

Picture of the World by the Second Law of Thermodynamics

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Abstract—According to its content, the proposed article is a collection of articles with comments and additions. All articles, in one way or another, have a connection with the Second Law of Thermodynamics. The content of the articles is given in a concise form. The articles were published in different journals at different times. Main topics are presented: gravity, biography of the Earth, physics of global warming-cooling cycles, multiverse. The articles are based on the laws of classical physics. Along the way, it should be noted that the Second Law of Thermodynamics can be formulated as the Law of Matter Cooling. As it cools down, the processes of condensation, separation, and changes in the aggregate states of matter occur. In accordance with these changes, a picture of the world is being formed. Also, the main driving force of these processes is the inverse temperature dependence of the forces of gravity. As matter cools, the forces of gravity increase. The actions of these phenomena in the compartment form a picture of the world.

Keywords—Gravitational forces, cooling of matter, second law of thermodynamics, planetary model of the atom.

I. INTRODUCTION

FOR a more complete understanding of this article, it is necessary to familiarize yourself with the source articles on the topics. The key articles are articles on the topic of gravity. These articles present the physics of gravity.

All articles are innovative, do not repeat or develop any previously put forward ideas. Moreover, the articles reject previously presented views on these topics. Criticism of existing views is not the purpose of this article. The article also presents points that are not directly related to the second law of thermodynamics, some phenomena are explained.

Modern science is characterized by a desire for solitude. Research is conducted deep into the topic. As a result, there is a certain disunity in the scientific community. The proposed article is a manifestation of the desire for a multidisciplinary approach. A multidisciplinary, integrated approach is not an end in itself. This approach serves as a verification calculation. In science, as in nature, everything must be interconnected.

II. GRAVITY

The proposed collection contains articles on the topic "Physics of gravity". The hypothesis is based on the laws of classical physics and planetary model of the atom [1]-[5], [11]. Accordingly, the hypothesis operates with the concepts of classical physics. The articles present the mechanism of formation of gravitational forces as a cumulative reaction of the

gyroscopic forces of electron rotation to the external impact of the expansion of the Universe. The expansion of the universe is initially, everywhere, continuous, isotropic. Accordingly, the reaction (gravity) is initially, everywhere, continuous, isotropic. The articles also note the inverse temperature dependence of the forces of gravity, namely, an increase in the temperature of objects reduces the forces of gravity, and vice versa [6]-[8]. The inverse temperature dependence is explained by the change in the rigidity of intermolecular bonds depending on the temperature of objects. Intermolecular bonds are schematically represented in the form of a lattice. As the temperature increases, the rigidity of the lattice decreases, and vice versa.

The proposed articles attempt to explain the quadratic dependence of gravity on the distance between objects. The rotation of the electron also creates an electromagnetic effect. It may be noted here that the resulting vector of electromagnetic action of matter at rest is zero. The expansion of the universe brings matter out of a state of rest. Gyroscopic and electromagnetic effects occur. These effects manifest themselves in a quadratic dependence on the distance between objects, namely from r^2 . It is no coincidence that the formulas of Newton (gravity) and Coulomb (electromagnetic interaction) are similar. The same effects manifest themselves depending on the forces of gravity on the mass of objects. In this case, M_1 and M_2 are analogues of q_1 and q_2 . The fact that the resulting vector of the electromagnetic effect is zero does not mean that there is no electromagnetic effect. Each rotating electron has an electromagnetic effect. This shows the connection of the micro- and macrocosm.

To understand the work of the forces of gravity, it is necessary to constantly keep in mind that the expansion of the Universe is a constant process and this process has been going on initially since the creation of everything. The picture of the world is being formed, the dynamics of the formation of the picture of the world is based on the action of the second law of thermodynamics. The main meaning of the second law of thermodynamics is that matter is cooling down in the universe. Since the forces of gravity have an inverse temperature dependence, the cooling process affects the magnitude of the forces of interaction in nature, changing the picture of the world [9], [10]. An example of the effect of temperature dependence and the second law of thermodynamics can be the structure of galaxies, the shape of galaxies: disc-shaped shape, arms and the presence of a black hole in the centre. An earthly example is the formation of clouds, the processes of vapor condensation during cooling. It should also be noted that we are witnessing a twofold

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process – on the scale of the Universe, the process of expansion, on the scale of the Galaxy, the process of compression. The phenomenon of dualism in this case is a side effect of the expansion process. A model of this phenomenon can serve as the dynamics of water movement after paddling. The formation of a galaxy is like a vortex (funnel) on the water.

The main key point is the action of gyroscopic forces. Gyroscopic forces tend to return matter to its original position. The original position is the moment of the Big Bang.

Another key point is the similarity of the forces of gravity, inertia and centrifugal forces.

III. BIOGRAPHY OF THE EARTH

The generally accepted version of the formation of the planets of the solar system is very controversial. In any case, according to the second law of thermodynamics, the temperature of the source material was higher than the modern average temperature of the planets. Currently, all the planets of the solar system are in the cooling stage according to the second law of thermodynamics [12].

The existing version of the origin of the planets has no analogues in nature. There are no examples of the transformation of kinetic energy into thermal energy with a change in the aggregate state from solid to liquid.

The main phenomenon, which is the determining process in the proposed hypothesis, is the cooling of the matter. Newton-Richman law of cooling fully reflects this process. The cooling process is presented in the form of the differential equation $dQ / dt = \alpha A (T_s - T)$. The process does not contradict the second law of thermodynamics either. There is a simple mathematical solution to extreme problems. Taking as the basic conditions the common origin of all the solar system planets as well as the intermediate conditions, the current state of the planets, it seems to be possible to forecast their future [16]. The proposed hypothesis is not intended to provide an exact mathematical calculation. It aims to determine the nature of the cooling process and to build a picture of the world on this basis.

The formation of the Earth's crust is an example of a change in the aggregate state of matter as it cools. The liquid phase is transformed into plastic, then into solid.

At the stage of formation of the plastic phase, the Earth collided with a celestial body. The impact formed the existing main mountain systems on Earth (can be considered as a hypothesis). Mountain systems are the edges of the crater. The bed of the Pacific Ocean can be considered as a crater after this collision. Australia is the central slide of this crater. Further cooling formed tectonic plates. Mountain systems continued to grow in the process of compression of the Earth's crust and the Earth's matter. Compression is a consequence of the cooling of matter.

The Earth's crust can be considered as a layer of thermal insulation [13]. This thermal insulation prevents the Earth from cooling down. As the crust cools, the thickness of the Earth's crust increases, creating additional resistance to cooling. If the amount of water on Earth is taken as a constant value, then an increase in the thickness of the Earth's crust leads to a decrease in the amount of water in the free state. An increase in the

thickness of the Earth's crust leads to an increase in the volume of the Earth's crust. In this process, the amount of water in the pores of the Earth's crust increases. The pores of the Earth's crust also bind atmospheric air. In the future, water and air will go into the pores of the Earth's crust, disappear from the surface of the Earth.

It should also be noted that according to the second law of thermodynamics, the starting material for the formation of planets should be matter with a higher temperature potential. The aggregate state of this matter is similar to the matter of a star.

IV. PHYSICS OF GLOBAL WARMING-COOLING CYCLES

Let us consider the effect of the second law of thermodynamics on the formation of climate on Earth [14]. The existing dominant version of changing the Earth's orbit is very far-fetched. It is quite possible that there is some minor fluctuation of the orbit. But it is unlikely to have a significant impact on climate change.

It should also be noted that as the Earth cools, the thickness of the Earth's crust increases. The Earth's crust performs the role of thermal insulation of the Earth's body. A decrease in heat transfer enhances the damping nature of the oscillatory process of climate change [17].

During the warming period polar caps melt, the level of the world ocean rises, the average water temperature increases, and the average air humidity goes up. During this period, the atmosphere is characterized by cyclonic exchange. It seemed that the average humidity of the atmospheric air is a constant value and it is supported by the balance of evaporation and precipitation. However, in due course, the average humidity in the atmosphere increases. At a certain moment, as humidity increases, there appear conditions in the upper atmosphere to create the dew point effect. This effect represents stable (continuous) formation of overcast over the entire atmosphere surface to achieve a stable dew point. The stability of the dew-point is supported by the alteration character of the atmospheric air circulation from cyclonic to a global breeze. The stable continuous overcast is a turning-point in optical and thermomechanical processes on the Earth surface, in the atmosphere. Continuous overcast immensely increases the amount of the reflected solar energy, accordingly the quantity of the solar energy absorbed by the Earth decreases, the cooling process commences.

The first stage of the warming period is characterized by the melting of the polar caps, an increase in the level of the world ocean, an increase in the level of inland reservoirs. The second stage of warming is characterized by the melting of the polar caps, the rise in the level of the world ocean, the desiccation of inland reservoirs. The cooling process begins with the formation of continuous clouds. The process of cooling is characterized by the growth of polar caps, a decrease in the level of the world oceans.

Cycles of cooling and warming are an oscillatory process. This oscillatory process has a damping character. Any free oscillatory process has a damping character. In this case, the attenuation is enhanced by the fact that the amount of water and

air on the Earth's surface decreases.

Attenuation is also enhanced by the action of the second law of thermodynamics. The amount of energy to maintain the process decreases with each cycle.

V. THE MULTIVERSE

As already noted at the beginning of the article, the combined effect of the inverse temperature dependence of the forces of gravity and the second law of thermodynamics form galaxies, stars, planets. This article adopts the concept of the Big Bang [15]. This refers to some initial impulse of the expansion of the Universe. This refers to some initial expansion rates. Speed is a relative concept. During the expansion of the universe, the movement of matter in space is possible along certain spiral trajectories. A simple classical addition of velocities is quite possible in nature. For example, the Earth revolves around the Sun, together they move towards the centre of the Galaxy. The Galaxy also moves in space. The cooling of matter and the strengthening of gravity can enhance this process. As a result of the addition of velocities with translational, rotational multidirectional motion of cosmic conglomerates, superluminal velocity may well be obtained. As a physical process, the speed of light has limitations. The speed of light in the applied value should be considered as the transmission rate of the forward and reverse signal. So, for example, dark matter can be represented as matter that moves relative to us at superluminal speed. Accordingly, we are also dark matter for this dark matter. The fact that we are dark matter does not affect us in any way. In this sense, the Lorentz transformations find their confirmation. At superluminal speeds, the object becomes invisible. In other words, Lorentz transformations describe illusions that occur at near-light speeds. It is illusions, because in reality, no changes occur with material objects during any movements.

Using the example of a burun (funnel) (Section II), it can be noted that the flow velocity on the surface of the burun (funnel) may exceed the speed of the paddle, the initial flow velocity. This example clearly shows that the dynamics of the process is such that vortex processes are quite possible in the Universe. If a lot of vortex processes occur simultaneously, then superluminal velocity is quite achievable with the addition of portable velocities. For Terrestrial conditions, the speed of light seems unattainable. On the scale of the universe, the speed of light for material objects is quite real. Speed is a relative concept.

VI. CONCLUSION.

This article presents the conceptual connection of some natural phenomena [21]. The concept is based on the second law of thermodynamics, the law of matter cooling [22], [23]. This article demonstrates the significant role played by the second law of thermodynamics in shaping the world we observe. By understanding and analysing the cooling process dictated by this law, researchers gain insights into various key phenomena, such as the nature of gravity, formation of galaxies and planets [24], and climate fluctuations on Earth [25]. These

findings contribute to the advancement of scientific knowledge and refine existing theories in the field of classical physics.

The joint work of the second law of thermodynamics and the inverse temperature dependence of gravity forces carries out the processes of condensation, separation, and changes in the aggregate states of matter. Without these processes, matter would be a homogeneous amorphous mass.

It is quite possible that there is a component of gravitational forces in the processes of condensation and evaporation. Additional research is needed to reliably confirm this dependence. So, the source of the energy of the forces of gravity is the Big Bang (some initial impulse). From that moment, the expansion of the universe began [25]. The expansion of the universe is initially, everywhere, constantly, isotropic. Accordingly, the reaction (gravity) is initially, everywhere, constantly, isotropic. It makes no sense to talk about the speed of propagation of gravitational forces in such a situation. The gravitational field of a single material object can be said conditionally. Everything that exists has one gravitational field. It makes sense to talk about gravitational *perturbation* waves, but not about gravitational waves. Visible and invisible matter (dark matter) are under the influence of this field. Everything that exists has one common origin.

The article suggests a general approach to consider all sides of the world picture. On the one hand, the article is entirely based on hypotheses, on the other hand, it is based on the concepts of classical physics [26]- [28].

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