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THE POSTULATES FOR THE LOGICAL SUBSTANTIATION OF THE PHOTON THEORY OF THE UNIVERSE'S ORIGIN

Problem of creation of the Universe excited representatives of the different sciences and forms of ideology from the most ancient times. For thousands of years this problem has generated a great number of theories and concepts, which sometimes were diametrically opposed each to other. Meanwhile on this issue there is a rare unanimity of representatives of different ideological trends too. For clarity, let us refer to religion, philosophy, and physics. In our opinion, the major world religions, philosophy (in particular mystical philosophy, or mysticism) and modern physics, on the beginning of the Universe say about one and the same, though in different languages. For example, in the Bible it is written: «And this is the message which we have heard from Him and declare to you: God is light, and in Him there is no darkness at all¹». In the Holy Scripture of Islam - the Qur'an we read: «Allah is the light of the heavens and the earth²». Representatives of philosophy write: «Initially there was Light. Everything came from the Light³.» Some contemporary physicists say: «Photon is the main element of the matter. All kind of material bodies are composed of photons. All kind of interaction of material objects is carried out mainly by means of photons⁴».

If we proceed from the fact that the light is a stream of photons, it would be logical to state that the representatives of all of the above mentioned ideological directions are unanimous in the understanding of light as the material, the physical origins of the Universe.

As you can see, most forms of ideology recognize the light as the beginning of the Universe and the beginning of all things. But the logical question arises here:

¹ The Bible. The first Epistle of John. Chapter 1. Verse 5.

² The Qur'an. 24:35.

³ How did the universe emerge // <http://worktak.narod.ru/40.htm>.

⁴ Nikishin S. V. The photon theory // <http://ntpo.com/physics/studies/50.shtml>.

from where appeared the light or photon? Consider the responses to this question again from the sphere of religion, philosophy and physics. Response of the representatives of religions is obvious: a light's source is God. In philosophy on the light's source says: «The Light has always existed. The light was the original⁵». In physics there are different answers, which, at first glance, are a consonant. For example, some physicists believe that as the source of all or, rather, as a force that gave birth to everything, including light, acted universal gravitation: «According to the law of universal gravitation, the Universe could and should appear from nothing. Spontaneous creation - this is exactly the reason why, instead of emptiness arises something⁶.»

As we can see, in understanding of the source of light there is no unanimity between the representatives of different ideological trends. However, this question - "What is the source of the light, and the whole of existence" - is the main problem, to the solution of which should be directed efforts in modeling process of the origin of the Universe, and for this aspect of the problem should, in our view, be given more attention in the modern science.

Recognition of light as a material or physical beginning of being by supporters of different ideological trends, in fact, can be considered as foundation of the photon theory of the origin of the Universe. Although such a comprehensive theory may be, does not exist in cosmology, but the characteristics of photon, which is given in modern physics show favor for this theory. In proof of this on the basis of the widely-available reference books on physics below we cited few excerpt from the similar characteristics of the photon: «The smallest particle of Dense World is the photon, the quantum of electromagnetic radiation, and the largest structure - galaxy⁷»; «In 1964, the American astronomers A. Penzias and R. Wilson found that the global space is filled with millimeter radio waves, which can be considered as the cold photon gas with temperature of 2.7K. According to modern views, this radiation (which names "the relict") occurred in the early stages

⁵ How did the universe emerge // <http://worktak.narod.ru/40.htm>.

⁶ Stephen Hawking said that there is no God // <http://2012over.ru/stiven-khoking-zajavil-chto-boga-net.html>.

⁷ The principle of the device of the world // <http://kosmologia.ucoz.ru/index/0-19>.

of development of the Universe, when the substance was under enormous pressure and temperature. The average density of the relict photons is about 500 units per 1 cm^3 . This number can be compared with the prevalence of protons, from which built the world around us: in average there is more than one proton in 1 m^3 in the Universe. Thus, the photons in the Universe are billion times more often, than protons⁸».

And another statement of this kind: «At very early stage, in the first moments of the Big Bang, the whole matter was extremely hot and dense mixture of particles and antiparticles and gamma-photons with high-energy. Particles in collision with the corresponding antiparticles annihilated, but the resulting gamma-photons instantly materialized in particles and antiparticles⁹».

Basing on this, as well as on the basis of the analysis and synthesis of views existing in the various ideologies and theories, below are put forward some postulates for the logical substantiation of the photon theory of the origin of the Universe.

Let's start with the simplest thing. If the light, according to the definitions adopted in the optics is electromagnetic wave propagation velocity in vacuum with constant, or light is a stream of photons - particles with a certain energy, momentum, the momentum of its own and zero mass (i.e., in general, this is a set of photons), the smallest or the elementary light must be a single photon too. In other words, the light as beginning of the entire material is photon and photon is a light. Therefore, according to the photon theory of the origin of the Universe, a single photon must be the first material of the beginning of all things. On this basis it is possible to propose the following enough simple postulate:

Postulate 1. *«Light can be considered as a stream of photons; therefore, the smallest, elementary light is also a photon as a single elementary particle».*

In continuation of this postulate it should be noted that, according to the definitions adopted in the optics, the light in general can be considered not only as

⁸ Photon // http://www.alnam.ru/book_e_phis.php?id=1.

⁹ The Big Bang model and the chronology of the Universe // <http://www.prioslav.ru/kursb1>.

a stream of photons, but also as radiation or energy. And the radiation and energy always have their source, i.e. they come from somewhere, which is their source. Therefore, according to the photon theory of the origin of the Universe, the recognition of single photon as material basis of all kind of existence presupposes still looking for its source. Proceeding from this, we can propose another enough simple postulate:

Postulate 2. «Light can be regarded as electromagnetic radiation emitted by heated or excited state of the substance, therefore, light, including as a single photon, always has its source».

In comments to these postulates should be noted that the recognition of light, photon as a material, physical origins of the Universe in the framework of the laws of logic inevitably confirms the priority of the light on the dark and the superiority of the «hot model» of the origin of the Universe over alternative to it «cool model». As is known, the majority of researchers consider that the Universe in its beginning was a «singular» condition with a huge temperature, and therefore adheres to the «hot models» of the origin of the entire material. The recognition of the light, stream of photons as the beginning of the Universe stresses that the photon theory of the origin of the Universe is also one of the other «hot model.» All this gives grounds to put forward such postulate:

Postulate 3. «The light was always preceded and precedes the darkness, because the darkness is the absence of light, and, accordingly, while there will be no light (or until disappears light), there will be no darkness (or does not appear dark), and the presence of the light always means the presence of heat, therefore, the beginning of the entire material existence was a hot, not cold substance».

Now consider the implications of the adoption of these three postulates in complex to the beginning of the Universe. But before this, it is necessary to find out the essence of the concept of «the beginning».

It should be noted that in modern science the researchers say about mathematical, geometrical and physical beginning. Based on existing data, it can be argued, that in mathematics the «physical» beginning is «zero». In geometry the

beginning in the particularly given physical space is a “point”¹⁰. With the beginning of the physics we observe a complex pattern - if we rely on the recognition of some scientists that the atom is nonmaterial¹¹, it turns out that physical zero, or the beginning, can be considered as a specific body (probably, from the level of molecules), and not a microcosm or elementary particles in general (starting with the atom). With this understanding of the recognition of light, photon (elementary particle stream or elementary particles) as a material beginning of the Universe will be absurd. Therefore, stating that all elementary particles are material, we will have to admit, that the smallest elementary particle, in our case, the photon, on the basis of the data available at the present stage of development of natural sciences, is the primary material of the beginning in physics.

So, let us assume that the “zero”, “point” and the smallest elementary particle – “photon” are three varieties of material beginning. Logic dictates that before «beginning» nothing can exist. We can not argue that there is «the beginning of the beginning», and further, «the beginning of the beginning of the beginning», and so on to infinity. In such case, we need to recognize that the question about the beginning of the Universe also been resolved - it is light, photon, which is the unique beginning, the source of himself, spontaneous element, which was the cause of the spontaneous emergence of the entire material existence. However, here you can go deeper and draw some parallels between the beginning in physics and geometry and the beginning in mathematics, not leaving based on reason and logic framework.

As we have already noted, in mathematics «the physical beginning” is «zero», which can have an infinite negative «non-physical» principle in the form of negative numbers or negative measurements. In other words, the negative numbers is like phenomena from another space-time dimension.

¹⁰ Ouspensky P.D. The new model of the Universe // <http://psylib.org.ua/books/uspen02/txt11.htm>.

¹¹ The same source.

The “point” in geometry, as it is known, is characterized by the fact that it is a «physical» beginning in the given particularly physical space, and for its negative dimension, i.e. for the presence of what may be before «physical point», it is necessary the presence of another, namely, the «non-physical» space, which is difficult to describe. Therefore, going by analogy with the fact that there is a particle and antiparticle, world and anti-world, matter and anti-matter, we can assume that there is also «anti-space», which can be negative dimension in geometry.

In physics, although a «negative value» or the negative measurements generally devoid of meaning, however, some researchers, as was already stated, consider measuring inside of atom as negative. But if we recognize that these measurements refer to the sphere of material being, or to the physical beginning, we will have to assert, that the measurements inside of the atom are also positive. To determine whether there are any negative measurements in the field of physics, let us refer to the logical analysis of one specific example.

As is known, when we are talk about the stages of the origin of the Universe, we usually refer to three stages of its evolution in the following sequence: 1) the physical evolution; 2) the chemical evolution (includes prechemical or physico-chemical evolution); 3) biological evolution (includes prebiological or biochemical evolution). However, by this logic, when the chemical evolution presupposes existence of prechemical stage, and biological presupposes existence of prebiological stage, it will be necessary to recognize the existence of prephysical evolution of the Universe also. In fact, the singularity or light, photon, which can be considered as the beginning of the material world, refer to the physical evolution of the Universe, i.e., to the positive dimensions. But what was there before them? In other words, what was prephysical state of being, or, based on our example, what was the «prephysical-physical» state of the world, what are the negative dimensions of material existence? In other words here also in analogy with the fact that there is a particle and antiparticle, world and anti-world, matter

and anti-matter, space and «anti-space», there is a need for the recognition of negative measurements in physics too.

Basing on the logic of the abovementioned example about the stages of the evolution of the Universe, once again we pose the question: whence had come the light or photon, what is its source? According to the religion light's source is God. To accept or deny this idea in principle is impossible, especially if we bear in mind that religion is based not on evidence, but on faith. According to the philosophy (or in this case, according to the mystical philosophy or mysticism) light is a source of himself, that is also impossible to accept, neither to deny, because here is irrational mechanism of proof of facts. But how to answer to this question from the point of view of rationality, physics?

The first answer we already have: we repeat it - from the point of view of some physicists, light, stream of photons, is a source of himself and spontaneous element, which under the action of the force of gravity was the cause of the spontaneous emergence of all being, i.e. the answer which, from our point of view, is more like the abovementioned answer of mysticism, rather than rational response.

The second answer we suggest to give on the basis of idea about negative measurements in physics or with respect of the recognition of prephysical state of being. For clarity, let us assume that in prephysical state of being, in the beginning there was a certain source, representing a force, which could be conditionally called X-force. From it as from the energy radiated heat, and, accordingly, the light or stream of photons, the “immanent” with its source (we mean associated with its source) and moving, according to its internal laws, with its speed (i.e. with speed of light). The beginning of movement of light, stream of photons and its penetration into the emptiness, where all the material being appeared, was must to become the reason of occurrence of time, as well as of space (or ether), which inevitably would be expanded together with the movement of light, stream of photons. The expanding light, stream of photons coming from the X-force, moving by its original speed in this space-time dimension, could become “transcendental”

(we mean not connected with its source, self-contained) with its source and changed. Light, stream of photons, after this could take the properties of matter, i.e., would move from the state of non-manual with negative dimension to the state of the physical with positive dimension. From this moment, from separation of light, stream of photons from its original path, it can be assumed that ends prephysical evolution of the Universe and begin the physical evolution of it. And at this stage of evolution light, photons beam under the influence of very high heat temperature, which he was endowed with, could be compressed to the limit and explode. A further condition of light, matter can be described in the main parts in accordance with the theory, generally accepted in modern science - the theory of «Big Bang».

In general, the above statements show the fact that, in answer to the question «Whence appeared light, photon or a stream of photons, what is its source?», we can only assume, that in the beginning existed prephysical power, and, since this source - X-force has not matter (in the modern meaning), that its essence is incomprehensible for physical science. Based on the laws of logic, at this stage of science's development, we can only assume that the X-force was a prephysical source of initial light, stream of photons, which was immanent with it. However, becoming transcendental with the X-force, the light, the flux of photons deprived us of the possibility to understand the essence of its first primary source. The source by itself could or can exist in our or in parallel world, in the «dark matter», in the anti-world or in other temporal-spatial dimension. Or in other words occurred hole teleportation of light from its source to our temporal-spatial dimension, i.e., there was a movement, where photons moved from one area to another, did not exist in the intermediate points between them.

The above-stated ideas about beginning of the movement of light, stream of photons, as well as about the impact of the light's movement for time and space, also give grounds to assert that the matter is initially inherent only by movement that is given to it by its first primary source, existing in the other temporal-spatial dimension, and the space and time of the material world are created by matter itself

due to its motion. Therefore, according to the photon theory of the origin of the Universe, the motion of matter is originally only, and not space and time, in which there are all of the material being: the beginning of the movement of light in the emptiness, in which formed all of the material world, is the beginning of space and time - how, where and to where moves the light, forms space, and when and how to move the light forms a time. In addition, endlessness of movement or the expansion of the light emphasizes the infinity of time and space. All this proves the validity to put forward the following postulate:

Postulate 4. «The movement is inherent in the light, stream of photons initially and it was given to it from its source, from another space-time dimension, therefore, the space (ether) and the time of material world are created by the light due to its movement.»

The above-stated ideas show that all forms of material existence have a common origin in the form of light, stream of photons. However, here may arise question about the beginning of «living substance»¹². In connection with this, analyzing and summarizing the known experimental data, which show that the source of dead and «living substance» is one, it is necessary to recognize, that the appearance of the material being at the same time is the beginning of the intangible, reasonable being also. Therefore, we would like to note that the opinion about problem of the origin of the Universe in general should be holistic and not divided to the questions of the origin of the cosmos and life (dead and living matter, tangible and intangible) in isolation, just as it is doing in modern science in general, and in cosmology, in particular. Modeling firstly the origin of the cosmos, the nonliving substance, and then the origin of living as a stage, following this process, we can assume one-sidedness from the point of view of logic, and, respectively, needlessly solve question of the relationship between nonliving and living, tangible and intangible, in favor for the first. Here can be correct a pantheistic approach, recognizing the unity of the two abovementioned origins. In such approach the origin of the Universe and life be merge, and thereby will be

¹² «Living substance» is the term of V.I. Vernadsky.

confirmed the words expressed by the scientists back in 1924. «... soon, soon, under the pressure of hard work and a strong scientific thought, collapse the last barriers that separated the living from the dead.¹³»

In accordance with the views of the living substance below extends another postulate:

Postulate 5. *«The light, or photons, originally contained in itself the possibility of appearance of all other elementary particles, therefore, it contained in itself also the possibility of appearance of living or reasonable being.»*

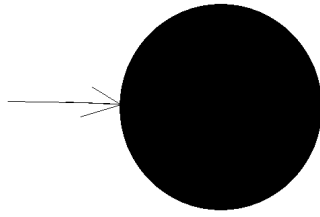
In general the above-stated ideas, including those, which were formulated by postulates, are speculative, logic substantiation of the photon theory of the origin of the Universe. For the proofs of these ideas by physical methods, from our point of view, the first thing must be conducted is the following experiment: first, we must cut a «piece», a beam of light and compress it to the limit with the purpose of finding out - what happens after the explosion of that substance; secondly, it is necessary to prove that the millimeter radio waves - cold photon gas (cosmic microwave background radiation or relict photons) actually emerged in the early stages of development of the Universe, when the substance was under enormous pressure and temperature, or it is still a continuation of the penetration of photon flux to our space-time dimension from unknown source.

In conclusion, we would like to note that the most important in the photon theory of the origin of the Universe, as well as in other theories on this issue, unfortunately, remains the difficulty of identifying the essence of the source of light, the root causes of materialization of all things - a hypothesis, explore or to prove which by physical methods today is impossible, as this go beyond the cognitive capabilities of mankind...

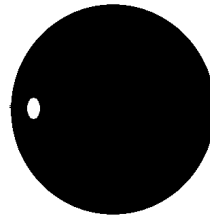
¹³ Oparin A.I. The origin of life. - Tbilisi, 1974.- P.47.

Appendix № 1.

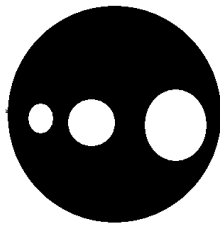
**Stages of the origin of the Universe
(according to the photon theory of the origin of the Universe)**



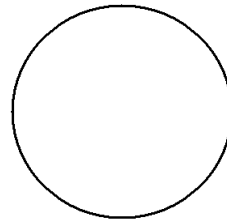
1. Emptiness (nothing)



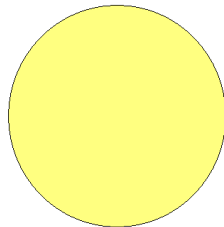
2. The penetration of a photon to the emptiness



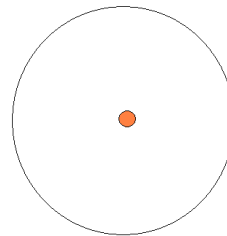
3. The penetration of the stream of photons to the emptiness



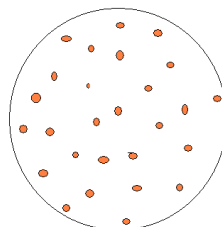
4. The emptiness is filled with photons



5. Photons are heated up to the limit



6. Photons are compressed to the limit



7. The «Big Bang»