

# **The Secret of Time**

## **(The second Treatise on Time)**

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**Abstract.** This article presents the author's arguments, evidence, and reflections on the question and problem of natural time. The author adheres to the position of dialectical materialism in philosophy. Its founders are K. Marx and F. Engels. V. I. Lenin made a significant contribution to the further formation and development of this philosophy. This philosophy was the state philosophy in the USSR. This is the only true and scientific philosophy. From the standpoint of this philosophy and its worldview, the author of this article poses the question of natural time: “What is time?” And from the standpoint of this same philosophy (dialectical materialism, DIAMAT), the author answers this question and solves the problem of time in nature as a whole, as an objective reality.

**Keywords:** Philosophy, dialectical materialism, physics, nature, objective reality, Universe, matter, dialectics, movement, time, Singularity, natural time, universal time, algorithm of the evolution of nature, algorithm of the evolution of the Universe, laws of nature, scientific and social progress, forces of reaction and obscurantism

### **Part I**

“What is time?”

People have been asking this question for a long time.

Is time an objective reality (1) or is it our subjective perception (2) – these are the two main points latently contained in the question of time.

Two philosophical lines are connected with these moments in the question of time. Firstly, it is the line of materialism, dialectical materialism, to consider time as an objective reality. Secondly, it is the line of idealism in philosophy. Mysticism, esotericism, various illusions about time, the teachings of Kabbalah, and any other anti-materialistic fantasies that are related to idealism should also be included here. Theories and teachings in which time is considered to be anything but objective reality also find their place here.

Separately, there are views that consider time to be non-existent in reality, but this should also be attributed to the second line with idealism at the head.

The practice of human life, human existence, latently leads us to the awareness of time as a natural phenomenon. This intuitive awareness turns out to be correct and true.

Time and space are two categories in our consciousness that are closely and inextricably interconnected. We, people, have long intuitively and latently perceived events and processes that take place in nature as occurring in space and time. We, people, for the most part, still consider both time and space to be objective (objectively existing) factors that do not depend on our consciousness. As for time, our intuition does not fail us. Time is truly the most important essence of nature on a par with matter. But in relation to space, our intuition fails us.

< Space > Space as such, as some natural entity in nature does not exist. But time as a natural entity does exist and its existence is closely connected with the movement of matter, material bodies. There are material bodies in the Universe and in nature. Moreover, the Universe is the largest material object of nature. The assumption of the existence of space in nature requires, for example, resolving the question of the place of space in nature and in the Universe. But if there is nature and the Universe (as

receptacles of all things and objects, bodies and objects), then space is simply superfluous here. After all, nature is simple and economical.

< Vacuum > In addition, there is a vacuum in nature. All material bodies and objects are surrounded by a vacuum, “immersed” in a vacuum, “exist” in a vacuum. Vacuum is a unique environment that exists everywhere in nature, in the Universe. Vacuum is an environment invisible to the eye. But vacuum is an objective (objectively existing in nature) reality. Vacuum does not hinder the existence and movement of material bodies in any way. Vacuum does not screen material bodies in any way. We can say that all material bodies, objects, and subjects exist and move in a vacuum environment.

< Matter > Matter is the primary basis, the primary essence, the origin and the first cause of everything and everyone in nature. Matter is a unique (and universal) and the only substance of nature. All natural bodies are material bodies, i.e. bodies based on the matter of nature. A concrete representation of the matter of nature is the content of elementary particles (EP). It is well known that all material bodies consist of atoms, and atoms consist of elementary particles (protons, electrons, neutrons). The content of EP is the “pure” concrete matter of nature. And this representation of matter takes place in the form of a quantum of matter. We can say it differently: behind this representation there is a quantum of matter. A quantum of matter is a minimal portion of matter. And this minimal portion of matter is in a state of constant internal pulsation, internal movement of matter. We can say that this minimal portion of matter generates, forms a material object, a quantum of matter.

< Quantum of matter > In this regard, we can say that the matter of nature is primary, and the material object is secondary. But we must understand, and we do understand, that in reality, in nature, all this is an inseparable, organic unity, this unity of a minimal amount of matter, its pulsating behavior, character (pulsation, movement) and its form in the form of a material body. And the name of all this is

quantum of matter (EUM). Quantum of matter (EUM) is pure concrete matter of nature. Quantum of matter (EUM) is a minimal amount of matter of nature. Quantum of matter (EUM) is not frozen, petrified (like magma, like asphalt, like concrete) material solidity. Quantum of matter (EUM) is material flesh pulsating in the rhythm and tempo of nature. Quantum of matter (EUM) is an inseparable organic intercourse of form and content. Form and content in a quantum of matter do not oppose each other (as in all other material bodies), but exist in an inseparable organic unity, in coition. Form and content in a quantum of matter do not oppose each other. Form and content in a quantum of matter represent one inseparable whole. This is the coition of form and content into one entity (matter, quantum of matter, quantum of matter pulsating in the rhythm and tempo of nature). At the same time, in all other material bodies, form and content oppose each other and constitute a single whole, but do not merge in coition into one entity. And in a quantum of matter (EUM) pulsating in the rhythm and tempo of nature, matter and its primary fundamental movement, pulsation (internal movement of matter) are merged together.

< Pulsation of quantum of matter > Pulsation of quantum of matter occurs in the rhythm and tempo of nature. Pulsation of quantum of matter is a strictly periodic, harmonic process. This process is represented by a sequence of elementary beats (cycles) of pulsation. Pulsation of quantum of matter in the rhythm and tempo of nature implies the frequency of this pulsation process. And the concept of frequency is the opposite concept of time. These are mutually inverse concepts. In the form of formulas, this connection of concepts can be clearly (for our understanding and perception) presented as follows:

$$\mathbf{frequency = 1/time, frequency*time=1, time=1/frequency.} \quad (1)$$

In these formulas, the unit **1** appears. What does this unit **1** mean?

It is clear that **1** is also some time, it is a certain unit of time, it is a unit of time of nature, it is a natural unit of nature (NUT). It is a larger unit of time than “**time**“ in our formulas.

**Frequency** is a dimensionless quantity, it is the ratio of two “time” quantities: a unit of time (**1**) or a natural unit nature (NUT) and time, represented by the term “**time**“, in the formulas given above. It is clear and completely understandable and transparent that with an objective approach to solving the issues and problems of the foundations of nature and the universe, the term “**frequency**“ must be followed by a natural (universal) constant value (constant). This must be a unique (and universal) constant. Within the framework of the “Theory of Nature” [1] (my book, 2021), this constant has been found, defined and its numerical value has been established. It has been given its own name “UCN” (unique constant of nature). Its value has been calculated, it is as follows:

$$\text{UCN} = 1.210\ 256 \cdot 10^{44}.$$

This expression can be written in one line like this:

$$\text{UCN}=1.210\ 256*10 \wedge\{ 44\}.$$

The unique constant of nature (UCN) is a very large value, but not infinite.

This unique constant of nature represents (must represent!), embodies, first of all, the frequency of nature (the Universe). It is this frequency that initially sets and determines the rhythm and tempo of nature (the Universe). The existence of nature (the Universe) is inextricably and organically linked with this frequency. With this frequency, all changes in nature occur on the Planck scale of existence, at the level of the foundations of the universe, the foundations of nature. With this same frequency, the pulsation of the quantum of matter (EUM) occurs. The unit of the process of pulsation of the quantum matter (EUM) is the pulsation beat (cycle). The duration of one single beat (cycle) of a quantum of matter is expressed by the time duration of the parameter “**time**”, presented in formulas (1). This duration is expressed through the unique constant of nature (UCN) and the natural unit of time (NUT) as follows:

$$\text{UCN} = \text{NUT}/\text{time}, \text{UCN}*\text{time} = \text{NUT}, \text{time} = \text{NUT}/ \text{UCN} . \quad (2)$$

Considering the numerical equalities:

$$\text{NUT}=1, \text{UCN} = 1.210\,256 \cdot 10^{44},$$

represent these equalities (identities) as the value of the quantity “**time**” in numerical form:

$$\text{time} = 1/\text{UCN} = \text{UCN}^{-1} = 8.262\,718 \cdot 10^{-45}.$$

This is the numerical value of the parameter “**time**” in relation to the natural unit of time (NUT) and taking into account the unique constant of nature (the Universe) UCN.

During this period of time (“**time**”) one cycle of pulsation (oscillation, internal movement) of the quantum of matter (EUM) occurs. A completely natural and reasonable, logical conclusion suggests itself that this “**time**” is a minimal time interval in the nature. This is a quantum of time (EUT) of nature .

Thus, the duration of one pulsation cycle of a quantum of matter (EUM) is equal to one quantum of time (EUT). Elementary logic tells us that the time of nature (“**time**” or quantum of time (EUT)) must be measured by the matter of nature, by the quantum of matter (EUM).

The implementation of the mechanism of pulsation of a quantum of matter in the rhythm and tempo of nature (presented above) is such that in each beat (cycle) of pulsation of a quantum of matter (EUM) there is an inseparable organic unity of three moments. These are the three moments: the existence of matter, the quantum of matter (EUM), the existence of the motion of matter, the pulsation (internal motion) of the quantum of matter (EUM) and the existence of time (“**time**”), the temporal duration of one beat of the pulsation of the quantum of matter (EUM), equal to one quantum of time (EUT).

We can and have every right to speak in this regard about the triune organically inseparable, inseparable essence of nature “**matter - movement – time**”. And in this trinity the substance (active principle) is the matter of nature, the quantum of matter (EUM). This is a quantum of matter (EUM) pulsating in the rhythm and

tempo of nature or with the frequency of nature (the Universe). This pulsation is a strictly periodic harmonic process in nature. One beat (cycle) of the pulsation of a quantum of matter (EUM) is carried out in a time (“**time**”) equal to one quantum of time (EUT). All quanta of the matter of nature pulsate strictly synchronously in a single rhythm and tempo of nature.

Another important, fundamental, global conclusion suggests itself: the time of nature, the quantum of time (EUT) is measured by the quantum of matter (EUM): **EUT=EUM**. By this, the time of nature is, as it were, identified with the matter of nature. But this is a relative identity, for the time of nature and the matter of nature are two most important, fundamental entities of nature. But at the same time, these are two essentially different objective entities of nature. The identity of these entities at the level of quantum quantities **EUT=EUM** symbolizes and embodies the fact that these entities are always organically inseparably linked in nature. Their quantitative values are equal. These natural entities do not exist separately from each other and from movement (pulsation). Matter exists only in movement. Movement separately from matter does not exist. And matter without movement also does not exist. Movement is the most important attribute of matter. And time is the form of existence of moving (pulsating) matter.

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## **Part II**

In relation to space, we speak of spatial extension, of distance, of the length of a segment, of length. Length is spatial extension. Length is a measure of extension, distance.

In relation to time, we speak of temporal duration, temporal interval, temporal segment, duration. Time is temporal duration. Time is a measure of duration.

In our knowledge of nature and its laws, we can speak separately about matter (material bodies), about the movement of matter (material bodies), about the time of existence of matter (material bodies), but in nature all this exists together in an indissoluble unity, exists as a triune essence of nature “**matter & movement & time**”. This was above demonstrated in relation to the quantum of matter (EUM).

It is clear that everywhere in nature on the Planck scale of existence there are quanta of matter pulsating in the rhythm and tempo of nature (with the frequency of nature). But this is the microworld, these are the foundations of the universe, this is the Planck scale of existence. And how is it on the macro scale, on the scale of the entire Universe. And the Universe, as is known, is the largest material object in nature.

And finally, how is it in all of nature? This question is answered in my article “Nature as an objective reality” [2].

Of course, the question (and problem) about time must be preceded by the question “What is nature”? This question (problem) is fully and completely covered in the article mentioned. I recommend all readers to look into this article.

But in the present article I will still repeat (remind) some points from this recommended article.

First. “Nature, as an objective reality, accommodates, contains everything, the entire material world. Therefore, the concept of “nature” is the most general concept. There is no more general concept. ...

According to the “Theory of Nature” and the philosophy of modern dialectical materialism, nature is a five:

**Nature:: = < Singularity, UCN, matter, emptiness, MLN> (3)**

The symbol “:: =” means “by definition there is”.



(1). **Singularity** – a special, unique area of nature or a special, unique natural mechanism.

(2). **UCN** = **1,210 256 · 10<sup>44</sup>**. (4)

UCN is a unique constant of nature (the Universe). It is a 45-digit decimal number. Currently, only the first 7 digits of this number are reliably known. We have yet to learn the exact value of this unique and universal constant of nature (the Universe).

(3). **MLN** – Main Law of Nature .

(4). **Emptiness** is the absence of matter or Singularity.

(5). **Matter** is the matter of nature. In nature, matter is represented by its three types, but mainly by quanta of matter (EUM) .

Second. “The algorithm of the evolution of nature implements the main law of nature, the law of the circulation of matter in nature (LCMN). Here is the general scheme of the algorithm of the evolution of nature:

... { [...**MVD**==>**S**==>**NUM**]==>**EUM**==>**U** }==>**MVD** ... (5)

The following abbreviations are used in this diagram:

**S** – Singularity ,

**U** – Universe ,

**MVD** – material vacuum dust, matter of the first type,

**NUM** – natural unit of matter, matter of the second type,

**EUM** – quantum of matter, matter of the third type.

The ellipsis (...) on the left in this diagram indicates that nature has no beginning.

The ellipsis (...) on the right in this diagram indicates that nature has no end.

The square brackets in this diagram highlight the part of the diagram related to the functioning of the Singularity itself. The

fragment of our diagram enclosed (taken) in square brackets represents one cycle of the functioning of the Singularity

[...**MVD**==> **S** ==>**NUM**].

Within the evolution of the Universe, this part is repeated in a cycle  $UCN^2$  times, as it established within the framework of the TN.

...

The curly brackets in this diagram indicate, highlight (designate) the part of the diagram related to the evolution of the Universe. The fragment of this diagram, enclosed (taken) in curly brackets, is repeated in a cycle  $UCN^2$  times. This corresponds to the total time of the evolution of the Universe. This time will be the value  $UCN^2$  EUT (quanta of time) or  $UCN$  NUT (natural units of time). In terms of our usual units, the total time of the evolution of the Universe will be approximately  $2.8 \cdot 10^{34}$  years. According to TN calculations, the current age of the Universe is approximately **124 trillion 666 billion 537 million 511 thousand years ."**

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The above excerpts require clarification.

<Explanations> According to scientific research of the foundations of nature, carried out by the author in 2011-2024, according to the "Theory of Nature" and later articles on the same topic, nature, in the author's opinion, has a feature, Singularity. This is a unique special area of nature or a unique special mechanism of nature. It can be considered that the Singularity is a kind of natural oscillator. Its operating frequency is the frequency of nature. The Singularity (oscillator) functions as follows. But first of all, it should be said that the process of functioning of the Singularity is a strictly periodic, harmonic process. The "mechanism" of the Singularity has an input and an output. Matter of the first type (this is material vacuum dust, MVD) enters the input of the Singularity. In the process of internal work of the "mechanism" of the Singularity, this matter is transformed into matter of the second type (this is a natural unit of matter, NUM).  $UCN$  particles of MVD are "packed"

by the Singularity into one NUM block, forming a material NUM-object. Immediately after its “production”, formation, the material NUM-object receives an initial impulse from the Singularity. Having received this impulse, the material NUM-object is “shot back” (radiated) by the Singularity into the surrounding vacuum. Due to the initial impulse, the material NUM-object begins to move by inertia rectilinearly and uniformly in the radial direction away from the Singularity. The initial velocity of radiation (“shot”) of the material NUM-object (as the author believes) is equal to the maximum velocity in nature, in the Universe (MVN) at the moment of radiation. The physical quantity MVN itself is one of the most important characteristics of the Universe. It is a physical quantity that increases over time. For the modern era of the Universe, its value is equal to the speed of light in a vacuum. By experimentally determining the value of the physical quantity the speed of light in vacuum, we thereby establish the value of the physical quantity MVN for the moment (time) of this experiment. Since, according to the conclusions of the “Theory of Nature”, this physical quantity ( MVN) increases with time, according to the known formula, then this can be used to check the predicted value of the quantity MVN and its actual, experimentally calculated (established) value for compliance. This way, the “Theory of Nature” and its conclusions can be verified experimentally, practically for compliance with real objective nature. As established within the framework of TN, in 1000 years the numerical value of the speed of light in a vacuum in SI should increase by 0.03. < End of explanation >

But now let's return to our Singularity (natural oscillator). It is the Singularity (as an oscillator) that sets the rhythm and tempo of all nature or natural frequency. This is the working frequency of the oscillator. In this rhythm and tempo, the mechanism of the Singularity functions. In this rhythm and tempo, the Singularity “produces” and emits material NUM-objects. The time duration of each beat (rhythm) of the Singularity's functioning is the quantum of time (EUT). All of nature (the Universe) is tuned to this rhythm

and tempo. All of nature (the Universe) exists and evolves in this rhythm and tempo. This natural rhythm and tempo (natural frequency) is transmitted to all quanta of matter (EUM). And quanta of matter (EUM) are the third type of matter in nature after MVD and NUM. Here it should be said (reminded) that some time after its emission by the Singularity, a material NUM-object disintegrates (crumbles) into UCN quanta of matter (EUM). And the pulsating character of the behavior of a quantum of matter (EUM) after the disintegration of a material NUM-object is transmitted to it, so to speak, “along a chain”, “by inheritance” from the Singularity, as from the original source. And it is the quantum of matter (EUM) that is the material “first building block” of the universe, nature, the Universe. Quanta of matter form all elementary particles. Elementary particles form atoms of chemical elements. And all material bodies consist of chemical elements. And the Universe includes all material bodies. The Universe consists of material bodies. The Universe itself is the largest material object of nature (in nature). The Universe is a dynamic, constantly expanding (growing in volume, in diameter) material object. It is constantly and continuously in a natural rhythm and tempo fed by matter emitted by the Singularity. In fact (and conditionally it can be considered so) the Singularity is the center of the Universe. The Singularity is a kind of fountain, a gushing primary source of matter for the Universe. The Singularity is a unique and only source of matter (“building material”) for the formation, development and evolution of the entire Universe. But still, in fact, the Singularity is not the property or part of the Universe. The Singularity (natural Singularity) is a key moment for the existence and evolution of the entire Universe. Without the Singularity, the Universe does not exist, cannot exist and evolve. The Singularity is the most important primordial essence of nature. The Universe is not eternal in the time of its existence and evolution. The total time of existence and the evolution of the Universe is the value of UCN NUT. This is a large, but finite value. After the completion of the evolution of one Universe, the evolution of a new Universe begins. This transition occurs

“instantaneously” without any delays or interruptions. After all, the Singularity does not stop functioning after the completion of the evolution of the Universe. The Singularity continues its functioning, and it actively forms new material NUM-objects in the rhythm and tempo of nature, as the initial “building material” for the construction of a new universe. Singularity is eternal, as is nature. Together with Singularity (and nature), the natural frequency (rhythm and tempo of nature) is eternal, the unique constant of nature (the Universe) UCN is eternal, the quantum of matter (EUM) and quantum of time (EUT) are eternal and unchangeable:

$$\mathbf{EUT = EUM = UCN^{-1} = \mathbf{const.}}$$

Regarding the immutability of the quantum of matter, an important clarification should be made. The constancy of a quantum of matter is understood in the sense of the constancy of the amount of matter in a quantum of matter (EUM). But, as a material body, an object, a quantum of matter is subject to change. For the sake of clarity, we imagine a quantum of matter (EUM) as a material ball in a continuous, constant, periodic, harmonic oscillatory (pulsating) mode. This ball constantly (1) decreases (shrinks) in size, in diameter to some lower (not zero, not point) limit, (2) then increases (swells) in size, in diameter to some upper (finite, but not infinite) limit. The very concept of “pulsation” of a quantum of matter already implies (includes) variability, as opposed to constancy. A pulsating quantum of matter personifies the materiality and dialectic nature and their interrelation at the micro level, at the Planck scale of being, in the foundations of nature, in the foundations of the universe.

The lower limit of the pulsation of a quantum of matter represents a grain of matter. At the lower limit of pulsation, a quantum of matter is represented in the hypostasis of a “grain of matter”. At one and the same moment in time, this limit has a constant value for all pulsating quanta of matter. But within the evolution of the Universe, this lower limit increases in size. This is the most important law of nature. This is the fundamental law of nature. This

is the law of increasing the diameter of a grain of matter or quantum of length (EUL) in nature with the passage of time (absolute universal time) or with the increase of the absolute age of the Universe. Within the framework of the “Theory of Nature”, a formula for this change of quantum of length (EUL) has been established in depending on the universal time. This means that in this respect, the quantum of matter is not static, not constant, it is subject to change, it is changeable. In the state, in the hypostasis of “grain of matter” the quantum of matter remains for a very small (but not zero) time interval of time smaller than the quantum of time (EUT). This is the interval of the actual existence of a grain of matter. According to the author, this time interval is proportional to the diameter of the grain of matter.

The upper limit of the pulsation of a quantum of matter (EUM) represents an elementary particle. In the upper limit of the pulsation, the quantum of matter is presented in the hypostasis of an “elementary particle”. And each type of elementary particle (proton, neutron, electron, etc.) has its own size, diameter. This means that the upper limit of the pulsation of a quantum of matter varies from one type of elementary particle (EP) to another type of EP. Similarly, in the state, in the hypostasis of an “elementary particle”, the quantum of matter remains for a very small (but not zero) time interval, smaller than the quantum of time (EUT). This is the time interval of real existence of an elementary particle. According to the author, this interval is proportional to the diameter of the EP.

It is important to understand that the time of existence of a pulsating quantum of matter is continuous (continuous duration). Here, an association with an infinite continuous straight line is appropriate. But the time of existence of an elementary particle is not a continuous duration. It is a periodic alternation of the time of existence, being (phase, state, hypostasis of “elementary particle” for a quantum of matter, EUM ) and the time of non-existence, non-being (other phases of pulsation of a quantum of matter). Here, an association with an infinite dotted straight line is appropriate. The

time (duration) of existence of an elementary particle within one quantum of time (EUT) coincides (is equal to) the time of stay of a pulsating quantum of matter in the hypostasis of “elementary particle”. A similar (symmetrical) situation takes place in relation to the existence of a grain of matter. In this regard, we must speak of the intermittent character of the existence of an elementary particle. The same conclusion is true in relation to a grain of matter. In relation to an elementary particle and a grain of matter, there is a periodic alternation of time intervals of existence and time intervals of non-existence. And this means that we record elementary particles in physical experiments within the time intervals of the existence of elementary particles. Most likely, this should be a moment in time in the center of the time interval of existence of an elementary particle, and possibly the point center of this time interval itself. The point centers of the time intervals of existence of all elementary particles are one single **fixed** moment in nature. Apparently, this moment in time determines the end of the previous and the beginning of a new quantum of time of nature (EUT). At these moments in time, the results of elementary changes occurring in nature at the level of the microworld within a quantum of time **are fixed**. And the middle of a quantum of time (EUT) then (according to the logic of things) it determines the middle of the interval of existence of all grains of matter in nature.

Note that the duration of each pulsation cycle of a quantum of matter (EUM) remains an unchanging constant value, this is a quantum of time (EUT). This is also a fundamental law of nature.

In addition to pulsation (internal movement of the matter), the quantum of matter (EUM) participates (is) in a constant, incessant external movement, displacement. This displacement is carried out with the maximum speed in nature (MVN). This is one and single, the only speed of displacement of all quanta of matter (EUM). Since all elementary particles are formed from quanta of matter (EUM), then this means that this same speed (MVN) is the only speed of movement of all elementary particles. This is the displacement of a quantum of length (EUL) in one quantum of

time (EUT). For the present age of the Universe, this speed is equal to the speed of light in a vacuum.

So, we see that everything in nature, both on the Planck scale of existence and on the universal scale of existence, is subject to a single rhythm and tempo of nature. Behind all natural phenomena, processes, including the processes of existence of material bodies, objects, there is a natural frequency, a unique (and universal) constant of nature (the Universe):

$$\mathbf{UCN = 1,210\ 256 \cdot 10^{44} .}$$

And time is a concept and phenomenon inverse to the concept and phenomenon of frequency. Two time intervals have (play) a special role in nature, these are the natural unit of time of nature (NUT) and the elementary unit of time of nature or quantum of time (EUT). They are connected with each other by simple relations:

$$\mathbf{1\ NUT = UCN\ EUT, 1\ EUT = UCN^{-1}\ NUT,}$$

$$1\ NUT = 1,210\ 256 \cdot 10^{44}\ EUT ,$$

$$1\ EUT = 8,262\ 718 \cdot 10^{-45}\ NUT.$$

Within the framework of the “Theory of Nature” the connection of these quantities with our usual time, with the second, is also determined. This is such a connection through the physical quantity (PQ) of the fine structure constant ( $\alpha$ ):

$$\mathbf{1\ NUT = \alpha\ s, 1\ s = \alpha^{-1}\ NUT,}$$

$$\mathbf{1\ EUT = \alpha \cdot UCN^{-1}\ s, 1\ s = \alpha^{-1}\ UCN\ NUT.}$$

In numerical values we have the following relationships (equalities):

$$\alpha = 7,297\ 352\ 5643 \cdot 10^{-3}, \alpha^{-1} = 1,370\ 359\ 9918 \cdot 10^2,$$

$$UCN = 1,210\ 256 \cdot 10^{44}, UCN^{-1} = 8,262\ 718 \cdot 10^{-45},$$

$$\mathbf{1\ NUT = 7,297\ 352\ 5643 \cdot 10^{-3}\ s,}$$

$$\mathbf{1\ s = 1,370\ 359\ 9918 \cdot 10^2\ NUT,}$$



$$1 \text{ EUT} = 6,029\,596\,3756 \cdot 10^{-47} \text{ s},$$

$$1 \text{ s} = 1,658\,485\,8052 \cdot 10^{46} \text{ EUT}.$$

Everything in nature at the level of the foundations of the universe occurs with a natural frequency, behind which stand the natural unit of time of nature (NUT) and the quantum of time (EUT). This is real nature. These are the foundations of the universe. They are material and dialectical. Nature is its own mistress. Nature exists and evolves according to its own laws and its own logic (dialectical logic). The correct, true explanation and understanding of nature is possible only through nature itself. And nature is fundamentally material and dialectical. These facts are constantly confirmed in the course of human social and industrial practical activity and its interaction with nature throughout the centuries-old history of the development and evolution of human civilization. And this is presented both in this article and in the author's book "Theory of Nature".

<Digression> It should be noted that in the matter of knowing nature and its fundamental laws, absolutely no faith is needed. In this good and noble cause of knowing the truths of nature, absolutely no faith is needed. Neither faith in God, nor faith in the devil, nor faith in mysticism, nor faith in esotericism are required here. Faith only hinders and interferes with the normal process of knowledge. There is no place here for various kinds of bourgeois-idealistic philosophical teachings, false at their core and deeply anti-scientific.

Behind the "true faith" of all sorts of religious doctrines lies a banal lie. And the teaching of Kabbalah (its lie) is also completely unnecessary here. No otherworldly (not of this world) explanation is needed here. Everything is explained in a simple natural way, proceeding from nature itself. Nature is explained simply, proceeding from nature itself. No otherworldly forces exist in nature. No "other side" exists in nature. Nature is simple and

uncomplicated. Nature is simple and economical. Such is the position of dialectical materialists on this issue.

The philosophy of dialectical materialism is the only true (in all respects nature) and scientific philosophy. And this just expressed judgment also receives its full confirmation in this article, in the author's book "Theory of Nature", in other articles by the author in the development of the theme of TN.

Within the framework of the philosophy of dialectical materialism, a corresponding worldview, world understanding is developed. This is a completely and fully true and scientific worldview. This is a dialectical-materialistic worldview. This worldview is based on the known scientific facts about nature. This worldview is based on the facts and conclusions of all sciences about nature. These are, for example, such facts: "Nature is an objective reality that exists outside our consciousness and independently of our consciousness", "The minimum material bodies that exist in nature are elementary particles", "Any material body is represented by its form and content", "Newton's law of universal gravitation", "Coulomb's law on the interaction of electric charges", "The charge of an electron or proton is an elementary electric charge".

This dialectical-materialistic worldview is also based on facts established, verified and proven in the course, in the process of human social and labor practical activity throughout the entire historical stage of the evolution of human society. Such facts are, for example, such judgments and statements: "Nature is an objective reality existing outside our consciousness and independently of our consciousness", "Nature is fundamentally material and dialectical", "Nature exists absolutely", "The Universe is the largest material object in nature", "All bodies, objects, subjects in nature are fundamentally material and are material bodies". These same provisions are confirmed in science.

The dialectical-materialistic worldview in no way relies on any faith, as is the case, for example, in religious teachings. All religious teachings are based on the belief in the existence of God (the Supreme Being). But no religious teaching provides evidence

of this existence (and the "truth" of its faith). This fact alone makes one wary of religious teachings. Science strives to find and provide evidence, and religion relies on faith. But providing evidence is not the privilege of science alone. Evidence is also required when establishing the truth or falsity of a particular judgment, assertion, or position. Evidence is required at every step in our daily life.  
<End of digression>

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So, what do we have? There is nature as an objective reality. In nature there is a Singularity, a kind of center of nature. The Singularity is, among other things, a kind of eternal mover of nature. It sucks in material vacuum dust (MVD) like a pump, packs it into a natural unit of matter (NUM) and like a gun fires a material NUM-object into the surrounding vacuum. All this economy, this whole mechanism of nature functions with the frequency of nature (UCN). The operating mode of the Singularity "pump – gun" ("inhale – exhale") allows us to talk about the pulsation of the Singularity, as two-tact process. In the first tact ("inhale") there is a suction ("pump") of matter, material vacuum dust (MVD) in the amount of UCN particles, which is "packed" into a NUM-object. In the second tact ("exhale") there is a radiation (a shot "gun") of the material NUM-object into the surrounding vacuum. This is a strictly periodic, harmonic process of pulsation. Here a certain analogy can be seen with the pulsation of a quantum of matter (EUM). The frequency of the pulsation of the Singularity (oscillator) sets and determines the frequency of all nature, the natural rhythm and tempo. This rhythm and tempo of pulsation will be inherited by all quanta of matter (EUM). The pulsation of the Singularity and the pulsation of all quanta of matter (EUM) occur strictly synchronously. This is the law of nature.

One cycle of pulsation of the Singularity (oscillator) and all quanta of matter (EUM) is carried out in one quantum of time (EUT). UCN pulse cycles are performed in one natural unit of time (NUT).

In relation to the natural unit of time (NUT) the value  $UCN \text{ NUT}$  means the total time of the evolution of the Universe. And the value  $UCN^{-1} \text{ NUT}$  means quantum of time (EUM), the minimum time duration in nature, the minimum natural time step and the first instant (moment) of the formation of the Universe.

Limits of the time of evolution of the Universe (A) in NUT units are defined by the range:

$$UCN^{-10} \leq A \leq UCN$$

with discreteness step  $UCN^{-1} \text{ NUT}$ .

The evolution of the Universe is a time-limited process. Universal time has a beginning and an end.

The evolution of nature has neither beginning nor end. It is an endless process. It is a periodic process. One cycle of the evolution of nature is equivalent to the entire process of the evolution of one universe. The evolution of nature is, figuratively speaking, a sequence of evolutions of universes. Immediately after the completion of the evolution of one universe, the evolution of the next universe begins. No information is transmitted from one universe to another universe. No legacy is transmitted from the universe that has completed its evolution to the universe beginning its evolution. Everything connected and related (except matter) to the universe that has completed its evolution will sink into eternity and disappear without a trace. Nature has no historical tablets and no archive. Such are the laws of nature. Only matter in the form of MVD from the universe that has completed its evolution remains in nature as raw material for the functioning of the Singularity. The Singularity (oscillator) functions forever without stops and breaks. This is a kind of unique and the only “Perpetuum Mobile”, perpetual motion machine (mover) in nature. Singularity is the driving force in the pattern of the circulation of matter in nature (5).

Within the evolution of the Universe, natural time and universal time express the same essence, these are identical concepts. But natural time is a global concept and the most important, together

with matter, essence of nature. And universal time is a local concept, limited by the framework of the evolution of the Universe.

Natural time, unlike universal time, has neither beginning nor end. Such is nature. Such is the mystery of nature's time. The mystery of time is revealed.

But this became possible only and solely on the basis of the only true and scientific philosophy of dialectical materialism and its scientific dialectical-materialistic worldview and understanding of the world.

The teaching of the philosophy of dialectical materialism is omnipotent, because it is true and scientific.

This article and the book “Theory of Nature” are a confirmation of the truth of this judgment, the truth and scientific character of the philosophy of dialectical materialism.

This article explains and clarifies the provisions, conclusions and results of the “Theory of Nature” (TN) of the author [1] regarding the concept of “time”.

TN is a scientific Revolution in physics and cosmogony (cosmology). The year of this scientific Revolution is 2014.

TN is a powerful breakthrough in our scientific knowledge of nature and its fundamental laws.

TN is a further creative development of the theory and practice of the philosophy of dialectical materialism. TN is a triumph of the philosophy of dialectical materialism.

TN is a powerful blow to the forces of modern reaction and obscurantism.

Sincerely

Robert Yusupov from Vladivostok, independent researcher, dialectical materialist, Marxist, communist

## References

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