible if DNA, water and wave be $4 + n$ -dimensional objects [5]. In this paper, it has been argued that under a magnetic field, a DNA could be teleported from a water to another via extra dimensions. This result is in agreement with experiments of DNA teleportation in [6, 7]. Also, molecules of water could be able to store information if they have DNA-like structures in extra dimensions. On the other hand, these genes in extra dimension could act like the receiver or sender of waves and exchange information with genes in four dimensions [8]. And finally in one of newest works, it has been shown that compacting DNA with 7 meter long in a very small place leads to the emergence of curved space-time around it. This black hole-like system makes DNA as a window into extra dimension. Then, using the concept of 11-dimensional black branes, the relation between Tsallis -entropy of DNA-Branes exterior and interior of sheel for chick embryo has been calculated [9]. Motivated by these researches, using the conditions in microgravity, we can explore the existence of the dark DNAs in extra dimensions. To this aim, we should investigate type of interaction between the Earth and dark DNA in microgravity.

If Earth emits only gravitational fields, we shouldn't observe any extra fields for a falling or orbiting object, however there is a minimum of fields. Previous experiments has indicated that these fields could communicate with DNAs and produce some new observable results. Also, the existence of dark DNAs shows that these extra fields could be able to communicate with extra dimensions so. Thus, we can conclude that the origin of these microgravitational fields may be a DNA-like structure in the core of the earth. Until now, there is a little information about the inner core of earth. Scientists have estimated he temperature of the inner core from the melting temperature of impure iron at the pressure which iron is under at the boundary of the inner core (about 330 GPa) [10]. From these considerations, they have estimated its temperature as between 5,400 K (5,100 C; 9,300 F) and 5,700 K (5,400 C; 9,800 F). However, in 2013 some others have obtained experimentally a substantially higher temperature for the melting point of iron, 6230 [11, 12]. In this paper, we assume that there is a DNA-like structure in the core of earth which its real size is 10^9 times the diameter of the earth. However, this system is compacted interior of core and consequently, a temperature near the melting point of iron is emerged. We will show that this structure could be the main responsible of large temperature and pressure in the core. Also, this DNA-like system produces some fields that under the conditions in microgravity, interact with dark DNAs and recover their informations. These extra informations lead to the emergence of new states for DNAs interior of cells and the emergence of cancer.

The outline of the paper is as follows. In section II, we will obtain number of states in microgravity which is produced by DNA-like structure in the core. . In section III, we investigate the communications between dark DNAs and fields of DNA-like structures in the condition of microgravity.

II. NUMBER OF MICROSTATES AROUND A DNA LIKE STRUCTURE IN MICROGRAVITY

In this section, we calculate number of microstates of a DNA like structure interior of the core of the earth (See figure 1). In a cell, a DNA has a longer around 7 meter that is compacted in small size around 10^{-9} meter. This DNA has been constracted from hexagonal and pentagonal molecules (See figure 2). Previously, it has been shown that compacting this long DNA in a very small place leads to the emergence of a Rindler space-time and producing

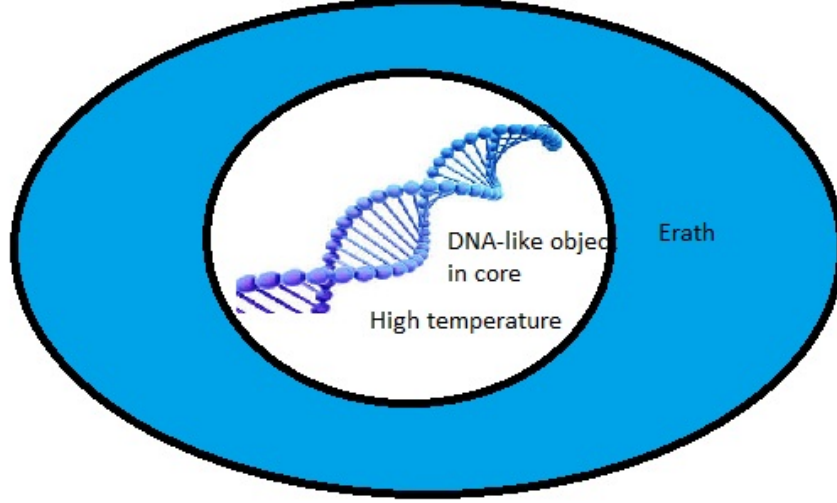


FIG. 1: DNA-like structure interior of the core of the earth.

high temperature [8, 9] (See figure 3). In this space-time, a new mirror of DNA is emerged in a new region II that interacts with a DNA in region I. Also, it has been shown that DNA has some missing genes in extra dimensions that could exchange information with genes in four dimensional universe [5] (See figure 4). The existence of extra dimensions could give good reasons for some experiments like the water memory and DNA teleportation in [6]. The same conditions could be occurred for a DNA-like structure interior of the core. To count total area of a DNA-like structure, we should sum over areas of hexagonal and pentagonal molecules in regions I and II in four dimensional universe and extra dimensions:

$$A_{DNA} = A_{I-A,DNA} + A_{II-A,DNA} \quad (1)$$

where

$$A_{I-A,DNA} = \sum_{i=1}^M \left([A_{I-A,6,fourdimension,i} + A_{I-A,5,fourdimension,i}] + [A_{I-A,6,extradimension,i} + A_{I-A,5,extradimension,i}] \right) \quad (2)$$

$$A_{II-A,DNA} = \sum_{i=1}^M \left([A_{II-A,6,fourdimension,i} + A_{II-A,5,fourdimension,i}] + [A_{II-A,6,extradimension,i} + A_{II-A,5,extradimension,i}] \right) \quad (3)$$

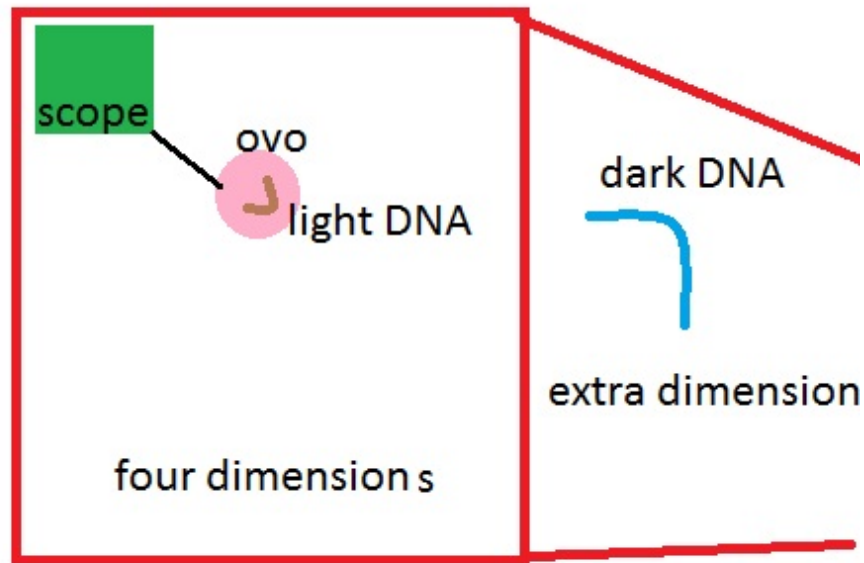


FIG. 4: Dark part of DNA in extra dimensions.

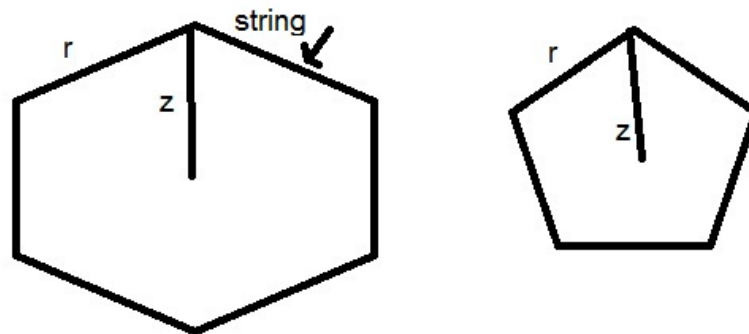


FIG. 5: Hexagonal molecule of a DNA.

where M is the number of molecules. This area depends on temperature and nonlinear fields. In a biological system like a cell, DNA is compacted four times around various axes and temperature is very large. This causes that total area of DNA grows and achieve to large values.

On the other hand, it has been shown that the entropy of a gravitational system such as a DNA brane could be extended to the non-additive entropy, which is given by $S = \gamma A^\beta$, where A is the horizon area [13]. We can write:

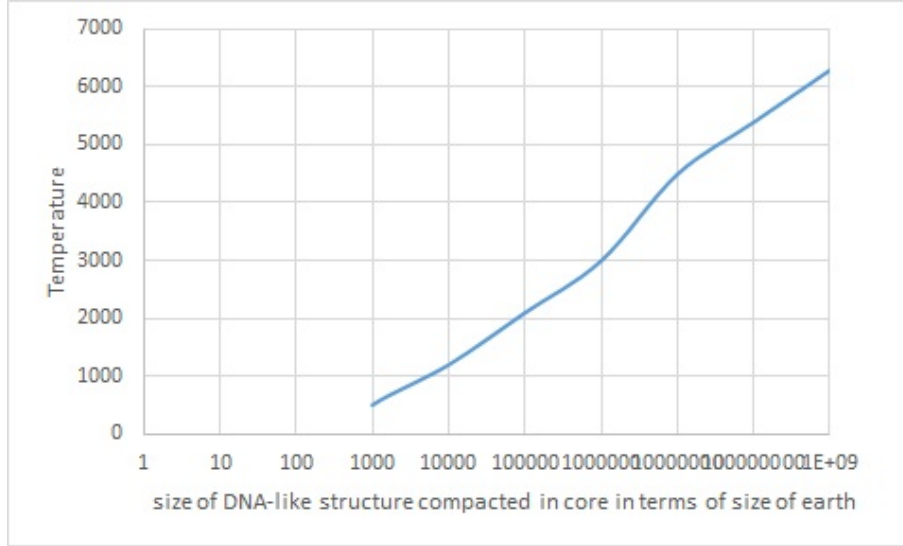


FIG. 6: Dependency of temperature of core on the size of DNA-like structure.



FIG. 7: Creating the conditions of microgravity by using clinostat for water and connect it to an scope..

$$\bar{S}_I = \gamma A_{DNA}^\beta \quad (4)$$

Above equation shows that entropy of a DNA has a relation with current which is produced by its wave in a metal. This helps us to measure entropy of a DNA by evolutions of currents in a lab. On the other hand, entropy has a relation with the number of microstates of a DNA:

$$\bar{S}_I = K_B \log(\Omega_{DNA}) \quad (5)$$

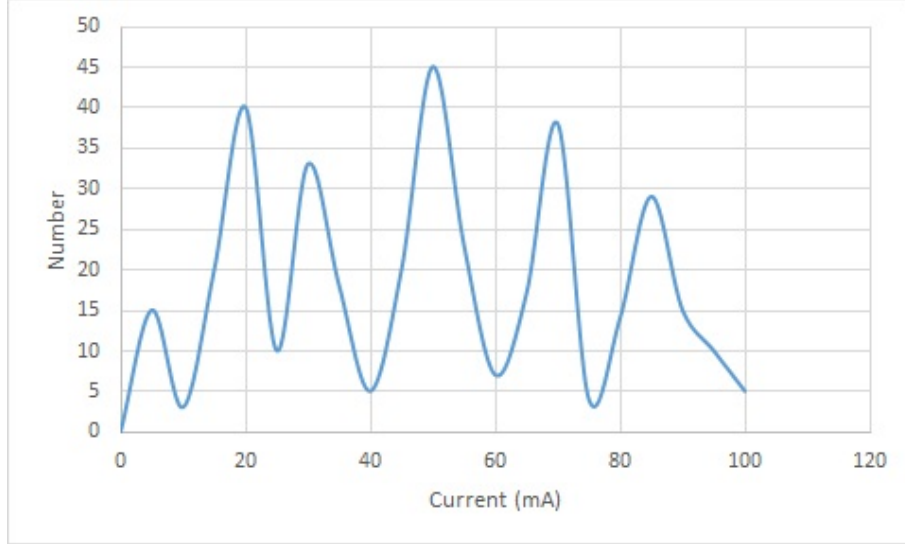


FIG. 8: Number of events for each current which is radiated by water in microgravity.

Using equations (4 and 5),we obtain number of microstates of a DNA in terms of microstates in regions I and II of four dimensional universe and extra dimensions:

$$\begin{aligned}
\Omega_{DNA} &= \frac{1}{K_B} e^{\gamma A_{DNA}^{\beta}} = \\
&\frac{1}{K_B} e^{\gamma A_{I-A,DNA,4-dimensions}^{\beta}} e^{\gamma A_{II-A,DNA,4-dimensions}^{\beta}} \times \\
&e^{\gamma A_{I-A,DNA,extra-dimensions}^{\beta}} e^{\gamma A_{II-A,DNA,extra-dimensions}^{\beta}} = \\
&\Omega_{I-A,DNA,4-dimensions} \Omega_{II-A,DNA,4-dimensions} \times \\
&\Omega_{I-A,DNA,extra-dimensions} \Omega_{II-A,DNA,extra-dimensions} \quad (6)
\end{aligned}$$

Above equation shows that total number of microstates depends on the number of microstates in four and extra dimensions and in regions of I and II of DNA. To calculate dependency of this number of microstates on temperature, we should calculate the dependency of areas of each hexagonal and pentagonal molecules on temperature. To this aim, using the method in [9], we use a black brane model for DNA. In fact, we write the below metric of DNA [8, 9]:

$$ds^2 = D^{-\frac{1}{2}} H^{-\frac{1}{2}} \left(dx_2^2 + dx_3^2 \right) + D^{\frac{1}{2}} H^{-\frac{1}{2}} \left(- f dt^2 + dx_1^2 \right) + D^{-\frac{1}{2}} H^{\frac{1}{2}} \left(f^{-1} dr^2 + r^2 d\Omega_5^2 \right) \quad (7)$$

where

$$f = 1 - \frac{r_0^4}{r^4} \quad H = 1 + \frac{r_0^4 \sinh^2 \alpha}{r^4} \quad D = \cos^2 \epsilon + \sin^2 \epsilon H^{-1} \quad (8)$$

and

$$\cosh^2 \alpha = \frac{3 \cos \frac{\delta}{3} + \sqrt{3} \cos \frac{\delta}{3}}{2 \cos \delta} \quad \cos \epsilon = \frac{1}{\sqrt{1 + \frac{K^2}{r^4}}} \quad (9)$$

The angle δ is defined as:

$$\cos \delta = \bar{T}^4 \sqrt{1 + \frac{K^2}{r^4}} \quad \bar{T} = \left(\frac{9\pi^2 N}{4\sqrt{3}T_{D3}} \right)^{\frac{1}{2}} T \quad (10)$$

where T is temperature and r is the separation distance between two atoms in a hexagonal or pentagonal molecule of a DNA (See figure 5). Now, we can obtain metrics of thermal DNAs in non-flat space-time. In fact, we want to consider effects of non-linear fields on this metric. These non-linear fields lead to the acceleration of DNA and emergence of a Rindler space-time. To this aim, we begin with the action of three dimensional manifold:

$$\begin{aligned} S_3 &= -T_{tri} \int d^3 \sigma \sqrt{\eta^{ab} g_{MN} \partial_a \phi^M \partial_b \phi^N + 2\pi l_s^2 G(F)} \\ G &= \left(\sum_{n=1}^3 \frac{1}{n!} \left(-\frac{F_1 \dots F_n}{\beta^2} \right) \right) \\ F &= F_{\mu\nu} F^{\mu\nu} \quad F_{\mu\nu} = \partial_\mu A_\nu - \partial_\nu A_\mu \end{aligned} \quad (11)$$

where g_{MN} is the background metric, $\phi^M(\sigma^a)$'s are scalar fields, σ^a 's are the DNA coordinates, $a, b = 0, 1, \dots, 3$ are world-volume indices of time dependent DNA and $M, N = 0, 1, \dots, 10$ are eleven dimensional spacetime indices. Also, G is the nonlinear field [5] and A is the photon which exchanges between charged particles. First, we describe a non-thermal DNA in a flat space-time and use of below metric for bulk:

$$ds^2 = -dt^2 + dr^2 + r^2 \left(d\theta^2 + \sin^2 \theta d\phi^2 \right) + \sum_{i=1}^6 dx_i^2 \quad (12)$$

Using this metric, we can write below relations between coordinates of bulk and DNA [?]:

$$t(\sigma) = \tau \quad r(\sigma) = \sigma, \quad x_1(\sigma) = z \quad (13)$$

Using above relations, for this DNA in flat space time, the action is given by [5, 8]:

$$S = - \int d\sigma \sigma^2 \sqrt{1 + z'^2 - 2\pi l_s^2 G(F)} \quad (14)$$

For this action, it has been asserted that momentum density is given by [5, 8]:

$$\Pi = \frac{2\pi l_s^2 G'(F) F_{01}}{\sqrt{1 + z'^2 - 2\pi l_s^2 G(F)}} \quad (15)$$

where ' denotes the derivative respect to the field (F). On the other hand, it has been asserted that there is a relation between momentum density and σ [5, 8]:

$$\Pi = \frac{K}{\sigma^2} \quad (16)$$

Using equations (15 and 16) and assuming ($z' \ll G(F)$), we can obtain :

$$\sigma = \left[\frac{\sqrt{1 - 2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \quad (17)$$

Above equation shows that coordinates of DNA depend on non-linear fields and increase by increasing the strength of fields. We also obtain the acceleration, with taking derivative of above coordinate respect to time:

$$a = \frac{d^2\sigma}{dt^2} = \left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1 - 2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \quad (18)$$

Above equation shows that acceleration of DNA has a direct relation with non-linear fields which live on it. This acceleration leads to the emergence of a rindler space-time. In these conditions, the relation between the world volume coordinates of the DNA (τ, σ) and the coordinates of Minkowski space-time (t, r) are [5, 8, 9];

$$\begin{aligned}
at &= e^{a\sigma} \sinh(a\tau) & ar &= e^{a\sigma} \cosh(a\tau) & \text{In Region I} \\
at &= -e^{-a\sigma} \sinh(a\tau) & ar &= e^{-a\sigma} \cosh(a\tau) & \text{In Region II}
\end{aligned} \tag{19}$$

Now, we can obtain metric of a thermal DNA in non-flat space-time. Replacing acceleration by non-linear fields in equation (18), we can rewrite equation (19) as:

$$\begin{aligned}
\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] t &= e^{\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \sinh(a\tau) \\
\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] r &= e^{\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \cosh(a\tau) & \text{In Region I} \\
\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] t &= -e^{-\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \sinh(a\tau) \\
\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] r &= e^{-\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \cosh(a\tau) & \text{In Region II}
\end{aligned} \tag{20}$$

Above equation shows that non-linear fields change coordinates of space-time, leads to the acceleration and produce two different regions in a new Rindler space-time. Thus, metric changes and a new metrics in regions I and II are emerged.

Substituting equation (20) in equation (7), we obtain:

$$\begin{aligned}
ds_{I,A,thermal}^2 &= D_{I-A}^{\frac{1}{2}} H_{I-A}^{-\frac{1}{2}} f_{I-A} \times \\
&\left(e^{2\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} + \frac{1}{\sinh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau\right)} \left(\frac{dz}{d\tau}\right)^2 \right) d\tau^2 - \\
&D_{I-A}^{-\frac{1}{2}} H_{I-A}^{\frac{1}{2}} f_{I-A}^{-1} \times \\
&\left(e^{2\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} + \frac{1}{\cosh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau\right)} \left(\frac{dz}{d\sigma}\right)^2 \right) d\sigma^2 + \\
&\frac{1}{\sinh\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau\right) \cosh\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau\right)} \left(\frac{dz}{d\tau} \frac{dz}{d\sigma}\right) d\tau d\sigma + \\
&D_{I-A}^{-\frac{1}{2}} H_{I-A}^{\frac{1}{2}} \left(\frac{1}{\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right]} e^{\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \cosh\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau\right) \right)^2 \times \\
&\left(d\theta^2 + \sin^2\theta d\phi^2 \right) +
\end{aligned}$$

$$D_{I-A}^{-\frac{1}{2}} H_{I-A}^{-\frac{1}{2}} \sum_{i=1}^5 dx_i^2 \quad (21)$$

$$\begin{aligned}
ds_{II,A,thermal}^2 &= D_{II-A}^{\frac{1}{2}} H_{II-A}^{-\frac{1}{2}} f_{II-A} \times \\
&\left(e^{-2[\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \sigma} + \frac{1}{\sinh^2([\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \tau)} \left(\frac{dz}{d\tau}\right)^2 \right) d\tau^2 - \\
&D_{II-A}^{-\frac{1}{2}} H_{II-A}^{\frac{1}{2}} f_{II-A}^{-1} \times \\
&\left(e^{-2[\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \sigma} + \frac{1}{\cosh^2([\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \tau)} \left(\frac{dz}{d\sigma}\right)^2 \right) d\sigma^2 - \\
&\frac{1}{\sinh([\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \tau) \cosh(a\tau)} \left(\frac{dz}{d\tau} \frac{dz}{d\sigma}\right) d\tau d\sigma + \\
&D_{II-A}^{-\frac{1}{2}} H_{II-A}^{\frac{1}{2}} \left(\frac{1}{[\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}]} e^{-[\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \sigma} \cosh([\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \tau) \right)^2 \times \\
&\left(d\theta^2 + \sin^2 \theta d\phi^2 \right) + D_{II-A}^{-\frac{1}{2}} H_{II-A}^{-\frac{1}{2}} \sum_{i=1}^5 dx_i^2 \quad (22)
\end{aligned}$$

where

$$\begin{aligned}
f_{I-A} &= 1 - \frac{\left(e^{[\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \sigma_0} \cosh([\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \tau_0) \right)^4}{\left(e^{[\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \sigma} \cosh([\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \tau) \right)^4} \\
H_{I-A} &= 1 + \frac{\left(e^{[\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \sigma_0} \cosh([\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \tau_0) \right)^4 \sinh^2 \alpha_{I-A}}{\left(e^{[\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \sigma} \cosh([\frac{d^2}{dt^2} [\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}] \frac{1}{2}] \tau) \right)^4} \\
D_{I-A} &= \cos^2 \epsilon_{I-A} + \sin^2 \epsilon_{I-A} H_{I-A}^{-1} \quad (23)
\end{aligned}$$

$$\begin{aligned}
f_{II-A} &= 1 - \frac{\left(e^{-a\sigma_0} \cosh(a\tau_0) \right)^4}{\left(e^{-a\sigma} \cosh(a\tau) \right)^4} \\
H_{II-A} &= 1 + \frac{\left(e^{a\sigma_0} \cosh(a\tau_0) \right)^4 \sinh^2 \alpha_{II-A}}{\left(e^{a\sigma} \cosh(a\tau) \right)^4} \\
D_{II-A} &= \cos^2 \epsilon_{II-A} + \sin^2 \epsilon_{II-A} H_{II-A}^{-1} \quad (24)
\end{aligned}$$

and

$$\begin{aligned} \cosh^2 \alpha_{I-A} &= \frac{3 \cos \frac{\delta_{I-A}}{3} + \sqrt{3} \cos \frac{\delta_{I-A}}{3}}{2 \cos \delta_{I-A}} \\ \cos \epsilon_{I-A} &= \frac{1}{\sqrt{1 + \frac{K^2}{\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right]^{-1} e^{-\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \cosh(a\tau) \right)^4}} \end{aligned} \quad (25)$$

$$\begin{aligned} \cosh^2 \alpha_{II-A} &= \frac{3 \cos \frac{\delta_{II-A}}{3} + \sqrt{3} \cos \frac{\delta_{II-A}}{3}}{2 \cos \delta_{II-A}} \\ \cos \epsilon_{II-A} &= \frac{1}{\sqrt{1 + \frac{K^2}{\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right]^{-1} e^{a\sigma} \cosh(a\tau) \right)^4}} \end{aligned} \quad (26)$$

The angles δ_{I-A} and δ_{II-A} are defined by:

$$\begin{aligned} \cos \delta_{I-A} &= \bar{T}_{0,I-A}^4 \sqrt{1 + \frac{K^2}{\left(a^{-1} e^{-\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \cosh\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau\right) \right)^4}} \\ \bar{T}_{0,I-A} &= \left(\frac{9\pi^2 N}{4\sqrt{3}T_{D3}} \right)^{\frac{1}{2}} T_{0,I-A} \end{aligned} \quad (27)$$

$$\begin{aligned} \cos \delta_{II-A} &= \bar{T}_{0,II-A}^4 \sqrt{1 + \frac{K^2}{\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right]^{-1} e^{a\sigma} \cosh\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau\right) \right)^4}} \\ \bar{T}_{0,II-A} &= \left(\frac{9\pi^2 N}{4\sqrt{3}T_{D3}} \right)^{\frac{1}{2}} T_{0,II-A} \end{aligned} \quad (28)$$

where T_0 is the temperature of the DNA in non-Rindler space-time. Above equations show that metric of thermal DNA depends on the evolutions of non-linear fields. In fact, evolutions of non-linear fields have a direct effect on thermodynamics of DNA. Following the method in [5, 8, 9], we can obtain the separation distances between center and molecules in a pentagonal or hexagonal molecule (See figure 5):

$$dz_{I-A} = dz_{II-B} \simeq \left(e^{-4\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \sinh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau\right) \cosh^2(a\tau) \right) \times$$

$$\begin{aligned}
& F_{DBI,I,A}(\tau, \sigma) \left(\frac{F_{DBI,I,A}(\tau, \sigma)}{F_{DBI,I,A}(\tau, \sigma_0)} - e^{-4a(\sigma - \sigma_0)} \frac{\cosh^2(a\tau_0)}{\cosh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau\right)} \right)^{-\frac{1}{2}} \\
& \left(\frac{F_{DBI,I,A}(\tau_0, \sigma) \left(\frac{F_{DBI,I,A}(\tau_0, \sigma)}{F_{DBI,I,A}(\tau_0, \sigma_0)} - e^{-4\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]}(\sigma - \sigma_0) \frac{\cosh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau_0\right)}{\cosh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau\right)} \right)^{-\frac{1}{2}}}{\sinh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau_0\right)} \right)^{-\frac{1}{2}} \\
& \frac{\sinh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau_0\right)}{\sinh^2(a\tau)} \right)^{-\frac{1}{2}} \tag{29}
\end{aligned}$$

or

$$\begin{aligned}
& dz_{I-B} = dz_{II-A} \simeq \\
& \left(e^{4\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\sigma} \sinh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau\right) \cosh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau\right) \right) \times \\
& \left(\frac{F_{DBI,II,A}(\tau, \sigma) \left(\frac{F_{DBI,II,A}(\tau, \sigma)}{F_{DBI,II,A}(\tau, \sigma_0)} - e^{4\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]}(\sigma - \sigma_0) \frac{\cosh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau_0\right)}{\cosh^2(a\tau)} \right)^{-\frac{1}{2}}}{F_{DBI,II,A}(\tau_0, \sigma) \left(\frac{F_{DBI,II,A}(\tau_0, \sigma)}{F_{DBI,II,A}(\tau_0, \sigma_0)} - e^{4\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]}(\sigma - \sigma_0) \frac{\cosh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau_0\right)}{\cosh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau\right)} \right)^{-\frac{1}{2}}} \right)^{-\frac{1}{2}} \\
& \frac{\sinh^2\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau_0\right)}{\sinh^2(a\tau)} \right)^{-\frac{1}{2}} \tag{30}
\end{aligned}$$

with the definition of $F_{DBI,I,A}$ given below:

$$\begin{aligned}
& F_{DBI,I,A} = F_{DBI,II,B} = \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]^{-1} e^{\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\sigma} \times \right. \\
& \left. \cosh\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau\right) \right)^2 \frac{4 \cosh^2 \alpha_{I-A} - 3}{\cosh^4 \alpha_{I-A}} \\
& F_{DBI,II,A} = F_{DBI,I,B} = \left(a^{-1} e^{-\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\sigma} \times \right. \\
& \left. \cosh\left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}}\right]^{\frac{1}{2}}\right]\tau\right) \right)^2 \frac{4 \cosh^2 \alpha_{II-A} - 3}{\cosh^4 \alpha_{II-A}} \tag{31}
\end{aligned}$$

These separation distances depend on the nonlinear magnetic fields and temperature. When, the separation distance in one region grows, the separation distance in another region decreases. Now, we calculate the area of a thermal DNA by using equations (29,30 and 20):

$$A_{I-A,5} = A_{II-B,5} = \int \frac{5}{2} r_{I-A} dz_{I-A} = \int \frac{5}{2} r_{II-B} dz_{II-B} =$$

$$\begin{aligned}
& \int d\sigma \left[\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right]^{-1} e^{\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \cosh(a\tau) \right] \times \\
& \left(e^{-4 \left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \sinh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau \right) \cosh^2(a\tau) \right) \times \\
& \frac{F_{DBI,I,A}(\tau, \sigma) \left(\frac{F_{DBI,I,A}(\tau, \sigma)}{F_{DBI,I,A}(\tau, \sigma_0)} - e^{-4a(\sigma-\sigma_0)} \frac{\cosh^2(a\tau_0)}{\cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau \right)} \right)^{-\frac{1}{2}}}{\left(\frac{F_{DBI,I,A}(\tau_0, \sigma) \left(\frac{F_{DBI,I,A}(\tau_0, \sigma)}{F_{DBI,I,A}(\tau_0, \sigma_0)} - e^{-4 \left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] (\sigma-\sigma_0)} \frac{\cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau_0 \right)}{\cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau \right)} \right)^{-\frac{1}{2}}}{\sinh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau_0 \right)} \right)^{-\frac{1}{2}} \frac{\sinh^2(a\tau)}{\sinh^2(a\tau)} \right) \quad (32)
\end{aligned}$$

or

$$\begin{aligned}
A_{II-A,6} &= A_{I-B,6} = \int 3r_{II-A} dz_{II-A} = \int 3r_{I-B} dz_{I-B} = \\
& \int d\sigma \left[\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right]^{-1} e^{-\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \cosh(a\tau) \right] \times \\
& \left(e^{4 \left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \sinh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau \right) \cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau \right) \right) \times \\
& \left(\frac{F_{DBI,II,A}(\tau, \sigma) \left(\frac{F_{DBI,II,A}(\tau, \sigma)}{F_{DBI,II,A}(\tau, \sigma_0)} - e^{4 \left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] (\sigma-\sigma_0)} \frac{\cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau_0 \right)}{\cosh^2(a\tau)} \right)^{-\frac{1}{2}}}{F_{DBI,II,A}(\tau_0, \sigma) \left(\frac{F_{DBI,II,A}(\tau_0, \sigma)}{F_{DBI,II,A}(\tau_0, \sigma_0)} - e^{4 \left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] (\sigma-\sigma_0)} \frac{\cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau_0 \right)}{\cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau \right)} \right)^{-\frac{1}{2}}} \right)^{-\frac{1}{2}} \frac{\sinh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau_0 \right)}{\sinh^2(a\tau)} \right) \quad (33)
\end{aligned}$$

Above equation shows that area of thermal accelerating DNAs depend on the nonlinear fields which live on them. These electromagnetic fields lead to the acceleration of DNA. This acceleration produces a Rindler space-time with two regions. The area of a DNA in region I expands, while, the area of a DNA in region II decreases. On the other hand, above areas depend on temperature and by increasing temperature, size of a DNA increases. Solving equations (6,31,32 and 33) simultaneously:

$$T_{DNA} = \ln(\Omega_{DNA}) T_{0,I-A} \left(4 \cosh^2 \alpha_{I-A} + 1 \right) \times$$

$$\begin{aligned}
& \left([\Omega_{DNA}]^3 e^{-4 \left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \sigma} \sinh^2(a\tau) \cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau \right) \right) \times \\
& F_{DBI,I,A}(\tau, \sigma) \left(\frac{F_{DBI,I,A}(\tau, \sigma)}{F_{DBI,I,A}(\tau, \sigma_0)} - e^{-4 \left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] (\sigma - \sigma_0)} \frac{\cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau_0 \right)}{\cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau \right)} \right)^{-\frac{1}{2}} \\
& \left(\frac{F_{DBI,I,A}(\tau_0, \sigma) \left(\frac{F_{DBI,I,A}(\tau_0, \sigma)}{F_{DBI,I,A}(\tau_0, \sigma_0)} - e^{-4 \left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] (\sigma - \sigma_0)} \frac{\cosh^2(a\tau_0)}{\cosh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau \right)} \right)^{-\frac{1}{2}}}{\sinh^2(a\tau_0)} \right)^{\frac{1}{2}} \\
& \sinh^2 \left(\left[\frac{d^2}{dt^2} \left[\frac{\sqrt{1-2\pi l_s^2 G(F)}}{2\pi l_s^2 G'(F) F_{01}} \right]^{\frac{1}{2}} \right] \tau \right)
\end{aligned} \tag{34}$$

These temperatures depend on the number of microstates of a DNA, nonlinear fields in microgravity and time. On the other hand, number of microstates of a DNA has a direct relation on it's area and size. Thus, temperature of a DNA in a cell or a DNA-like structure in the core of the earth depends on it's size.

In figure 6, we show dependency of temperature on the size of a DNA-like structure. It is clear that by increasing the size of a DNA-like structure, temperature of a system increases and tends to large values. To obtain the predicted value of temperature for the core of the earth, a DNA like structure should have a size around 10^9 times the diameter of the earth which is compacted interior of the core. This structure produces a temperature around 6400 K which is in good agreement with predictions in geophysics for temperature of the core.

To measure the effects of fields of microgravity on the molecules of water, we put a vessel of water inside a system similar to a clinostat and connect it to an scope. non-linear fields of microgravity make some forces to electrons interior of a wire and produce a current. These currents are taken by the scope and can be presented on the monitor (See figure 7). We measure number of events that produce the same currents and present them in figure 8. This number is small for low and high currents and large for moderate currents. This evolution in values of current is a good signature for the interaction of fields of microgravity with molecules of water.

III. EMERGENCE OF EXTRA STATES FOR DNAs INTERIOR OF CELLS BY EXCHANGING MICROGRAVITATIONAL FIELDS BETWEEN EARTH'S DNA AND DARK DNAs IN EXTRA DIMENSION

To examine the model, we inject tumor cells into two groups of chick embryos. We put a group in an incubator and consider the rate of the growth of tumor cells in normal conditions. We also put second group in a device similar to a clinostat and then incubate total system at a temperature around $39^{\circ}C$ for 17 days (See figure 9). To produce cancerous chick embryos, we can use of two methods, one related to In-Ovo and another related to Ex-Ovo. For In-Ovo model [14], the eggs were incubated at $39.4C$. The technique of the inoculation, similar to that described by [14], was as follows: With a small knife, a square of about 7 mm was cut in the shell and carefully removed. The vitelline membrane was then torn with sterile forceps and the tumor graft inoculated with a pair of curved forceps through this opening upon the underlying allantois. The fragment of shell was then replaced and sealed with paraffin. After inducing cancerous cells, the eggs were returned to the incubator and kept there until the seventeenth day of incubation, when they were removed and examined. For Ex-Ovo model, using the mechanism in [15], we produce chick embryos out of shell and induce tumor in it and then return it to an incubator.

Now, we can count number of microstates which has a direct relation with number of cancerous cells. . To this aim, using equation (6) and assuming that total number of microstates is constant, we can write:

$$\Omega_{cancerous\ cells} = \Omega_{I-A,DNA,4-dimensions} = \frac{constant}{\Omega_{II-A,DNA,4-dimensions}\Omega_{I-A,DNA,extra-dimensions}\Omega_{II-A,DNA,extra-dimensions}} \quad (35)$$

Above equation shows that number of microstates of DNA in region I of four dimensional universe depends on the number of microstates in region II of four dimensional universe and number of microstates in region I and region II of extra dimensions. Thus, by increasing number of microstates in four dimensions, number of microstates in extra dimensions decreases. This can be seen in cancerous cells. In figure 10, we present the rate of growth of tumors interior of normal eggs and also interior of eggs which are under microgravity.

The growth of tumor under microgravity is shown by red color and the growth of tumor in normal conditions is presented by blue color . It is clear that in the condition of microgravity, cancerous cells grow faster. This is because that in the absence of gravity, nonlinear fields of microgravity which are emerged by a DNA-like structure interior of the earth have more effects on the cells. These fields interact with dark parts of DNA in extra dimensions and recover their states in four dimensional universe. Consequently, number of microstates of a DNA in the conditions of microgravity increases and the growth of cancerous cells accelerates.

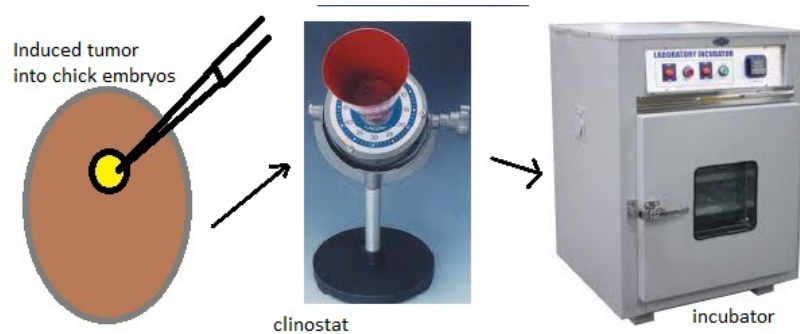


FIG. 9: Tumor cells are injected to chick embryos, then, the conditions of microgravity is created for them by using clinostat and total system is located interior an incubator.

IV. SUMMARY

In this research, we have considered the origin of fields in microgravity and their effects on the number of microstates of DNAs. We have shown that there is a DNA-like structure with the size of 10^9 times the diameter of the earth which is compacted interior of the core and leads to the emergence of high temperature. This structure could communicate with DNAs and change the number of microstates. Microgravity lets to this structure to exchange some fields with dark DNA in extra dimensions. This dark part of DNA includes some missing genes which are needed for continuity of the life and produce some observed chemical products in body. Exchanging information between DNA like structure of the core and dark DNAs leads to recovering some extra microstates. These states increase the velocity of the growth and activity of cell and prevent of programming death. They also increase the process of transcription, translation and generation of new cells without any

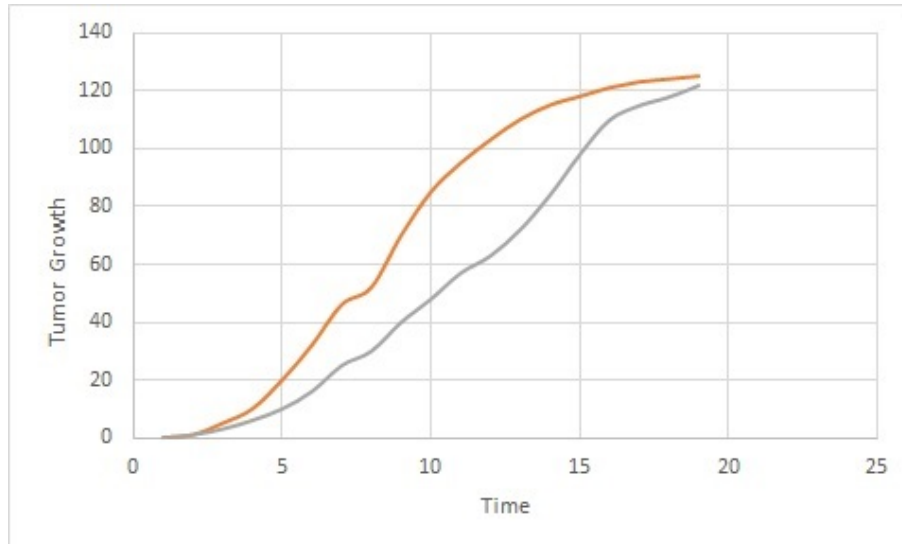


FIG. 10: Comparing the rate of growth of tumor interior of normal eggs and also eggs under microgravity. The growth of tumor under microgravity is shown by red color and the growth of tumor in normal conditions is presented by blue color .

stopping which may lead to the cancer. To consider the effects of fields of microgravity on cancerous cells, we induced tumor cells into two types of fertilized eggs and incubate them for 58h. Then, we incubate one of groups in normal conditions for 17 days and consider the process of the growth of tumor. However, by using a device similar to clinostat, we produce the conditions of microgravity for second group. We also provide the needed conditions for the continuity of the incubations for 17 days. We compare the amount of the growth of cancerous cells for eggs in microgravity and eggs in normal conditions. We observe that rate of the growth of tumor in the conditions of microgravity increases which is a signature of exchanging information between dark DNA and DNA-like structure of the earth.

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- [1] Cheryl A Nickerson, "Microgravity: A Novel Tool for Advances in Biomedical Research", American Association for the Advancement of Science 2013 Annual Meeting. Email: cheryl.nickerson@asu.edu.
- [2] Cheryl A Nickerson, C. Mark Ott, "Biomedical Advances in Three Dimensions: An Overview of Human Cellular Studies in Space and Spaceflight Analogues", in book with title "Effect of Spaceflight and Spaceflight Analogue Culture on Human and Microbial Cells", edited by

- "Cheryl A Nickerson, Neal R. Pellis, C. Mark Ott", pages: 88-92, published by Springer-Verlag New York, 2016. DOI: 10.1007/978-1-4939-3277-1.
- [3] Jennifer Barrila, C Mark Ott, Carly LeBlanc, Satish K Mehta, Aurlie Crabb, Phillip Stafford, Duane L Pierson , Cheryl A Nickerson, "Spaceflight modulates gene expression in the whole blood of astronauts", *npj Microgravity* (2016)2,16039; doi:10.1038/npjmgrav.2016.39; published online 8 December 2016.
- [4] Adam Hargreaves, "The hunt for dark DNA" - *New Scientist*, Volume 237, Issue 3168, March 2018, Pages 29-31 - [https://doi.org/10.1016/S0262-4079\(18\)30440-8](https://doi.org/10.1016/S0262-4079(18)30440-8).
Adam Hargreaves, "Introducing 'dark DNA' the phenomenon that could change how we think about evolution" - *Academic rigour. journalistic flair*, 2017 - <https://theconversation.com/introducing-dark-dna-the-phenomenon-that-could-change-how-we-think-about-evolution-82867>.]
- [5] Alireza Sepehri, Massimo Fioranelli, "4 + n-dimensional water and waves on four and eleven-dimensional manifolds". *Open Physics*, 16(1), pp. 463-475. Retrieved 11 Apr. 2019, doi:10.1515/phys-2018-0063].
- [6] Montagnier L., Assa J., Ferris S., Lavallee C., Electromagnetic signals are produced by aqueous nanostructures derived from bacterial DNA sequences, *Interdiscip. Sci. Comput. Life Sci.* 2009, 1, 81 - 90.
- [7] Montagnier L., Giudice E.D., Alissa J., Lavallee C., Motschwiller S., Capolupo A., Polcari A., Romano P., Tedeschi A., Vitiello G., Transduction of DNA information through water and electromagnetic waves. *Electromagnetic Biology and Medicine.*, 2015, 34:106 - 112. .
- [8] Alireza Sepehri, "A mathematical model for DNA" ,*Int. J. Geom. Methods Mod. Phys.*, 14, 1750152 (2017)]
- [9] Alireza Sepehri , Massimo Fioranelli , Maria Grazia Roccia , Somayyeh Shoorvazi , "The relation between Tsallis -entropy of DNA-Branes exterior and interior of shell",*Physica A: Statistical Mechanics and its Applications* Volume 524, 15 June 2019, Pages 73-88.<https://doi.org/10.1016/j.physa.2019.03.003>].
- [10] Annie Souriau and Marc Souriau (1989): "Ellipticity and density at the inner core boundary from subcritical PKiKP and PcP data". *Geophysical Journal International*, volume 98, issue 1, pages 3954. doi:10.1111/j.1365-246X.1989.tb05512.
- [11] D. Alfe , M. J. Gillan and G. D. Price (2007): "Temperature and composition of the Earth's

- core". Contemporary Physics, volume 48, issue 2 pages 63-80. doi:10.1080/00107510701529653
- [12] S. Anzellini; A. Dewaele; M. Mezouar; P. Loubeyre , G. Morard (2013). "Melting of Iron at Earth's Inner Core Boundary Based on Fast X-ray Diffraction". Science. 340 (6136): 464466. Bibcode:2013Sci...340..464A. doi:10.1126/science.1233514.
- [13] C. Tsallis, L. J. L. Cirto, Eur. Phys. J. C73, 2487 (2013).
- [14] Kristin H. Kain, James W.I. Miller, Celestial R. Jones-Paris, Rebecca T. Thomason, John D. Lewis, David M. Bader, Joey V. Barnett, and Andries Zijlstra, "The chick embryo as an expanding experimental model for cancer and cardiovascular research", Dev Dyn. 2014 Feb; 243(2): 216228.
- Holland N. Stevenson, "Growth of Tumors in the Chick Embryo", Cancer Research, DOI: 10.1158/jcr.1918.63 Published January 1918.
- Elena I. Deryugina, James P. Quigley, "Chick embryo chorioallantoic membrane model systems to study and visualize human tumor cell metastasis", Histochem Cell Biol. 2008 Dec; 130(6): 11191130. , doi: 10.1007/s00418-008-0536-2.
- [15] Alireza Sepehri, Massimo Fioranelli, Maria Grazia Rocchia, Somayyeh shoorvazi , "The role of entropic penalties of circular DNA assembly in spectroscopy and imaging", J Theor Appl Phys (2019) 13: 39. <https://doi.org/10.1007/s40094-019-0321-8> .
- Yutaka Tahara and Katsuya Obara,"A Novel Shell-less Culture System for Chick Embryos Using a Plastic Film as Culture Vessels", Journal of Poultry Science, 51 (3) pages 307-312(2014).