# DYNAMICS OF MATERIAL OBJECTS (PARTICLES) ON SUB LIGHT AND HYPER LIGHT SPEEDS. TACHYON SPACE, ZONE OF UNCERTAINTY AND WHITE HOLES.

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*In this work the analysis of dependence of change of metric and time response characteristics of material objects (fundamental particles) on the speed of their movement in three-dimensional space on sub light speeds and in the four-dimension space on hyper light speeds is given. The equations for these characteristics are removed. The possibility of movement in space with the speeds exceeding light speed is theoretically proved and shown. The principle of transition of matter through the light (power) barrier is explained. Existence of the World environment is proved; calculation of sizes of energy barrier of the zone of the uncertainty arising upon transition through "the light barrier", the cosmological red shift, temperature of background radiation of the Universe is given. The hypothesis of existence of white holes, in space objects as power source, matter and magnetic field is offered. Parameters of white holes are calculated, the physical principles of their emergence and existence are offered. The new view on the structure and structure of the internal kernel of planets is offered. Calculation of change of key parameters of our planet during 280 million years within the concept of "the Growing Earth" is given. Radiant powers of white holes in other planets of Solar system are calculated. The attempt of the explanation of change of magnetic fields of planets of Solar system in time and drift of their poles is made. The hypothesis of existence of white holes, in internal kernels of stars and galaxies as the power source determining parameters of these objects is offered. Classification of different types of white holes depending on types of space objects in which they are is given. The table of temperature of the white holes which are in the center of the star depending on its class and temperature of the surface is provided. The explanation of structure and structure of internal kernels of quasars and galaxies, and also the mechanism of formation of jets is offered. The explanation of some astrophysical problems which explanation causes difficulty now is offered.*

**Keywords.** The World environment, the equations of the movement, the light barrier, the uncertainty zone, the hyperspace, the cell disequilibrium, the background radiation of the Universe, the power barrier of a zone of uncertainty, the cosmological red shift, the white hole, the growing Earth, the energy of an internal kernels of planets, stars, quasi star objects and galaxies, jet, the sub stars, the thermo – quark gluon plasma.

**Contents**

**Introduction. Problems of modern cosmology.**

The question of the universe structure in which we live interested mankind from time immemorial. This universe is designated by the word now – the Universe. In the Big encyclopedic dictionary the Universe is defined how "All existing material world, boundless in time and space, and infinitely various in the forms which matter takes in the course of the development. The Universe studied by astronomy - the part of the material world which is available to the research the astronomical means corresponding to the reached level of development of science (sometimes this part of the Universe is called the Meta galaxy)".

At the beginning of the 20th century took the dominating place thorium about emergence and evolution of our Universe as a result of "Big Bang". The cosmological model standard at the moment, is the model describing early development of the Universe namely — the beginning of expansion of the Universe before which the Universe was in the singular state [57].

The red shift found by the American astronomer Vesto Slayferin 1912 — 1914 for galaxies became proofs of "Big Bang". In1929 Edwin Hubble opened that red shift for far galaxies is more, than for relatives, and increases approximately in proportion to distance (the law of red shift, or Hubble's law) and explained it with the Doppler effect. However, in the effect it became clear that in observed red shift from galaxies makes the contribution as cosmological red shift because of expansion of space of the Universe, and red or violet shifts of the Doppler effect owing to own movement of galaxies. At the same time at long distances the contribution of cosmological red shift becomes prevailing [8]. Thus, actually, main contribution to red shift is made not by (with) the Doppler effect, and expansion of the space, and, this expansion goes with the increasing speed, depending on distance to the space object – the farther it is, with the greater speed it moves away from us. In the early seventies for Hubble's constant the value was accepted as $H = 53,5(км/с)/Мпк$. The most reliable assessment of the Hubble constant in 2013 was $H = 67,8 \pm 0,77(км/с)/Мпк$ [40]. In 2016 this assessment was specified to $H = 66,93 \pm 0,62(км/с)/Мпк$ [41]. It should be noted that measurements by different methods give a little differing values of the Hubble constant. The values stated above are received by means of measurement of parameters of relict radiation of space by the Planck's observatory. The measurements published in 2016 "local" (in limits to $z$<0,15) values of the Hubble constant by calculation of distances to galaxies on the Cepheid's luminosity which are observed in them on the space telescope Hubble give the assessment in 73,24 ± 1,74 (km/s) / Mpk, [55].

According to modern representations of flash super new serve one of reference points of distances to galaxies. Flashes super new the Ia type, last in our Galaxy about two weeks, and in farther galaxies are dragged out in time to the proportional red shift of these galaxies which is in

turn proportional to remoteness of these galaxies. The flash super new in the galaxy with red shift of 0,5 is observed three weeks, and in the galaxy with red shift of 1,0 one month lasts.

Aristarkh Apollonovich Belopolsky, found in *1887* asymmetry of the "Doppler" shifts of the brightest stars of our Galaxy ~ *5 km/s* in the direction the apex - the anti apex of the Sun and discrepancy between the "Doppler" and parallax speeds of the Sun of rather surrounding stars. The astrophysicist V. V. Campbell opened in *1911* K-effect - dependence of Red shifts on absolute lightning of stars of our Galaxy. The astrophysicist R. J. Trampler proved discrepancy of K-effect to the Doppler Effect and its difference from gravitational red shift. In *1929*, after discovery of the red shift of galaxies by Hubble, the astrophysicist Aristarkh Apollonovich Belopolsky declared that for creation of red shift the galaxy shall not be removed: change of the range of galaxies causes not the Doppler Effect, but some other physical phenomenon. The astrophysicist G. Arp opened the connected space objects having strongly differing red shifts.

By means of stars of reference points, repeatedly defined distance to the center of the Galaxy $R_0$. However there is no consensus in it. Estimates of $R_0$ are ranging from *6,5* on stars similar RR of Lira to the *10th kilo parsec* on Cepheid. For creation of the intergalactic scale chose Cepheid. This method determined distances to some spiral galaxies which are at distances near the *10th mega parsec* where the system "Red shift" is already noticeable and, Hubble (H) constant is calculated, - *50 km per second on the mega parsec*, according to it "are defined time of expansion of the Universe in *13,8 billion* years". Clarity in the question of by what stars to reference points of distance are determined more correctly, introduced the HIPPARCOS draft (High Precision Parallax Collecting Satellite) in which parallaxes *of 118 000* stars in the field of around Sun by radius approximately *the 500th parsec* were defined. In this sphere there were also Cepheid, and distances to control Cepheid were much smaller, sometimes not less than on the quarter smaller, than was considered before. That is distance to the center of our Galaxy no more *6th kilo parsec*. And distance to the next galaxies having the system "Red shift" explicit there are *40%* less then accepted.

That the sizes of our Galaxy is less than the sizes assumed earlier at *the 221st* meeting of the American astronomical community, Allis Deason, the astronomer of university of California to Santa Cruz declared. Allis Deason and her colleagues were guided by the farthest stars in the halo of the Milky Way. The dispersion of speeds at these stars also allowed calculating the mass of the Milky Way in *500-1000 billion* solar that it is twice less accepted now.

What else problems face us if we try to explain the phenomena observed in space from the point of view of the explanation of red shift with the Doppler Effect and expansion of space?

If we accept that the Universe extends with acceleration $a \approx 73{,}8$ *the km/s* on each *3, 26 million light years*, and now age of the Universe makes *16, 8 billion years*, it is easy to count:

$16,8 \cdot 10^9 \div 3,26 \cdot 10^6 = 5153,4\, {year}/{Mpk}$ $or 73,8 \cdot 5153,4 = 380319\, {km}/{s}$. It turns out that with the light speed in vacuum ≈ *300 000 km/s*, the most distant space objects move away from us with speeds much exceeding light speed.

In the spectral lines radiated by astronomical objects – quasars, observed the red shift answering to triple reduction of frequency. With what speed at the same time the quasar would have to be removed? (Fig.1).

*Fig.1. The quasar emitting the jet from the active center.*

It is easy to count: $f(A) = f(B)/3$, or $\sqrt{\frac{1-v/c}{1+v/c}} = \frac{1}{3}$, from where $1+v/c = 9(1-v/c)$, or $10v/c = 8$.

It turns out that $v = 0,8c$. (here $In = v/c$, where $c$ – light speed in vacuum, $v$ – the speed of removal of the object).

Apparently, far galaxies and quasars run away from our Galaxy with the speeds proportional to distance to these objects. If this linear communication between the speed and distance is fair for quasars in this example, then the distance to them has to be about $12 \times 10^9$ years, i.e. are three orders more than the estimated radius of the Universe [27]. There are also other data of observations contradicting the statement that on cosmological red shift it is possible to judge distance to space objects. Helton ARP (Halton C. Arp) — the professional astronomer who earlier in the career was Edwin Hubble's assistant. He was awarded by the prize Elaine B. Warner, Cleveland Nukomb Premium, Alexander von Humboldt's Award for high scientific achievements (Fig.2).

*Fig.2. Helton ARP.*

For many years he works in observatories Mount-Wilson and Palomar. During this time he created the known catalog "Specific (Peculiar) Galaxies" in which the deformed or "wrong" galaxies are collected. Arp found, taking photos from big telescopes that many quasars having extremely high red shift *z* (and as think, move away from us very quickly, and thus have to be located from us at a great distance) are physically connected with galaxies which have low red shift and, as we know, are located relatively near us. Arp provided photos of many couples of quasars with the high red shift which are symmetries on both sides of the galaxy with the low red shift which is supposed their parent. These connections happen much more often, than probability of accidental coincidence. The overwhelming majority of astrophysicists try to find the justification of observations by Arp of the connected galaxies and quasars "illusions" or "angular visual coincidence". But, the large number of physically connected quasars and galaxies with the low red shift which he photographed and catalogued does such coincidence improbable. It simply happens too often.

Because the Arp's photos make assumption that objects with high red shift have to be very far what the theory of "Big Bang" and all "standard cosmology" is based on, it lose meaning!

One more very demonstrative and important example in the thesis denial "red shift is equal to distance" gives the following image of the galaxy *of NGC 7319* (shift = *0.0225*). The small object in the photo designated by the arrow is the quasar (*z* shift = *2.11*) (Fig. 3). Such observation of the quasar with such big red shift between the galaxy and Earth is possible only if the quasar in more than ninety times is farther than the galaxy.

Actually, as the following photo (Fig. 4) in which it is possible to observe the same quasar in an enlarged view shows, it cannot just be. In the photo it is well visible how the jet which is thrown out from the center of the galaxy *of NGC 7319* reaches directly for the quasar. It proves that both objects are located the row, and cannot be remote on huge distance from each other, especially by *90 times* in any way. Arp gives such large number of similar pictures that from them just like that it is impossible to wave away. All this demands the explanation.

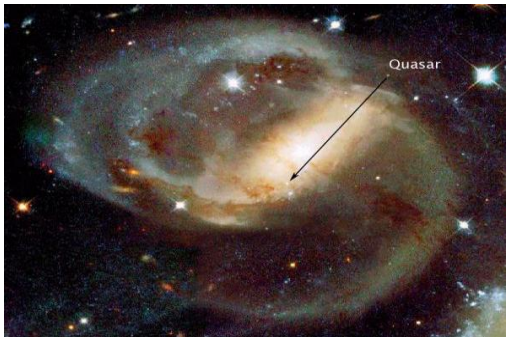



*Fig 3. The quasar located near NGC 7319 galaxy.*

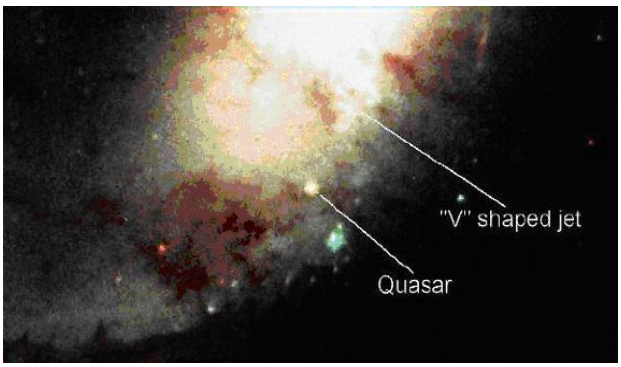



*Fig.4. Higher resolution of the Quasar shows "jet" of the substance stretching from the NGC 7319 center to it (below).*

In the Arp's opinion, red shift it is caused mainly by the effect, to the being young, and it is only minor because of its speed. Therefore as Arp considers, quasars not the brightest, the most remote and quickly moving objects in foreseeable Space, they are the youngest objects.

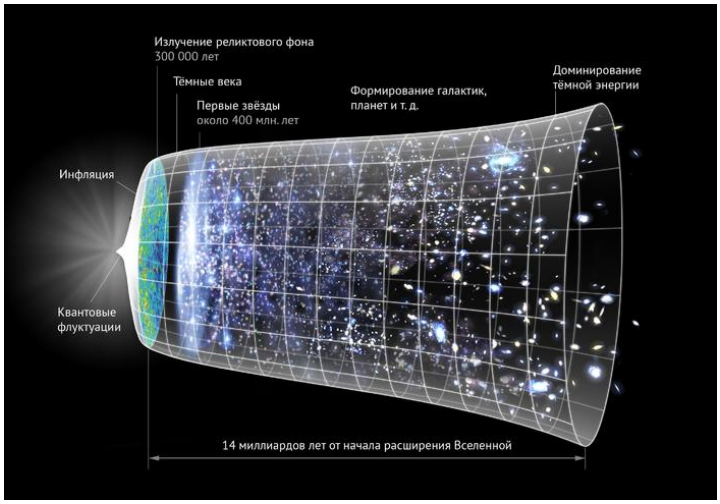



*Fig.5. Evolutionary model of the Universe as a result of "Big Bang".*

Along with cosmological red shift, the relict or background radiation of the Universe predicted in1948 by Georgy Gamov, Ralf Alfer and Robert Hermann, is considered as one of the main confirmations of the theory of the Big Bang.

In fig.5 the standard cosmological model (hot expansion of the Universe) describing early development of the Universe namely — the beginning of expansion of the Universe before which the Universe was in the singular state is shown. Extrapolation of observed expansion of the Universe time leads, when using the general theory of relativity and some other alternative theories of gravitation, to *the infinite* density and temperature in *the final* instant in the past. The Universe sizes then equaled to zero — it was compressed in the point. This state is called cosmological singularity (often cosmological singularity figuratively calls Universe "birth"). The impossibility to

avoid singularity in cosmological models of the general theory of relativity was proved, among others theorems of singularities, by R. Penrose and S. Hawking in the late sixties.

The theory of the Big Bang does not give any chance to speak about something that proceeded this moment because our mathematical model of space-time at the time of the Big Bang loses applicability. Somehow to explain this paradox, some scientists (in particular, Stephen Hawking) for the solution of this problem the idea of complex coordinates of space-time where to time measured by us there would correspond imaginary coordinate was offered.

But, despite considerable progress, the theory of the hot Universe faces the number of difficulties. If the Big Bang caused expansion of the Universe, then generally there could be the strong heterogeneous distribution of substance that is not observed. The theory of the Big Bang also does not explain expansion of the Universe; it accepts it as the fact [22]. There is also some number of the observation facts badly consistent with isotropy and uniformity of the observed Universe: existence of preferred direction of rotation of galaxies [63], heterogeneity in distribution of galaxies at the largest available scales, the axis is evil.

With development of the observation astronomy, emergence of more and more powerful telescopes allowing glancing deep into the Universe there are more and more questions to the standard cosmological model and to the physical principles on which it is based. In this regard there was the number of theories which try to explain the structure and development of the Universe from other points of view.

One of the known and serious theories is the theory which is not denying expansion of the Universe - the theory of the stationary Universe developed in 1948 by F. Hoyle, Thomas Goldie and Germann Bondi. The essence of the theory is that between the scattering galaxies new matter constantly is created and thus the cosmological principle is observed not only in space, but also in time. But Hoyle has no distinct explanation: from where this matter undertakes? There are no physical principles of its emergence also. To be fair, it is necessary to tell that it will not really well be coordinated also with astronomical observations [54].

There is also the theory of the A. Lind that the Universe is infinite and filled with very dense energy, and our visible part arose expansion (inflation) of the small part in "bubble" (as there are bubbles in dense cheese) [15].

Li Smolin's theory that the Universes arise from explosion of "singularity" in black holes [24].

Neill Turok's theory about the birth of the Universes as a result of collision "bran" (multidimensional membranes in the theory of strings) [49].

Paul Steinhardt, one of the physicists who laid the foundation of inflationary cosmology made the attempt to develop the theory of "Big Bang" further. The scientist who heads the Center of theoretical physics in Princeton together with Neil Turok from Institute of theoretical physics

"Perimeter" stated the alternative theory in the book " Endless Universe: Beyond the Big Bang". Steinhardt and Turok's model claims that the Big Bang resulted from collision of our bran with other abusive — the Universe unknown to us. According to this scenario of collision occur infinitely. According to Steinhardt and Turok's hypothesis, near our abusive one more three-dimensional bran separated by tiny distance "floats". It also extends, flattened and becomes empty, but through one trillion years of the bran will begin to approach and eventually will face. At the same time the huge number of energy, particles and radiation will be allocated. This cataclysm will start the next cycle of expansion and cooling of the Universe. It follows from Steinhardt and Turok's model that these cycles were also in the past and will surely repeat in the future. What these cycles began with, the theory holds back.

The existing inflationary theory was offered in 1981 by Alan Gut. However the key contribution to its creation was made by the Soviet and ex-Soviet astrophysicists Alexei Starobinsky, Andrei Linda, Vyacheslav Mukhanov and some other. This theory assumes the birth of the set of the Universes owing to certain inflationary processes, however, as well as the theory of the Big Bang, just postulates this fact, but cannot explain to the physicist of these processes [18].

Big freezing can be the alternative to the Big Bang. The team of physicists from the Melbourne University led by James Kvatch represented model of the birth of the Universe which reminds gradual process of freezing of amorphous energy more, than its splash and expansion in three directions of space. The theory of Big freezing calls into question Albert Einstein's statement accepted now about the continuity and smoothness of space and time. It is not excluded that the space has constituents — indivisible standard blocks like tiny atoms or pixels in computer graphics. These blocks are so small that they cannot be observed; however, following the new theory, it is possible to find defects which have to refract flows of other particles.

Scientists from Institute of theoretical physics "Perimeter" consider that our Universe arose thanks to the star collapse in the certain four-dimensional Universe. Results of their research were published by the Scientific American magazine. Niayesh Afshordi, Robert Mann also Strike Purkhasan say that our three-dimensional Universe became similarity of "the holographic mirage" at the collapse of the four-dimensional star. Unlike the theory of the Big Bang according to which the Universe arose from extremely hot and dense space-time where standard laws of physics are not applied the new hypothesis of the four-dimensional Universe explains both the origin reason, and its rapid expansion.

Such large number of different theories shows that, at the moment, there is no harmonious theory which is well explaining astronomical observations and cosmological measurements in observed space. On the contrary, there are all new paradoxes which difficult give in to the explanation. For example, the paradox caused by the fact that in the course of observations of *the*

*"running-up"* galaxies *fading* (quick and instant) galaxies was never recorded during observations of these galaxies. It would have to happen at least to some of these galaxies because *the "running-away"* galaxies would have to *"leave"* for light *"horizon"*. It corresponds to the condition when light does not reach us, observers any more, owing to existence of some threshold of possible observation behind which the speed of running away of galaxies is already more (or, at least, it is equal) than light speed. Nothing similar was ever observed and it could not be recorded because of lack of the fact "running away" of galaxies. Red shift has to be explained with operation of other mechanism.

One more reason forcing us more attentive to look narrowly at model of the Big Bang is connected with violation of the cosmological principle. This violation was inevitably shown would like in regional regions of the extending Universe as these areas extend not only with much bigger speeds, than in what there is our Galaxy, but also extend with the accruing acceleration. It means that the movement of galaxies in this case is absolutely heterogeneous, depends on the place of observation. Therefore, the cosmological principle cannot remain in such conditions. But we have no bases, to call into question the cosmological principle. Thus, and from this point of view the model of the Big Bang does not answer conditions of the correctness of scientific model.

The theory also assumes that the ratio of number of particles and antiparticles at the initial stage was such that gave as a result modern dominance of matter over anti-matter. It is possible to assume that in the beginning the Universe was symmetric – matters and anti-matters there was the identical quantity, but then to explain baryon asymmetry some mechanism of the bariogenez which has to lead to the possibility of disintegration of the proton that is also not observed [22] is necessary.

In the modern standard model of expansion the cosmological constant is positive and is significantly other than zero that is at big scales there are anti-gravitation forces. The nature of such forces is unknown, theoretically similar effect could be explained with action of the perfect vacuum, however the expected density of energy is many times more, than the energy corresponding to observed value of the cosmological constant [22].

Introduction of the hypothesis of the Big Bang means, in fact, refusal of the law of Cause and effect that causes rejection in many scientists. Here symptoms of it.

On May 22, 2004 on the Internet and the New Scientist magazine "The open letter to scientific community" behind signatures of thirty three world renowned scientists was published. In the letter it is told about fundamental problems of the theory of the Big Bang and about unjustified restriction of cosmological researches only by the framework of the theory of the Big Bang.

On March 15, 2014 in Australia there was the documentary "What Was to the Big Bang" in which five famous cosmologists tried to plan the exit from the deadlock scientific situation caused by the theory of the Big Bang. There are also other examples.

The number of modern scientists as in Russia, and in the West considers that the hypothesis of the Big Bang, really, raises many not solvable questions and leads to the impasse. Following concepts: the standard model, inflation, dark matter, dark energy, theories of age of stars, galaxies and the Universe, not consistent with results of astronomical observations and some other were born by force, for justification of consistency of the theory of the Big Bang.

Recently opened R136a1 object — the star can serve one of such examples, the theory contradiction of the latest data of the observation astronomy in the compact star cluster of R136 in the emission fog NGC 2070 (ESO 57-EN6) ("Tarantula nebula") located in the Big Magellan Cloud (Fig. 6).

*Fig. 6. R136a1 star.*

This star by 256 times massive our Sun also shines 7,4 million times brighter. In other words, it is just the giant. Scientists consider that the object of R136a1 is created from several other stars, but cannot still understand why it exists so long [43].

For a long time unshakable representation dominated that galaxies and stars occurred and come from gas-and-dust matter in the course of its condensation. Reasoning was simple: there are no other reasons, except the universal gravitation law, in the Universe, and everything that we observe - it is, finally, result of operation of this law. Almost all astronomers of the world it is firm hundreds of years adhered to this theory, expanding and improving it. However in the fifties last century the president of the International astronomical union, the numerous winner of the state awards, the full member of 17 national academies of the foreign states, one of founders of theoretical astrophysics who is marked out by the number of the highest state awards the academician of Academy of Sciences of the USSR V. A. Ambartsumyan (Fig. 7) established and incontestably proved existence of absolutely opposite process in the Universe — universal formation of stars and galaxies from super dense matter which catastrophically blows up and breaks up. At the same time substance passes from the super dense state into less dense. He managed to draw such conclusion thanks to thorough studying of non-stationary processes in the Universe. However this concept the long time persistently was not accepted by many astronomers, so far uncountable observation data including own observations, did not convince them of it [21].

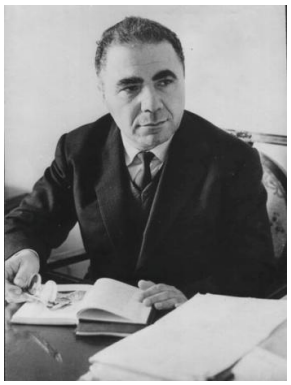


*Fig. 7. Academician Victor Amazaspovich Ambartsumyan*

Still some supporters of the first, so-called classical direction, still persistently try to find in the Universe process of condensation, the condensation and by that to disprove Ambartsumyan's concept. So far they do not manage it.

Drama fight of the ideas continues and today. However, by Kant definition, Ambartsumyan's concept already passed through times "not notes" and denials and now entered the period of improvement and adaptation to theories of black holes and accretion of substance: with amazing unscrupulousness all most powerful active kernels of galaxies of Ambartsumyan (for example, M87, etc.) are renamed into black holes.

Clear, huge emission from the kernel of the huge galaxy (*NGC 4486*, the Virgo A) made on Ambartsumyan the indelible impression scale of process in due time. This giant radio galaxy has feature which distinguishes it from other elliptic galaxies in optical beams: the blue stream with condensations which emit the polarized radiation proceeds from it. The fact that the stream comes from the center does not leave doubt that there is the emission from the kernel of the galaxy (Fig. 8).

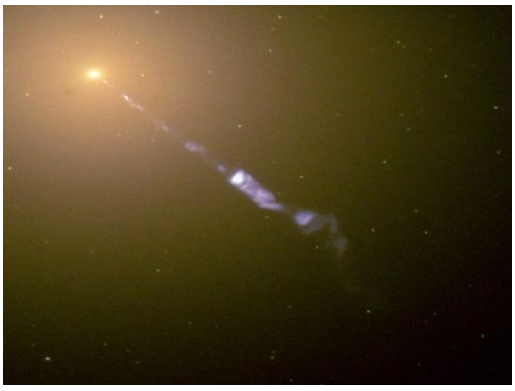


*Fig. 8. The powerful jet proceeding from M87 galaxy kernel.*

On the other hand, existence of the polarization of radiation of condensations measured by Baade indicates that the luminescence mechanism if not completely, then it is partially similar to the mechanism of the luminescence of the Crab Nebula. It means that the radiation of emission has the

non-thermal origin, and the range of condensations is continuous. From this it follows that in stream condensations the radiation source are not only stars, but also the diffusion substance which is in the same state as substance of the Crab Nebula. In other words, in these condensations it is possible to assume the significant amount of electrons of high energy. It became soon clear that sources of the radio emission are located on all volume of the galaxy. Two assumptions are possible:

1. Relativistic electrons were thrown directly out from the galaxy kernel.

2. From the kernel objects which are sources of relativistic electrons of so high energy that their synchrotron radiation is concentrated in optical area are thrown out.

It is impossible to be limited to the first hypothesis as in this case it will be impossible to understand concentration of optical radiation in the small volume of condensations. Therefore it is necessary to think that the sources emitting electrons of high energy are concentrated in these condensations. Thus, Ambartsumyan in the 1950th years comes to understanding of the nature of the considered condensations on the jet. They are conglomerates of clouds of relativistic electrons of gas clouds and non-stationary stars. And it is necessary to notice that matter which is thrown out from the kernel in a short space of time turned into similar conglomerates. The emission line observed in the field of M87 kernel gives, apparently, the idea of the speed of emissions from the kernel. Ambartsumyan evaluates the order of terms during which there can be similar transformations. They appear to be about $3 \cdot 10^6$ years. From here Ambartsumyan draws the important conclusion: along with division of kernels of galaxies in the nature there can be processes of emissions of kernels of galaxies of rather small masses. These thrown-out masses can turn into short terms in the conglomerates consisting of young non-stationary stars, interstellar gas and clouds of particles of high energy.

M87 galaxy with clear emission from the kernel and, especially with condensations on the jet, represented brilliant demonstration of instability and activity of its kernel. The possibility of emission of masses from kernels predicted by Ambartsumyan wonderfully was confirmed 50 years later: on the Hubble Space Telescope in 2002-2006 enormous explosion of the condensation, the next to M87 galaxy kernel was registered. In six years luminosity on this condensation increased by 90 times! Unfortunately, Ambartsumyan was not alive any more, and he could not be delighted to the embodiment of the anticipation … [33].

The given observation facts (Arp, Ambartsumyan) confirm: from kernels (centers) of galaxies and actually quasars there is the emission of the powerful, collimated jets: for example, rice. "Explosion on M87 galaxy jet". Here it is possible to see rather "motionless" condensation which increased in the size and luminosity **by 90 times in 6 years!** And connection of dynamic development of the condensation with distribution of strictly collimated jet is obvious. The pulse, discontinuous nature of emissions – jets is seen also (on M87 photo).

Extent of the visible trace of the jet of M87 is evaluated approximately in *5000* light years. It is clear, that condensations – explosions on the jet are obliged by the origin to properties of the jet. It is impossible to present strictly collimated (not blurring) jet consisting of compressed substance in any form: dust, gas, plasma.

The mentioned properties, including formation of condensations – "conglomerates of clouds of relativistic electrons, gas clouds and non-stationary stars" only the jet in the field form can possess. The gamma jet consisting of the collimated, coherent gamma-rays can apply for this role. The cylindrical surface of the gamma jet having extreme electric field intensity creates on border with the perfect vacuum substance, since neutrons which break up (in *15* minutes) to the proton, the electron and the antineutrino. Birth of the fundamental particles is accompanied by formation of the continuous range of EM of radiation of broad range, including optical (something similar to the continuous range of "braking radiation"). The zone of the continuous range moves with the jet with light speed. Clouds of relativistic electrons "give" synchrotron radiation at the curvilinear movement around "power lines" of magnetic field as in the direction of (jet), back and in other directions (almost like poloidal rotation around the vortex ring) (Fig. 9).

*Fig. 9. Powerful emissions from the radio galaxy kernel in Lebed A.*

All these facts call into question that responsible for these processes are the black holes which are in kernels of these space objects. Proceeding from the modern theory of education and development of black holes, they are not capable of it. It is necessary to look for other explanation for these phenomena, other sources of emergence of jets.

To understand the paradoxes and discrepancies described above in the theory of the main cosmological model of the Universe, it would be quite good to try to offer to explain other physical principles of existence of red shift which are not connected with the running away of galaxies and the Doppler effect on other the mechanism of background radiation of the Universe and to resolve some more issues, for example such as existence of the power source which has to be spent for maintenance of evolutionary processes in the Universe, contrary to the Second beginning of thermodynamics and explain: why this law does not work in Universe scales?

Since the time of M. V. Lomonosov it is known that energy, as well as matter cannot arise from anywhere and disappear in anywhere. This principle most is clearly stated at the Second beginning of thermodynamics. The name "Second Beginning of Thermodynamics" and historically its first formulation belong to Rudolf Klauzius who formulated him in 1850: "Process which only result is receiving by system of warmth from one body and transfer to her other body having more high temperature, than the first" ("Warmth cannot pass by itself from colder body to warmer") is impossible [37]. In the modern formulation according to the Second beginning of thermodynamics, any physical system which is not exchanging energy with other systems aims at the most probable equilibrium state — to the so-called state with the minimum of free energy, or the entropy maximum. It can be expressed the formula showing that for any isolated system, and we consider that our Universe is closed, entropy always only increases:

$$dS = \frac{dQ}{T^0} \geq 0,$$

here $dS$ – entropy of the closed system, $dQ$ – the elementary quantity of heat, $T^0$ – temperature.

On the basis of it in 1865 Klauzius formulated the conclusion about thermal death of the Universe [39] (Fig. 10). Klauzius formulated the idea about "Thermal death of the Universe" as follows. In space there are hot stars and cold surrounding space, over time stars have to cool down, and the surrounding space to heat up a little, levels of energy will be leveled, there will be no opportunity to make work and there will come "Thermal death of the Universe".

*Fig. 10. Thermal death of the Universe.*

On the basis of the Second beginning of thermodynamics the impossibility of creation of the perpetual mobile of the second sort is proved. That is, the energy supply from the outside is necessary for maintenance of course or development of any physical process, otherwise, only gradually calming down process with dissipation of energy in space is possible. In other words, in the closed system (which as it is considered, our Universe is) without receipt of energy local evolutionary processes at the level of fluctuations are possible, in such system in general only degradation processes can proceed. Owing to what as Klauzius wrote, all this has to lead to attenuation of all physical processes.

But, in reality, we observe the active evolutionary processes happening in the Universe, formation of new galaxies and star systems, development of the number of space objects. From here the conclusion about not isolation of the Universe and about power sources which provide the possibility of course of evolutionary processes follows. The attempt to solve this problem at the level of mysterious "Dark energy", actually explains nothing.

**1. The analysis of the movement of material objects in three-dimensional space on sub light speeds.**

Let's try to understand these problems, having looked at the processes happening in the Universe from a bit different point of view.

At the beginning of the 20th century the triumphal procession of physics of Newton was broken by emergence of Maxwell equations which changed the look upon transition from one inertial coordinate system to another if rules of this transition to set classical transformations of Galilee.

Then the well-known Michelson – Morley experiment on detection of ether wind in which they don't find the interference where it had to be. These two events were the push to emergence of Lorentz – Einstein equations and to creation of the Special Theory of Relativity (STR) which, undoubtedly, was revolutionary and made the invaluable contribution to further development of world science. These equations look as follows:

$$L' = L\sqrt{1-v^2/c^2} \quad \text{и} \quad t' = t\sqrt{1-v^2/c^2}\ .$$

For the conclusion of these formulas it was necessary to enter the fourth coordinate – time, having created six planes, but the solution of these equations was kept only in the xt [14] plane. Let's try to understand Lorentz's – Einstein equations for STR, proceeding from Newton's physics and Galilee's transformations, but taking into account the extremity of transfer speed of influences (Fig. 11).

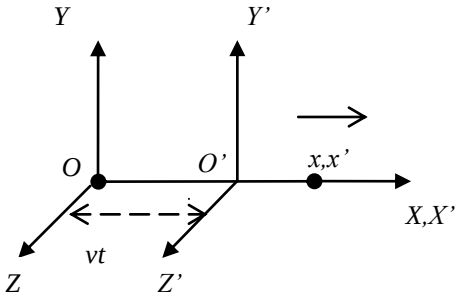



*Fig.11. Inertial movement of one coordinate system is relative another.*

Let's notice that in Lorentz transformation laws numerator on *x* there is the formula of Galilee transformations $x' = x - vt$, and in the denominator appears $\sqrt{1-v^2/c^2}$. Directly these Lorentz's

transformations are not brought out of the scheme of the research of Lienard - Wiechert equation. As R. Feynman wrote in the course of lectures on physics: "We watch at it (charge) from the moving coordinate system, and **it seems** to us that coordinates should be transformed by means of these formulas" [30].

Now we will try to understand: from where in Lorentz's – Einstein equations the denominator undertakes $\sqrt{1-v^2/c^2}$ ?

At the moment it is known that Earth moves in space, making revolutions around the figure axis, with average speed – *0,46 km/s*, moves on the elliptic orbit around the Sun with average speed – *30 km/s*, flies in space together with Solar system around the center of mass of the Galaxy with average speed – *220 km/s*, is displaced together with group of the connected galaxies with average speed in the direction of the Cluster Norma or the Great Attractor $627 \pm 22$ *km/s [7]* (Fig. 12).

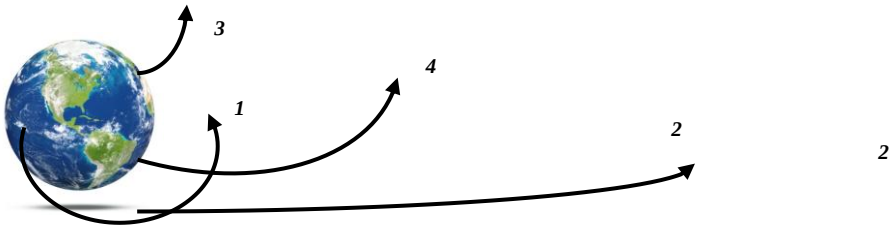



*Fig.12. The trajectories of Earth movement.*

1 – Rotation of Earth around the figure axis.

2 – Movement of Earth in space around the Sun.

3 – Movement of Earth in space together with the Sun around the Galaxy.

4 – Movement of Earth in space in the direction of the Great Attractor.

The Earth is moving on the difficult curve with the huge speed, with the fixed bias of rather rectilinear trajectory on which the light beam (the point on the sphere of distribution of the light beam which is radially moving away from the center) extends in vacuum moves. Therefore, it does not make sense to direct one shoulder of the interferometer along Earth orbit as it is unknown how the interferometer of rather light beam will move, independently and rectilinearly extending in space.

And, if to accept that the World environment – the field filling space (vacuum) in which, the electromagnetic waves excited by the material source, extend with the light speed (speed of distribution of the front of the electromagnetic wave) which is greatest possible for this environment. That all types of influences and interactions concerning this environment between material particles in space happen to light speed.

It is worth making a reservation at once that it does not cancel the fact that for the observer who is on the environment moving relatively to system, light speed will not be the constant as for him at the same time and in proportion change the way which passes the front of the electromagnetic wave, and time of course of physical processes. But neither the environment, nor the front of such wave extending in this environment depends on speed and the trajectory of the movement of the source which caused perturbation in this environment [60].

For a start we will address experience with the Michelson – Morley interferometer with which all both began, and we will consider it in detail (Fig. 13). As physics of the end of the 19th, the beginnings of the 20th century was keen on non inertial systems, and Michelson with Morley tried to lead experimental conditions to rectilinear, uniform motion. They directed one shoulder of the interferometer along Earth orbit, and the second is perpendicular to it, believing that because of the big difference of speeds of light and the movement of Earth on the orbit, the ratio of length of the shoulder of the interferometer and orbital radius of Earth, it is possible to neglect path curvature of the orbit.

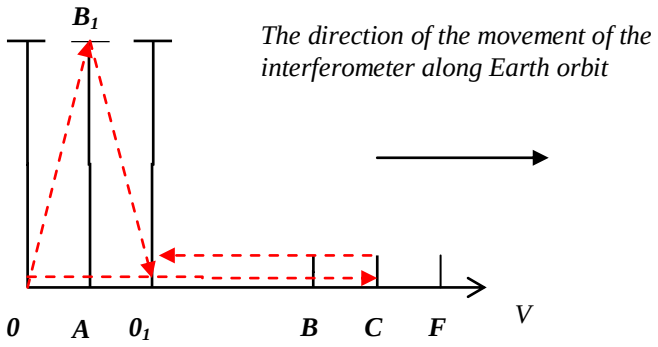



*Fig.13. The estimated course of beams in the Michelson – Morley interferometer.*

It is supposed that the shoulder *0B* is directed along the movement of Earth on the orbit around the Sun. Then the ways light passed by $OB_1O_1$ and $OCO_1$ not are equal, therefore, because of the difference of the course of beams there has to be the interference which in experience is not observed [31]. Actually, because of the curvilinear movement of Earth, the mirror on the end of the interferometer will be displaced on some any trajectory in the point *D*, and the ray of light which left *O* point will catch up with the mirror displaced in the point *D*, having passed the way *ct* (Fig. 14).

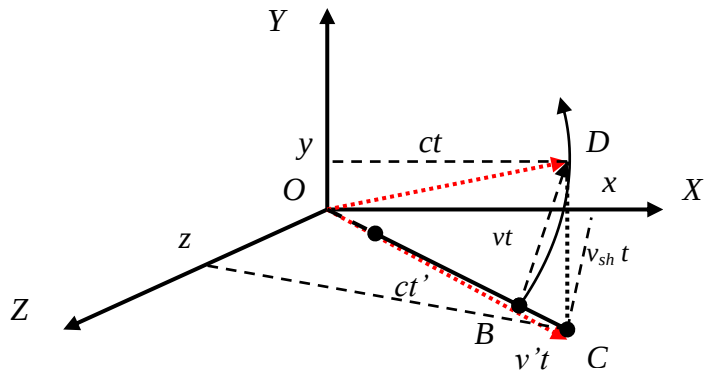



*Fig.14. Interferometer mirror shift on some trajectory in space.*

As, actually, we consider the task in three points of O, C and D in space, we can carry out the plane through these three points and consider this task in the Y, XZ plane (Fig. 15). Then it is possible to write down: $c\vec{t} = \vec{r}_x + \vec{r}_y + \vec{r}_z$, $c\vec{t}' = \vec{r}'_x + \vec{r}'_y + \vec{r}'_z$, or $c^2t^2 = x^2 + y^2 + z^2$, $c^2t'^2 = x'^2 + y'^2 + z'^2$.

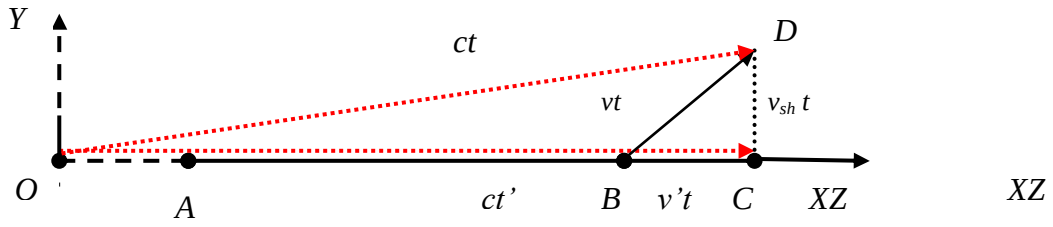



*Fig.15. Reduction of length of the way passed by light in the system connected with Earth, rather World environment owing to interferometer shoulder shift on some trajectory.*

If we accept $ct' = x'$, and $ct = x$, then in the vector form this equation will look as $\vec{x}' = \vec{x} - \vec{v}_{sh}t$. And in the scalar form, in that specific case, at which infinitesimal shift $dS = vtdt$, occurs linearly under some corner to axis X, it is possible to write down $dS' = v'dt$, $dS_{sh} = v_{sh}dt$. Coordinates of the point *of D* are defined as $r^2 = r_x^2 + r_y^2$, or $c^2t^2 = c^2t'^2 + v_{sh}^2t^2$, from where $ct' = \sqrt{c^2t^2 - v_{sh}^2t^2}$, or $ct' = t\sqrt{c^2 - v_{sh}^2} = ct\sqrt{1 - v_{sh}^2/c^2}$, or $S' = S\sqrt{1 - v_{sh}^2/c^2}$. *(1)*

The same can be written down for time:

$$ct' = \sqrt{c^2t^2 - v_{sh}^2t^2} = ct\sqrt{c^2 - v_{sh}^2} = ct\sqrt{1 - v_{sh}^2/c^2},$$

or $t' = t\sqrt{1 - v_{sh}^2/c^2}$. *(2)*

Thus, proceeding from linear shift, neglecting curvilinearity of the trajectory as it was made by Michelson and Morley, we easily receive formulas STR. And, if we consider that the mirror had to pass along axis X, the way

$S = vt$, but not $S' = v't$, we will have, as if, the imaginary reduction of length of the shoulder of the interferometer, and actually – imaginary reduction of length of the way passed by light.

In this case, ***S* is the way** which there passes the electromagnetic wave, or any other influence extending with light speed in any frame of reference moving on the curvilinear trajectory, rather World environment in which this influence extends (is transferred) with light speed, taking place the way $S \geq S'$. And ***t* is the interval of time** on which physical processes in this system, owing to delay of transfer of influence because of the movement of this system with some speed concerning the front of distribution of the electromagnetic wave (influence) in the World environment in time are slowed down $t \geq t'$. In this case, we receive increase in the time interval, or delay of time concerning time passing in the motionless coordinate system (The world environment). We then can define the world environment how absolute frame of reference in which influence irrespective of other systems extends, and concerning which all other frames of reference move. Therefore we can apply the same reasons to any material object moving in space, for example, to the charge or the fundamental particle. If we consider time as speed of change of processes physical, chemical, information, etc. i.e. as influence transfer speed depending on object traverse speed in three-dimensional space, then it is possible to present influence transfer as it is shown in fig.16:

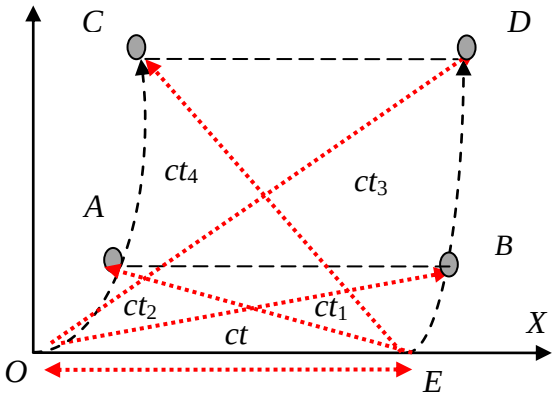



*Fig.16. Transfer of influence between particles (atoms) depending on body traverse speed.*

Let's choose, in the body moving with the certain speed on the curvilinear trajectory, two, particles (atoms) nearby with each other connected by forces of interatomic communications. Each particle, (atom) influences the neighbor with some force *F*, providing durability of interatomic communications. This influence is transferred in the World environment with light speed. Let's say initially particles (atoms), are in some points *O and E* in the body. If the body was not movably concerning vacuum, then the influence extending with light speed would need *t* time to pass distance *OE or EO*. But, if, the body moves on the curvilinear trajectory of rather World environment with rather small speed, then to influence, sometime $t_1$ and $t_2$ is required to catch up with particles (atoms) in points *A and B.* At the same time, maybe so that $t_1 > t$, and $t_2$ will be, even, it is less *than t*. But, in process of increase in traverse speed of the object when during *t* of the particle (atoms) appear in points *C and D*, it is obvious that influence already needs $t_3$ time$> t_1$, and

$t_4 > t_2$ to pass distances *OD and EC*. In process of increase in traverse speed, it will be necessary to spend more and more time to transfer influence from one point to another. Thus, all processes physical, chemical, etc. in the body which, naturally, depend on influence transfer speed (energy, force of internal communications, etc.) will be slowed down. The traverse speed of the body of rather World environment in which this influence is carried out will be higher, the time of course of these processes in the body will be slowed down more.

And now we will consider the question: whether the particle with the speed over the light speed can move, It appears – can. From discussion is higher (fig. 16) we saw that influence extends with light speed rectilinearly, and as, the particle moves on the curvilinear trajectory, its physical properties will not reach critical values at the speed of in number equal light speed. Then, at $v_p \geq c$ i.e. when the particle moves with the speed of distribution of the light wave, we receive the case when the body (particle) moves **with the speed not in reality but in number bigger, than the light speed** (Fig.17).

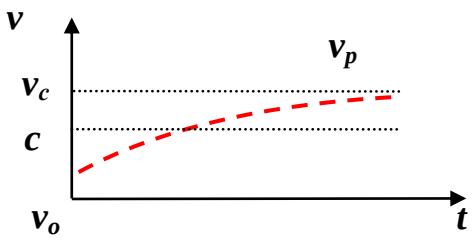



*Fig.17. Schedule of excess by the particle of speed, in number equal light speed.*

where $v_p$ – particle speed near light speed;

$v_c$ – the particle speed which is in number exceeding light speed;

$c$ – light speed in vacuum (The world environment);

$v_0$ – initial speed of the particle.

In this case the speed of influence will be equal to particle traverse speed in vacuum (The world environment), and impact on the particle will stop, matter at the same time has to break up to elementary components. Why it will not occur, we will see further.

Let's consider Dependence of force of impact on the particle on the speed of its movement now. Before dealing with whether the mass of the material body (particle) with increase in speed of its movement in the World environment increases, we will consider in more detail this dependence. Let's note the fact that at registration of any event which is taking place in some point of space the observer, obtaining information on this event, interprets it depending on that physical analog which he uses, and depending on his understanding of the physical processes happening in space (Fig.18).

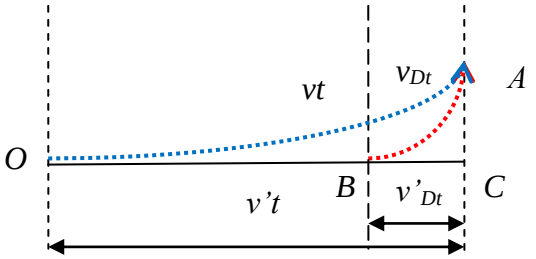



*Fig. 18. Real movement of the particle and detector.*

Let's say the particle which took off from the source which is in *O* point with *v* speed has to get to the detector located in *B* point, measuring energy of this particle. The observer, knowing that the particle moves irrespective of the source, but considering that the particle and the detector move rectilinearly, assumes that both of them will appear in the point *C*. Actually both the particle and the detector, owing to shift, will meet in *A* point.

Let's designate

$OA = vt$ – the real way of flight of the particle;

$OC = v't$ – the estimated way of flight of the particle;

$BA = v_D t$ – actual shift of the detector, owing to the movement concerning vacuum;

$BC = v'_D t$ - estimated shift of the detector, owing to the movement concerning vacuum;

Knowing the mass of the particle, distance which, in his opinion, the particle has to fly, and time for which the particle will reach the detector, the observer can calculate the expected force which needs to be put to the particle in the field of the detector to slow down it to the full stop. But in reality, during this time, the particle will fly bigger distance, and, therefore, will have speed the exceeding rated

$v_p > v_{sh}$. The observer with surprise will find out that to stop the particle, it was necessary to apply bigger force. Assuming, according to its physical analog that the mass of the particle depends on speed, he will decide that he received experimental confirmation of this model. Let's look what turns out actually if we consider the curvilinear movement of the particle?

Force which the experimenter expects to spend for the particle stop, equal $F' = ma'$, actually, because of particle shift, will be force which needs to be spent for the particle stop, and equals $F = ma$, as, because of shift, the particle for the same time will pass bigger distance, and, therefore, will have the higher speed, and acceleration which will need to be extinguished for the same time will be bigger, than the observer considers. Let's calculate this acceleration, considering formulas of influence (1) and (2):

$$a' = \frac{S'}{t'^2} = \frac{S\sqrt{1-v_p^2/c^2}}{t^2(1-v_p^2/c^2)} = \frac{a}{\sqrt{1-v_p^2/c^2}}, \text{ that is}$$

$$F' = ma' = \frac{F}{\sqrt{1-v_p^2/c^2}}. \quad (3)$$

Thus, from the equation it is visible:

1. *The particle needs to pass the bigger way, depending on its speed, in comparison with system which we consider motionless, the big force, in comparison with rated, it is necessary to put to slow down the particle.*

2. *Increase in force of impact on the particle, at its braking, depends on increase in speed of the particle, owing to its shift, but not on its weight.* ***The mass of the particle remains invariable and does not depend on particle traverse speed***.

Instead of the formula of change of the weight appearing in STR we entered the formula (3) - forces of impact on the particle moving in space on the curvilinear trajectory.

And, on the contrary, by transfer of influence from any point of space with light speed on the particle moving on the curvilinear trajectory, time for transfer of this influence will be that more, than particle speed is higher. Therefore, time spent for transfer of this influence increases, and force of the influence decreases.

$$F = F'\sqrt{1-v_p^2/c^2}\ . (4)$$

And at the speed of the body (particle) of equal speed of distribution of influence in the World environment, force of impact on the body (particle) or in the body (particle) will disappear.

Having substituted boundary conditions in formulas (1), (2) and (4) $v_p = c$, we will receive:

$S = \infty, t = \infty, F = 0$.

Way which there has to take place influence in vacuum (The world environment) that will influence the particle infinitely long, the interval of time of influence infinitely big and influence force, respectively, will be equal to zero. But it will not really happen as the particle which reached speed, in number equal light speed will get to the zone of uncertainty and will break the light barrier. As it occurs, is described further.

**2. The analysis of the movement of material objects in the four-dimensional space on hyper light speeds.**

And what will occur if to substitute in these formulas speed, at which particle speed more than the light speed? It is easy to notice that such substitution gives the negative number under the root. What does it mean? That it does not make physical sense? Yes, it has no, mathematically - in the

field of real numbers, **physically - in our three-dimensional world**. But it has decisions in the field of i imaginaries, or in the plane of complex variables that, inherently, **is equivalent to emergence of the new plane or carrying out the new axis, or new measurement**. (The fourth is added to three coordinates of space which are characterized by three real numbers – imaginary, **but too metric)**. (To explain symmetry of space-time in the singularity point, Stephen Hawking, suggested entering imaginary coordinates too). Naturally, we cannot carry out this axis in our three-dimensional world; it is possible to make it only in the four-dimensional space (hyper space).

Hyper volume will concern any point of our three-dimensional space, the same as volume concerns any point of the plane. In hyper volume any number of volumes can go in.

And then formulas will look so:

$$(i)S = \frac{S'(i)}{\sqrt{v_p^2/c^2 - 1}},\ (i)t = \frac{t'(i)}{\sqrt{v_p^2/c^2 - 1}},\ \ (i)F = F'(i)\sqrt{v_p^2/c^2 - 1}. \quad (5)$$

Then: for $(i)S, (i)T, (i)F$ at substitution of boundary conditions, we will receive:

<u>At</u> $v_p = c$,

$(i)S' = \infty$, $(i)t' = \infty$, $(i)F' = 0$.

<u>At</u> $v_p = 2c$;

$$(i)S = \frac{S'(i)}{\sqrt{v_p^2/c^2 - 1}} = \frac{S'(i)}{\sqrt{4c_p^2/c^2 - 1}} \approx 0,6S'(i)\ ,$$

$$(i)t = \frac{t'(i)}{\sqrt{v_p^2/c^2 - 1}} = \frac{t'(i)}{\sqrt{4c_p^2/c^2 - 1}} \approx 0,6t'(i)\ ,$$

$$(i)F = F'(i)\sqrt{v_p^2/c^2 - 1} = F'(i)\sqrt{4c_p^2/c - 1} \approx 1,7F'(i)\ .$$

<u>At</u> $v_p = 3c$:

$$(i)S = \frac{S'(i)}{\sqrt{v_p^2/c^2 - 1}} = \frac{S'(i)}{\sqrt{9c_p^2/c^2 - 1}} \approx 0,36S'(i)\ ,$$

$$(i)t = \frac{t'(i)}{\sqrt{v_p^2/c^2 - 1}} = \frac{t'(i)}{\sqrt{9c_p^2/c^2 - 1}} \approx 0,36t'(i)\ ,$$

$$(i)F = F'(i)\sqrt{v_p^2/c^2 - 1} = F'(i)\sqrt{9c_p^2/c - 1} \approx 2,8F'(i)\ .$$

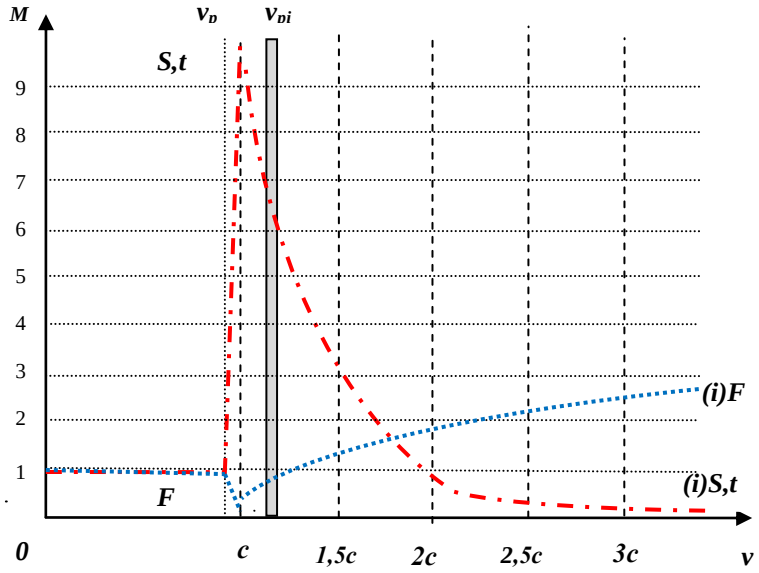



*Fig.19. Schedules of change of power and existential characteristics of the environment at sub light and superlight speeds of movement of a particle in space.*

where $v$ – speed;

$M$ – characteristics of material properties ( $M = f(S,t,F)$ ,

$c$ – velocity of light;

$v_p$, $v_{pi}$ – borders of an interspatial barrier (a transition zone) of matter from three-dimensional in a four-dimensional state;

$S$, $t$ – distance and time;

$F$ - *influence*.

On schedule (Fig. 19) the transition zone or a light barrier is well visible. **Matter passes through this barrier into other state and measurement**.

From the received formulas it is also visible that in hyper space the particle can move with a speed as is wished more than the velocity of light of rather three-dimensional space, but at the same time its physical characteristics will be others. We can call this area of existence of matter – Tachyon [2]. On this schedule the area lying in the range of speeds from 0 to *with* will be three-dimensional area of existence of matter, and area from *with* to ∞ four-dimensional, or Tachyon.

Now we will try to understand that happens to a material body when it approaches a "light" barrier. First, we already noted that at achievement by a body of speed of in number equal velocity of light, it will – move equally in all more slowly than the front of a light wave as light spreads in vacuum on a straight line, and the body moves on a curvilinear trajectory.

It means that transfer of various forces of interaction in a body, and impacts of fields on a body, will be still carried out in spite of the fact that the body will move in vacuum with a speed of in

number equal velocity of light. It will stop only when the speed of movement of a body is made even to the speed of distribution of the front of a light wave and, actually, its own speed will exceed velocity of light in number. As it paradoxically sounds, but the particle moving in space **with a speed of in number equal velocity of light will move all the same more slowly, than light**.

**3. Transition process through the light barrier.**

What it leads to, we will consider slightly further, and now we will try to describe process of transition through a light barrier. We recognize that all interaction in our three-dimensional world happens and is transferred in the World environment through fields with velocity of light. From this it follows that matter in a three-dimensional state (as we know it) cannot exist at a speed over the velocity of light as physical processes (for example, short-range intra nuclear forces) will not manage to happen. Matter will have to pass into other, four-dimensional state where influence transfer speed, concerning our world, occurs much quicker. And in this space its interaction with the environment will change that to us and is shown by the right part of the schedule. The transition zone through an interspatial barrier will have transitional quasi four-dimensional properties. In Tachyon area of border of this zone will be indistinct from our point of view, in connection with emergence of the fourth coordinate and additional degree of freedom. From the power point of view of matter it is more favorable to cross this barrier from Tachyon area as the four-dimensional space has higher, rather three-dimensional, energy potential.

The elementary particles breaking this potential barrier, and getting to us from four-dimensional or Tachyon area of space fly with an initial speed, almost equal speed of distribution of light in our space. From here justice of a formula follows $E = mc^2$ for such elementary particles. With some share of probability as we will see further, it is possible to claim that such particles are neutrons which can be divided then into *p* proton +, an electron *electronic* and an electronic neutrino $\vec{\nu}_e$.

From where at the particle crossing a light barrier the additional impulse undertakes? Transition of particles from one state in another requires creation of certain conditions, most likely, of very high temperature and pressure concentrated in rather small volume. Such conditions can arise, for example, in kernels of galaxies, stars or other enough massive celestial bodies warmed inside, at least, up to the plasma temperature. "Boiling vacuum", i.e. continuous emergence and disappearance of particles in it can be explained with an equilibrium state between the Universe and hyper space, like continuous emergence and disappearance of particles over glass with water, owing to balance of partial vapor pressure over a surface of the water. But, if in an equilibrium zone of a potential barrier balance in a border layer of vacuum is broken, then particles can break a hyper spatial barrier and appear in our space. We can speak about emergence of a certain nonequilibrium local cell through which matter and energy in the form of a stream of elementary particles

(neutrons) from hyper space comes to three-dimensional space. At such process, at emergence of particles in our space, there is an additional small amount of energy, $E_G$, causing an impulse of rotation $P_G$, these particles (Fig. 20).

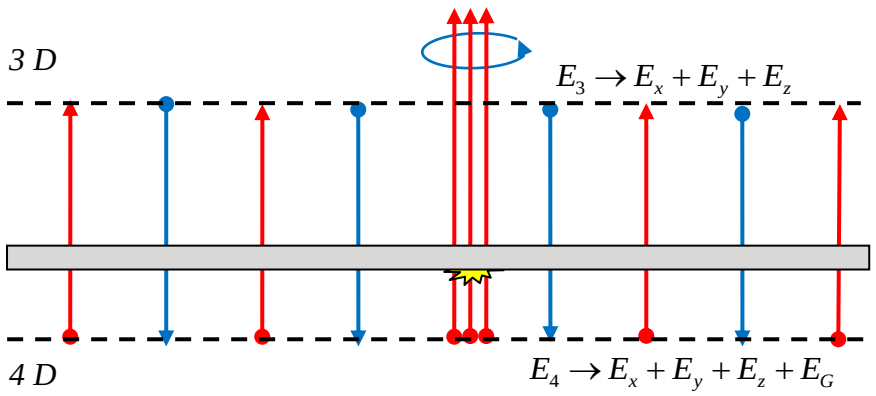



*Fig.20. An equilibrium state in a zone of a potential hyper spatial power barrier of "The boiling vacuum".*

We can spread out a spatial impulse of the movement of a particle in hyper space on four coordinate axes:

$$(i)\,p = (i)mv = (i)m\frac{S_x}{t} + (i)m\frac{S_y}{t} + (i)m\frac{S_z}{t} + (i)m\frac{S_G}{t}.$$

Upon transition of a particle through a hyper spatial barrier, an impulse of the movement of the particle in three-dimensional space moving on some curve about three axes are displayed.

$$p = mv = m\frac{S_x}{t} + m\frac{S_y}{t} + m\frac{S_z}{t}.$$

The fourth component of an impulse, in that case, will turn into an impulse of rotation of a particle as at us the fourth coordinate and the plane disappears, and the additional impulse directed along an axis gives rotation in the plane,

$$P_G = p_\omega = m\frac{S_G}{t} = m\omega_r.$$

The composite pulse of the particle passing through a hyper spatial barrier, and appearing in three-dimensional space will be:

$$p_\Sigma = p_x + p_y + p_z + p_\omega.$$

Thus, particles, breaking a light barrier, and, appearing in three-dimensional space, receive two boost of the movement – forward, on some three-dimensional trajectory, and a rotation impulse around own axis. That is, the particle begins to move forward, at the same time rotating (Fig. 21).

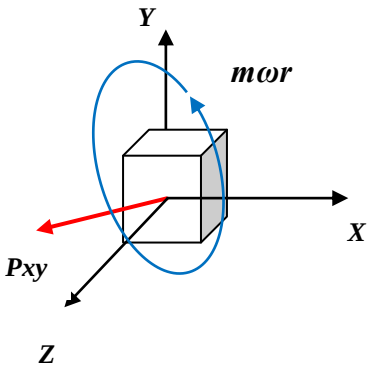



*Fig.21. Emergence of an impulse of rotation in a particle, upon transition from hyper space.*

The particle entrance impulse to our space, will be equal to two impulses: $p_{xyz} = mc_x + mc_y + mc_z$ and to an impulse of rotation $p_\omega = m\omega_r$. If this process happens continuously in space objects, then the stream of these particles will gradually untwist an object. Energy of such particle appearing will be respectively equal in three-dimensional space to kinetic energy of a particle $E_k = E_x + E_y + E_z = mc^2$, as it at once appears with velocity of light, and $E_\omega = m\omega_r$. However, energy of a particle in hyper space equaled $E_\Sigma = E_x + E_y + E_z + E_G$, therefore at emergence of a particle, not crossing barrier, from hyper space a small part of additional energy can be radiated in the form of the electromagnetic energy perceived by us as the background radiation of vacuum.

Now we will consider why the particle reaching velocity of light does not break up, and breaks a light barrier? We already paid attention that the particle which reached velocity of light, all – equally moves slowly, than light, i.e. short-range intra nuclear forces still continue to work.

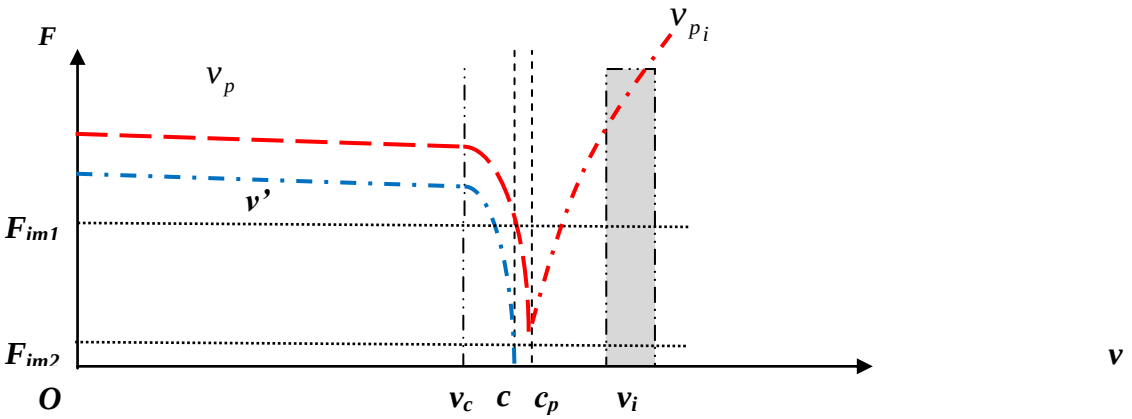



*Fig.22. An uncertainty zone at the movement of a particle at okolosvetovy and superlight speeds.*

$F$ – force of impact on a particle;

$F_{im1}$ – a point in which influence of hyper space on a particle begins;

$F_{im2}$ – a point of transition to a hyper spatial state;

$v_c$, $v_i$ – uncertainty zone borders;

$v'$ – the schedule of dependence of influence on the estimated speed of the movement of a particle in three-dimensional space;

$v_{p_i}$ – the schedule of dependence of influence on the speed of the movement of a particle in Tachyon space;

$v_p$ - the schedule of dependence of influence on the actual speed of the movement of a particle in three-dimensional space.

The schedule (Fig. 22) shows what would be if the particle could not exceed velocity of light, moving with a speed $v'$. Then, at $v' = c$, force of influence *of F* would become equal to zero, and a material body (particle) would cease to exist. But actually, at some speed of movement of a particle - $v_p$, as we saw in fig. 13, the speed of a body (particle) can exceed velocity of light in number, at the same time influence of internal forces will continue still. But hyper spatial forces which will not allow a body (particle) to break up will already begin to act on this stage on a body (particle). And, as forces of influence of three-dimensional space will weaken, forces of influence of hyper space will increase. Let's call a zone of speeds, near velocity of light – an uncertainty zone. The uncertainty zone border in three-dimensional space begins where the schedule of force of impact on a particle has a sharp change, that is at $v \to c, v_p \to c_p$.

Forces of three-dimensional space gradually stop affecting the particle getting to this zone, but Tachyon strengths already begin to work.

Let's consider it on the example of two elementary components of any particle (Fig. 23).

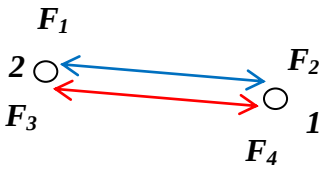



*Fig.23. Interaction of two components of a particle in an uncertainty zone.*

The elementary component of a particle *1 affects with $F_1$ force an elementary component of a particle 2*, at approach to velocity of light, force of this influence will begin to decrease due to delay of speed of course of physical processes, in particular due to increase in time of impact on elementary components of a particle. The same will begin to happen to force of influence of an elementary component of a particle *2 on a component of a particle 1*. But at achievement by a particle of speed of in number equal velocity of light at the movement on some trajectory, interaction will be still carried out because the speed of transfer of the interaction extending on a straight line will be all the same higher than the speed of a particle. At the same time on parts 1 and 2 which are in a particle action of forces *of $F_3$, $F_4$* which, according to a formula (5) will gradually

increase in process of the continuing increase of speed of a particle will begin. At last, at achievement by a particle of speed of distribution of light in three-dimensional space, forces $F_1$ and $F_2$ will disappear, and a particle, coming through "a light barrier", in four-dimensional metric space (hyper space) will already be kept by forces *of* $F_3$, $F_4$.

**4. Exchange of matter and energy between the Universe and hyper space.**

Let's consider process of transition through a light barrier in more detail:

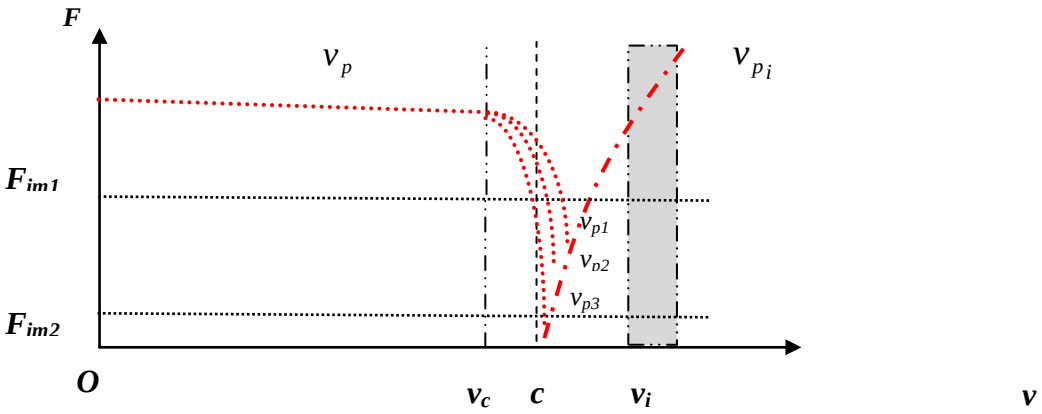



*Fig.24. Particle speed variations in an uncertainty zone.*

where $F$ – force of impact on a particle;

$F_{im1}$ – point in which influence of hyper space on a particle begins;

$F_{im2}$ – point of transition to a hyper spatial state;

$v_c$, $v_i$ – uncertainty zone borders;

$v_{p_i}$ – the schedule of dependence of influence on the speed of the movement of a particle in Tachyon space;

$v_p$ - the schedule of dependence of influence on the actual speed of the movement of a particle in three-dimensional space.

Force or energy of impact on the particle exceeding the speed in number equal to velocity of light in an uncertainty zone depends on curvature of a trajectory of a particle, i.e. on that contribution which is made by *v'* (Fig. 24).

$$E_{p1} = m_{n^0} v_{p1}^2 = m_{n^0} (v + v_{x1})^2 = m_{n^0} c_{\alpha 1}^2,$$

$$E_{p2} = m_{n^0} v_{p2}^2 = m_{n^0} (v + v_{x2})^2 = m_{n^0} c_{\alpha 2}^2, \ldots,$$

or, $E_{pn} = m_{n^0} v_{pn}^2 = m_{n^0} (v + v_{xn})^2 = m_{n^0} c_{\alpha n}^2$.

Absorption of energy and matter hyper space can come from the Universe through Black holes where particles can, falling in the Black hole, to disperse to the speed which is in number exceeding

velocity of light and to pass into a four-dimensional state. Owing to various trajectories of an entrance to area of a zone of uncertainty, there, because of the energy fluctuations arising at the same time, there have to be fluctuations of force of influence (oscillation) that, in turn, will lead to allocation oscillation (in case of transition from hyper space to our Universe), or absorption (upon the return transition) energy. In that case, zone $dE_\alpha$ we can call – a variability zone, and $E'_\alpha$ - energy of variability (oscillation).

$$dE'_\alpha = mc_\alpha^2 dc = m(v - v_\alpha)^2 dv,$$

where $\alpha$ – variability coefficient.

Energy oscillation variations in this zone are shown in fig. 25.

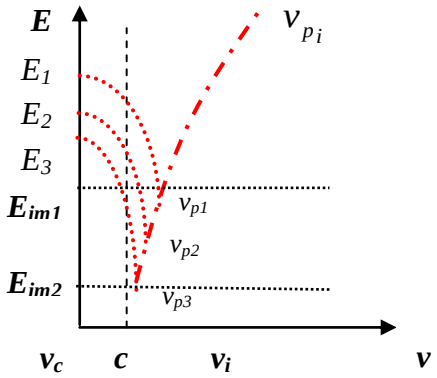



*Fig.25. Energy variations of oscillation in a variability zone.*

where $E_1, E_2, E_3$ – variations of energy of particles;

$F_{im1}$ – point in which influence of hyper space on a particle begins;

$F_{im2}$ – point of transition to a hyper spatial state;

$v_c$, $v_i$ – uncertainty zone borders;

$v_{p_i}$ – the schedule of dependence of influence on the speed of the movement of a particle in Tachyon space;

$v_{p1}, v_{p2}, v_{p3}$ - the schedule of dependence of influence on actual speeds of the movement of particles with different trajectories in three-dimensional space.

Energy allocation of oscillation comes along with intake of matter through a nonequilibrium cell from hyper space in our Universe or from our three-dimensional space to the tachyon area. It leads to the fact that in a cell of a nonequilibrium there are fluctuations depending on a number of parameters, both the cell, and change of density of vacuum, leading to emergence and distribution of spatial waves in the World environment. It is possible to call the frequency of these fluctuations arising in an uncertainty zone variable frequency- $d\omega_\alpha dt$.

**5. Calculation of temperature of background radiation of the Universe.**

In 1930 Paul Dirac offered the concept of "The boiling vacuum layer" (Dirac's Sea) where particles appear and disappear. Such behavior of vacuum is shown in various observed effects. "Activity of vacuum is shown in distortion of forces operating between particles" [16]. As the hyper space contacts to any point of our three-dimensional space, such "layer" or such "border" will be volume. As shown in fig. 23, the particles appearing from hyper space and passing through "a light barrier", but not having enough energy to break a potential barrier, come back, recombining with the "holes" which remained on that side of "a light barrier". This process from the physical point of view is similar to power balance because of balance of partial pressure of gases over the surface of liquid, or to an equilibrium condition of electrons and holes in an interface of semiconductors. However it is possible to assume that at the same time, in a vacuum interface after all small energy because of emergence of fluctuations in a zone of variability and because of allocation of energy is emitted at interaction of particles (Fig.26)

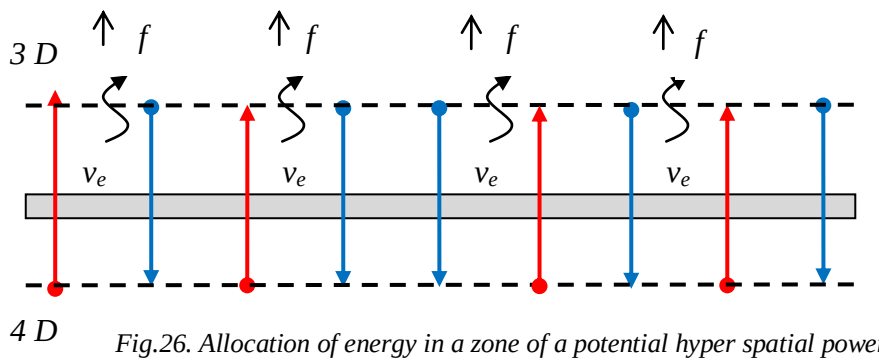



*Fig.26. Allocation of energy in a zone of a potential hyper spatial power barrier of "The boiling vacuum".*

Electronic neutrino as they are the most mass (along with photons) particles in the Universe can be carriers of such energy, and perform energy transfer function, taking part in weak nuclear interactions. Now it is known that the mass of a neutrino is extremely small, is in limits $0 \neq m_{\vec{\nu}_e} \leq 0,28\,eV$, and its real size still is questionable. At the same time it was succeeded to measure quite precisely experimentally a difference of squares of mass of a neutrino of "different generations", so-called oscillation neutrinos. This difference makes $\Delta m^2_{\vec{\nu}_e} = 27 \cdot 10^{-4}\,eV^2$. If to assume that $\Delta m_{\vec{\nu}_e}$ - this investigation of a variation of allocation of energy in an uncertainty zone because of interaction of a neutrino of different types, energy $E_{\Delta\vec{\nu}_e}$ also will be that energy which is emitted at the oscillation processes happening in an uncertainty zone. Then $E_{\Delta\vec{\nu}_e} = \sqrt{m^2_{\vec{\nu}_e}} = 0,5196 \cdot 10^{-3} \approx 0,52 \cdot 10^{-3}\,eV$ – power oscillations on border of a zone of uncertainty which excite electromagnetic oscillations in the World environment in the form of a stream of the photons having this energy.

It is known that the volume density of energy of background radiation of the Universe makes, approximately $u_{fot} = 5 \cdot 10^8 \ fot/м^3$ [7], [11]. Then the volume density of energy of all photons in $m^3$ will make $u = 0,52 \cdot 10^{-3} \cdot 5 \cdot 10^8 = 2,6 \cdot 10^5 \ eV/m^3 \approx 4,16566 \cdot 10^{-14} \ J/m^3$. Background radiation, practically, is the black-body radiation, therefore, we can calculate temperature providing such density of radiation, using a formula of volume density of energy of black-body radiation:

$$u = \frac{4\sigma T^4}{c}, \text{ or } T^0 = \sqrt[4]{\frac{uc}{4\sigma}} = \sqrt[4]{\frac{E_{\Delta \vec{\nu}_e} u_{fot} c}{4\sigma}} \approx 2,7245 K^0,$$

where σ –Stephan – Boltzmann constant = $5,67 \cdot 10^{-8} \ W/m^2 \cdot K^4$;

c – vacuum light velocity = $299792,5 \cdot 10^3$ m/s.

For comparison, by results of the last measurements value of background temperature of the Universe equals $T^0_{fon} = 2,72548 \pm 0,00057 K^0$ [45], therefore the error of calculation makes- **$0,00098 K^0$** (less than one ten-thousand degrees), it can also be explained with small rounding in calculations and lack of exact experimental data of volume density of energy of background radiation of the Universe on number of photons.

But it is possible to correct and receive easily exact value of temperature of background radiation of the Universe. Knowing energy of one photon, it is easy to calculate number of the photons providing the specific density of energy at $T^0_{fon} = 2,725 K^0$.

$$u = \frac{4\sigma T^4}{c} = 4,171463 \cdot 10^{-14} \ J/m^3 = \ 2,6036225 \cdot 10^5 \ eV/m^3,$$

$$u_{fot} = \frac{u}{E_{\Delta \vec{\nu}_e}} = 5,011355 \cdot 10^8 \ fot/m^3.$$

Having substituted the specified size of volume density of energy of background radiation of the Universe, we will receive an exact calculated value, measured experimentally, temperatures of background radiation of the Universe $T^0_{fon} = 2,725 K^0$.

For the same reasons it is possible to calculate the size of a power barrier and density of the World environment on unit of volume which will be equal to pressure of background radiation of the Universe upon unit of volume. At $E_{\Delta \vec{\nu}_e} = E_{Pc} \approx 0,52 \cdot 10^{-3} eV$, the size of a power barrier to the particle crossing a light barrier will make from the three-dimensional world:

$E_c = m_p c^2 + E_{Pc} = m_p c^2 + 0,52 \cdot 10^{-3} eV$, and for the particle crossing a light barrier from hyper space:

$$E_c(i) = E_{Pc} - m_p c_i^2 = 0,52 \cdot 10^{-3} - m_p c_i^2 \ eV.$$

**6. Calculation of cosmological red shift.**

On the basis of modern representations calculation of characteristics of cosmological red shift has to meet several main requirements. Not to depend on the frequency of radiation and to satisfy to the law of radiation of a black body. If we assume that cosmological red shift is observed owing to energy losses by photons in the World environment, and then this loss has to depend on specific coefficient of absorption of the World environment $k_{abWe}$, also has to satisfy to a formula:

$$\Delta E_f = k_{abWe} h\nu .$$

As we already saw when calculating temperature of background radiation of the Universe, oscillation fluctuations of a neutrino can be responsible for power processes on uncertainty zone border. We considered only process of allocation of energy on border of a zone of uncertainty and formation of a photon. But the same mechanism can participate also at absorption of energy of a photon. Let's assume that the photon arriving from the outside with energy of the neutrino oscillation surpassing energy on border of a power barrier of the Zone of uncertainty creates very weak indignation in the field of the World environment at which loss of some share of energy of a photon defiant oscillation fluctuations of a neutrino with energy absorption is carried out. And, as this absorption happens to a zone of zero fluctuations inside – fluctuations of quantum system, according to Paul Dirac's assumptions in this process two particles, have to participate in our case at the same time $\vec{\nu}_{e-}, \vec{\nu}_{e+}$ and total energy of their oscillation has to equal $\sum E_{2\Delta\nu_e} \approx 2,331 \cdot 10^{-22} J$ which will be equal to partial energy of absorption of a photon on neutrino oscillations on uncertainty zone border. Let's look what from this can turn out. Then losses of energy of a photon on full energy of oscillation of absorption have to be equal:

$$E_{2\Delta\vec{\nu}_e} = \sqrt{2m_{\vec{\nu}_e}^2} = 1,4 \cdot 0,5196 \cdot 10^{-3} \approx 0,7274 \cdot 10^{-3} eV \approx 1,1655 \cdot 10^{-22} J.$$

Let's calculate specific loss of energy of a photon at the expense of the specific density of radiation of the World environment now. We calculated the specific density of energy on $m^3$ of the environment which is equal $u = 4,1715 \cdot 10^{-14} J/m^3$. But we are interested in the specific linear density of energy:

$$E_{lpWe} = \sqrt[3]{u} = \sqrt[3]{41,715 \cdot 10^{-15}} = 3,425 \cdot 10^{-5} \, J\!\!\diagup_{m^3} .$$

Knowing absorption energy as a part of photon energy it is possible to calculate specific absorption of a part of photon energy on length of its trajectory one meter on oscillations and specific linear density of energy:

$$E_{spWe} = E_{lpWe} \cdot \sum E_{2\Delta\nu_e} = 3,425 \cdot 2,331 \cdot 10^{-22} \cdot 10^{-5} \approx 7,98 \cdot 10^{-27} \, J\!\!\diagup_{m} .$$

Or, the provided coefficient of specific absorption of a part of energy of a photon on length of its trajectory one meter in relative units $k_{abWe} = 7,98 \cdot 10^{-27}$.

Knowing the provided coefficient of specific absorption of a part of energy of a photon on length of its trajectory one meter, it is possible to learn what share of energy is lost by a photon at flight of a distance in one Mpk. $Mpk = 3,09 \cdot 10^{22} m$, then:

$k_{abWe}(Mpk) = 7,98 \cdot 10^{-27} \cdot 3,09 \cdot 10^{22} = 24,658 \cdot 10^{-5}$ part/Mpk.

Now it is possible to calculate what part of energy will be lost by a photon, equivalent to loss of a part of velocity of light at flight of a distance in one Mpk:

$$\Delta Sk_{abWe} = k_{abWe}(Mpk) \cdot c = 24,658 \cdot 10^{-5} \cdot 299792,5 = 73,92 \left( {km}/{s} \right) / Mpk.$$

For comparison, by calculation of distances to galaxies on luminosity of the Cepheid's which are observed in them on the space by telescope Hubble give an assessment $H_0 = 73,24 \pm 1,74$ *(km/s)/Mpk* that on 3,4sigma (for 7-8%) is more, than is determined by parameters of relic radiation (the reasons of it are not known yet) [55] while the error of our calculation made **+ 0,64** *(km/s) / Mpk* that is almost three times less than an error on modern representations, and makes **less than 1%.**

Except the specific density of radiation of the World environment the indignations brought by a space object this Wednesday, such as, the mass of an object, energy of radiation and speed of its rotation can influence loss of a part of energy of a photon. The gravitational indignation created by quickly rotating mass of such large objects as quasars, can strongly influence the power density of the World environment, distorting and condensing it. It can lead to big, in comparison with usual space, to energy losses by photons at interaction with this Wednesday and, respectively, to essential red shift. Taking into account these amendments, the formula of cosmological red shift can look so:

$$z \div k_{abWe}, M_{\otimes}, \omega R_{\otimes},$$

where $M_{\otimes}$ - object mass,

$\omega R_{\otimes}$ - object rotation speed.

**7. Confirmation of a hypothesis of the extending Earth. Search and justification of the probable source providing increase its weight in time.**

Now the theory of earth's plates or the theory of a mobilizm is considered a paradigm of development of crust. It was developed in the sixties last century by works, mainly, of the American geophysicists and succeeded the geosinklinalny, or fiksistst theory dominating the whole century. According to this theory, the main thing and, in effect, the only development of crust are the

horizontal movements of continental plates caused by convective currents in a cloak owing to its warming up, and the vertical movements can, almost, be neglected. Driving force of such horizontal movements is the warmed cloak moving in places of the section (spreading) of crust which are located along axes of median and oceanic ridges. From these axes bark moves along an oceanic bed to zones of its absorption (a subduktion zone) and plunges into the top cloak. Thus, in a cloak the huge convective cells responsible for creation and absorption of crust work. All crust is broken into several tens of earth's plates, interaction between which causes all variety of geological processes. The scientists supporting and developing this theory (mobilist) explain a divergence of continents with the movement on long distances of fragments (terreyn) of any (continental, oceanic, arch-island) structures on deep surfaces, korovy or mantle. One of the main theses of such concept is idea of constancy of radius and volume of Earth as space body.

However now appears more and more facts conflicting to the theory of global tectonics of plates. For example, the asthenosphere which the movement of plates contacts settles down at the different levels and has faltering character. The corner provision of the considered theory is spreading, but when it is about the space covered by it, there are difficulties. At different distances from an axial zone of World rift system weakening (relaxation) of spreading is found. In oceans categories of the demarcation of breaking zones not consistent with borders of earth's plates are marked recently out. Great doubts are raised by existence of zones of a subduktion in which there is an immersion in deep-water trenches of integral earth's plates up to the depths of 600-700 km. Therefore to recognize as integral, the Pacific earth's plate which occupies rather big territory of the Pacific Ocean, quite difficult. In it there are processes of a breaking zones appearing, grabens, horsts, tectono-volcanic structures, and also structures of crowding, the vertical ascending and descending movements are formed. It is possible to note that not only the Pacific plate, but also and other earth's plates of type Eurasian, Caribbean, Indo-Australian, and some other show artificiality of similar ideas of a subduktion. Moreover, it is possible to make a simple experiment, having reduced Earth globe radius, having cut out from it all oceans, and all continents easily without gaps will connect to the uniform continent to the Pan-gay. At the same time the radius of Earth will decrease almost by one and half times.

According to a number of authoritative geophysicists, the weight and diameter of our Earth continuously increase over time. This concept was put forward by the Russian scientist I. O. Yarkovsky in *1889* [64]. For example, according to NASA, diameter of Earth annually increases on the equator [52]. By data, in detail considered and reasoned V. F. Blinov [5], for the last *280 million* years acceleration of gravity on Earth increased from *4,2* $m/c^2$ up to *9,81* $m/c^2$. In the work the geophysicist N. P. Betelev writes: "According to a number of authors, absorption of planetary energy and matter of space vacuum transformed in Earth subsoil to usual atomic and molecular

substance" [4] is the reason of growth of Earth. In the work "About the concept of the growing Earth" [4]. Betelev provides such table of change of acceleration of gravity on Earth for the last 280 million years (Table 1) made by V. F. Blinov [64], coinciding with L. M. Yakushin's calculations [35].

Table 1

| Mil. years | 0 | 40 | 80 | 120 | 160 | 200 | 240 | 280 |
|---|---|---|---|---|---|---|---|---|
| $g_n$ m/s$^2$ | 9,8 | 8,8 | 7,7 | 6,8 | 6,0 | 5,3 | 4,7 | 4,2 |

In the work [50] R. Mezervey showed that only on the extending Earth it is possible to receive consent between modern topology of continents and oceans, and thermomagnetic data, such as, drift of magnetic poles and strip magnetic anomalies in oceans. He proved that connection of continents in which Africa, Eurasia, the Southern and Northern America, Australia and Antarctica form uniform праматерик, broken up, about, 200 million years ago is impossible on the globe having the radius equal to modern (Fig. 27).

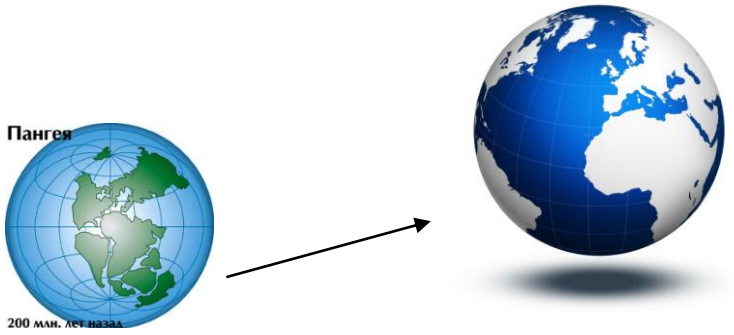



*Fig.27. The Earth 200 million years ago and now.*

Similar data are provided by Yu. V. Chudinov counting Earth radius for this period by V. I. Tretitsky's method [32]. Claus Vogel [56], in turn, created model of the globe on which he connected all continents in a uniform pramaterik to the Pan-gay and convincingly showed that it is necessary for such connection that Earth radius, approximately, equaled to the modern radius of a kernel of Earth. Similar models and similar calculations can be found also at such authors as O. Hildenberg [47], I.V. Kirillov [12], W. B. Neumann [17], K.M. Krir [42]. B. F. pancakes [6] and Osipishin N. Ya. [26], which determine the speed of an increment of radius of Earth *of dRdt* of equal *2 cm/year* at calculations of the areas of the oceanic crust. According to A. Yu. Retiyum [19], growth of continents happens to formation of structures of stretching – avlakogen. This process became especially noticeable, having begun, about, 200 million years ago. All this can serve as confirmation that continents disperse, owing to expansion of Earth as it "is constantly pumped up" by matter and energy received through the white hole which is in the center of Earth from hyper space, it provides and maintains temperature in the center of a kernel of Earth.

According to paleontologic and thermomagnetic data of various authors, such as Yu. V. Chudinov [32], and also on the basis of data on growth of the oceanic crust of A. B. Ronov [20] and N. S. Shatsky [34] it is possible to draw a conclusion on exponential expansion of radius of Earth in time. The approximate schedule of change of metric parameters of Earth during 200 million years looks so (Fig. 28):

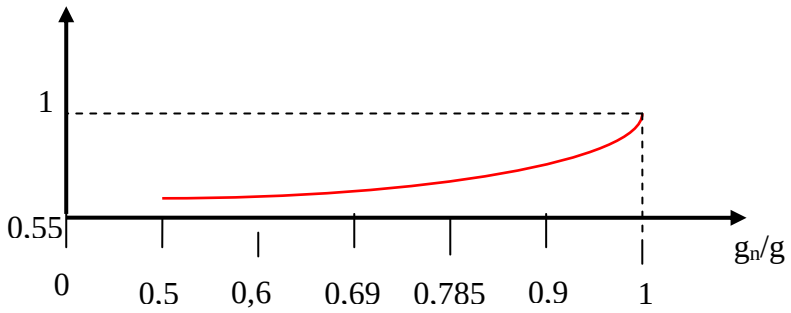



*Fig.28. The schedule of change of metric parameters of Earth according to paleontological and thermo magnetic data.*

The schedule is provided in the range from 200 million years ago in relative units of change of radius of Earth and acceleration of gravity so far.

$R_n/R_0$ – Earth radius relation during a certain period in the past at $\Delta n$*=40 one million years*, to Earth radius now.

$g_n/g_0$ – the relation of acceleration of gravity during a certain period in the past at $\Delta n$*=40 one million years*, to acceleration of gravity now.

Formula of change of radius of Earth in time, having taken *R0* for unit now, it is possible to present in the following form:

$$R_n = R_0 \cdot e^{-1,3(1-g_n/g_0)}, \text{ or } R_n = R_0 \cdot e^{-0,72(1-T_n/T_6)}. \quad (6)$$

Changes of radiuses of Earth $T_n/T_6$ in time are provided in table 2.

Table 2

| n | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Mil. years | 200 | 160 | 120 | 80 | 40 | 0 |
| $dR_n dt\ x10^6$ | 3,49 | 3,94 | 4,44 | 5,01 | 5,65 | 6,37 |

The physical principles of work of a nonequilibrium cell in a zone of zero fluctuations – fluctuations of quantum system it is considered in paragraph 3 and in fig. 24. As the radiating nonequilibrium cell, contrary to a black hole, delivers matter and energy in space, we will call it a white hole. Let's review an example of work of a white hole in a space object. Let's choose as such space object the planet Earth as the most studied celestial body. Let's try to calculate some parameters of a white hole, to consider the possible mechanism and conditions of its emergence. As we already noted in the previous paragraphs of this article, conditions for emergence and work of a nonequilibrium cell, most likely, appear in heavenly objects where balance in vacuum is broken at

the expense of huge pressure and temperatures that allows hyper particles to break a potential quasi four-dimensional power barrier. Allocation of a large amount of energy in small volume causes high temperatures in the center of a space body. It is known that for emergence of plasma and the beginning of self-sustaining thermonuclear reaction it is necessary to break the Coulomb barrier, and for this purpose it is necessary to create in small volume temperature about $10^8$ $K^0$ and pressure - $5 \cdot 10^{10}$ Pas ($N/m^2$). How such white hole in a space object can work? When pressure in an object upon some sphere reaches value $5 \cdot 10^{10}\ N/m^2$, there is a violation of equilibrium in vacuum, and from it with velocity of light neutrons begin to take off. The large volume and density of atoms in a celestial body on border of a nonequilibrium cell leads to the fact that the taking-off neutrons manage to face atomic nuclei, causing the chain reaction leading to sharp temperature increase to $T^0 = 10^8 K^0$. Neutrons, breaking up further on $2n_0 \to 2p^+ + 2e^- + 2\nu_{\bar{e}} \uparrow = H_2$, create the hydrogen necessary for course and maintenance of thermonuclear reaction in a kernel of the planet during which, also other elements are synthesized. Hydrogen also participates in formation of molecules of water with which many celestial bodies and which there is a lot of in the Universe are rich. It is quite probable that with hydrogen the Universe is enriched, generally not planets, but stars and, first of all, kernels of galaxies. In this place the chain reaction similar to nuclear begins. The white hole initiates and supports thermonuclear reaction in a celestial body. The arising plasma kernel burns out in it some volume which is gradually untwisted by the rotating white hole. The formed plasma kernel creates magnetic field of a celestial body, and the white hole exerts impact on rotation of the body, transmitting it through plasma. At planets with a small weight, and planetoids (such, for example, as the Moon) occurs expansion of a celestial body eventually that leads to falling of its average density and reduction of pressure in a kernel, the power of radiation of a white hole quickly falls or stops absolutely. At planets with rather big weight, radiation power gradually grows, together with the weight which increases in process of increase in a stream of particles from a white hole. Magnetic poles, in that case, will be formed by magnetic field of the rotating plasma kernel which will advance a little rotation of the planet, owing to its inertia. The magnetic pole will be displaced because of this advancing and because of emergence of turbulences in plasma (Fig. 29). Shift of a magnetic pole of the planet can be shown because of inertia of rotation of the planet of rather plasma kernel, the rotation moment from which is transferred not rigidly therefore axes of rotation of a kernel and the planet cannot coincide a little. To all other, the magnetic pole of a kernel cannot coincide with an axis of rotation of the kernel and independently move as a result of fluctuations.

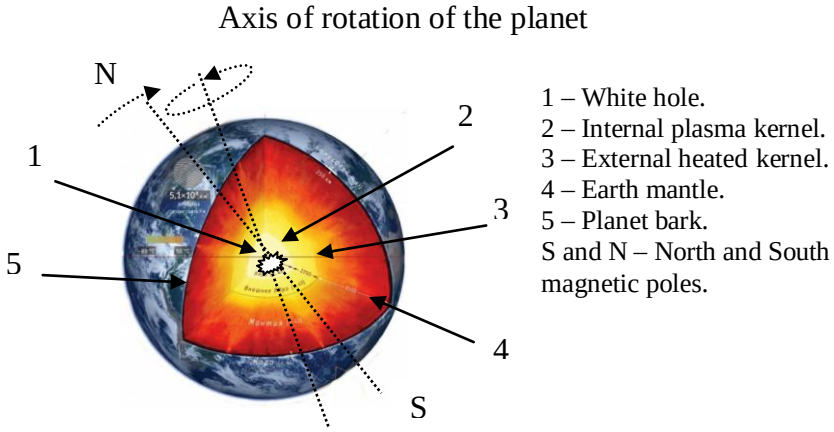



*Fig.29. The scheme of an internal structure of a celestial body with a white hole.*

Using these data, we can calculate productivity $d\vartheta_n dt$, power $dW_n = dE_n dt$ and other parameters of the white hole located in the center of Earth for various $T_n$. At once we will make a reservation that these calculations can be only estimated as exact data of change of parameters of Earth for so wide intervals of time, as far as we know, do not exist. Using V. F. Blinov [5] data and exponential expansion of radius of Earth, it is possible to remove the following formula of change of acceleration of gravity of Earth in time.

$g_n = g_0 \cdot e^{-0,74(1-T_n/T_6)}$, at $n = 1,2,3...$ and $\Delta T = 40$ *million years.* *(7)*

It is possible to calculate the specified changes of acceleration of gravity for Earth in time (Tab.3) by a formula (7).

Table 3

| n | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| T Mil. years | 200 | 160 | 120 | 80 | 40 | 0 |
| $m$ g/$c^2$ | 5,3 | 6,0 | 6,8 | 7,7 | 8,7 | 9,81 |

N. P. Betelev provides such data calculated by various authors trying to prove growth of weight and the sizes of Earth by certain hypothetical particles of "space air" (Table 4) in the work [4]. The criticism of proofs of growth of Earth just also consists that to the additional mass of Earth to undertake not from where (the mass of space dust and the meteors which are dropping out to Earth is incomparably small), and then increase in radius of Earth has to result in boomerang effect – reduction of acceleration of gravity, but not to its growth, according to authors. Definition of the physical mechanism of a gain of Earth in time would allow resolving this task.

Table 4

| № p/n | Authors | Gain speed in a year | |
|---|---|---|---|
| | | Mass kg/year | Energy J/year |
| 1. | K. E. Veselov [9,10] | $5,6 \cdot 10^{15}$ | $5,6 \cdot 10^{32}$ |
| 2. | E. V. Barkovsky [3] | $4,9 \cdot 10^{15}$ | $4,4 \cdot 10^{32}$ |
| 3. | L. M. Yakushin [35] | $5,6 \cdot 10^{16}$ * | $3,6 \cdot 10^{24}$ ** <br> $2,3 \cdot 10^{32}$ *** |
| 4. | V. A. Atsyukovsky, V. G. Vasilyev [1] | $5,6 \cdot 10^{16}$ | $2,3 \cdot 10^{32}$ |
| 5. | V. F. Blinov[5] | $5,5 \cdot 10^{16}$ | $4,9 \cdot 10^{33}$ |

* It is calculated, proceeding from increase in radius of Earth on *2 sm/year* and its average density $5,5 \cdot 10^3$ *kg/sm*$^3$.

** It is calculated, accepting the speed of particles of space air to Earth of equal second cosmic speed *11200 m/s* [36].

*** It is calculated, accepting the speed of particles of space air to Earth of equal 30% of velocity of light, i.e.$9 \cdot 10^7$ *m/s* [4].

The earth as planet, was created, about, 4,55-4,65 billion years ago. The scenario of its education is similar on, described above, the scenario for planets with rather big weight. Therefore process of formation of the planet went against the background of the adiabatic compression which was followed by a warming up of planetary substance on which, at achievement of a certain internal pressure, process of emergence of a white hole was imposed. When internal pressure was stabilized, the mass of the planet because of inflow of neutrons began to increase slowly, and temperature in the planet slowly to increase. Now it is difficult to determine the initial mass of the planet formed *4,55-4,65 billion years ago*, it is only possible to assume that originally increase in weight was almost imperceptible.

Knowing change of radiuses and accelerations of free fall of Earth in time, it is possible to calculate the mass of Earth in time by a formula: $M_n = \frac{gR_n^2}{G}$.

Changes of mass of Earth in time are given in table 5.

Table 5

| $T_n$ Mil. years | 200 | 160 | 120 | 80 | 40 | 0 |
|---|---|---|---|---|---|---|
| $M_n$ *x10*$^{24}$ *kg* | 0,99 | 1,38 | 2,0 | 2,9 | 4,1 | 5,97 |

The gain of mass of Earth for every period of time can be calculated by a formula:

$$dM_n dt = d(M_n - M_{(n+1)})dt .$$

The gain of mass of Earth for every period of time is given in table 6.

Table 6

| $T_n$ Mil. years | 160 | 120 | 80 | 40 | 0 |
|---|---|---|---|---|---|
| $dM_n dt\ x10^{24}\ kg$ | 0,39 | 0,62 | 0,9 | 1,2 | 1,86 |

The average gain of mass of Earth in sec. for every period of time can be calculated by a formula:

$$dM_n dt = \frac{d(M_n - M_{(n+1)})}{T_p t_s} dt,$$

where $T_p$ - period of time $= 40 \cdot 10^6$ *years;*

$t_s = 315{,}56952 \cdot 10^5$ - the average number of sec. in a year.

The average gain of mass of Earth in sec. for every period of time *Tp* is given in table 7.

Table 7

| $T_{nm}$ Mil. years | 180 | 140 | 100 | 60 | 20 |
|---|---|---|---|---|---|
| $dM_{nm} dt\ x10^9\ kg$ | 0,31 | 0,49 | 0,71 | 0,95 | 1,5 |

The gain of mass of Earth in sec. for every period of time can be calculated by a formula:

$$dM_{sn} = dM_{sm_0} \cdot e^{-1{,}765(1-T_n/T_5)}\ .$$

$m_0$ - a weight gain for the last period of time.

The gain of mass of Earth in sec. for every period of time is given in table 8.

Table 8

| n | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| $\boldsymbol{T_n}$ Mil.years | 200 | 160 | 120 | 80 | 40 | 0 |
| $dM_n dt\ x10^{24}\ kg$ | 0,4 | 0,54 | 0,72 | 0,97 | 1,3 | 1,74 |

Productivity of a white hole $d\vartheta_n dt$ for this period of time it is possible to calculate by a formula:

$$d\vartheta_n dt = \frac{dM_n}{m_{n^0}} dt\ \ n^0/sec,$$

where $m_{n^0}$ - mass of a neutron = $1{,}675 \cdot 10^{-27}$ *(kg).*

Productivity of a white hole of Earth for this period of time is specified in table 9.

Table 9

| Mil. years | 200 | 160 | 120 | 80 | 40 | 0 |
|---|---|---|---|---|---|---|
| $\vartheta_n\ x10^{33}$ $n^0$/sec | 240 | 320 | 430 | 580 | 780 | 1040 |

Power of a white hole *of* $W_n$ for this period of time can be calculated by a formula:

$$W_n = dE_n dt = m_{n^0} \vartheta_n c^2 dt\ \ W\ (J/sec),$$

where $c$ – light velocity = *299 792 458 m/s*.

Power of energy radiation of a white hole of Earth for this period of time is specified in tab. 10.

Table 10

| Mil. years | 200 | 160 | 120 | 80 | 40 | 0 |
|---|---|---|---|---|---|---|
| $W_n\ x10^{25}\ W$ | 3,6 | 4,82 | 6,47 | 8,73 | 11,74 | 15,7 |

The average gain of mass of Earth in a year for the last 40 million years makes:

$$dM_{0y}dt = \frac{dM_0 dt}{T_p} = \frac{1{,}86 \cdot 10^{24}}{40 \cdot 10^6} = 4{,}65 \cdot 10^{16}\ kg/year.$$

Radiation of energy of a white hole of Earth in a year makes now:

$$dE_n dt = E_0 t_s = 15{,}7 \cdot 10^{25} \cdot 315{,}57 \cdot 10^5 = 5 \cdot 10^{33}\ J/year.$$

What will not bad be coordinated with the data provided by V. F. Blinov (see Table 4).

If to assume as a basis that the radius of an internal kernel of Earth $R_c$, as it is considered, it is equal $1{,}22 \cdot 10^3$ *m*, it is logical to assume that that change of these radiuses $R_{cn}$ in time occurs in proportion to change of radiuses of Earth (since both that and others depend on *M* and *g)* also are calculated by a formula (6). Change of radiuses of an internal kernel of Earth in time is provided in table 11.

Table 11

| Mil.years | 200 | 160 | 120 | 80 | 40 | 0 |
|---|---|---|---|---|---|---|
| $R_{cn}x10^6\ m$ | 0, 67 | 0,736 | 0,82 | 0,92 | 1,06 | 1,22 |

Knowing change of power for this period of time of radiation of a white hole of Earth, it is possible to calculate temperature in an internal kernel for every period of time $T_{nc}^0$. But, in this case, it is necessary to consider the fact that, unlike a free plasma sphere which happens, for example, at stars the internal kernel of Earth is surrounded with a cover which will reflect a part of infrared energy, increasing thereby heating of an internal kernel. Therefore we need to consider dullness coefficient $\varepsilon_{gr}$ gabbro which is close to $\varepsilon_{gr}$ basalt $\approx 0{,}78$, and to calculate this temperature by a formula (8).

$$T_{nc}^0 = (\varepsilon + \varepsilon_{gr}) \sqrt[4]{\frac{W_n}{V_{nc}\sigma}} = (\varepsilon + \varepsilon_{gr}) \sqrt[4]{\frac{3W_n}{4\pi R_{nc}^3 \sigma}}, \qquad (8)$$

where $T_{nc}^0$ - Earth kernel temperature for this period of time *(grad $K^0$)*;

$\varepsilon$ - coefficient of gray-body blackness for Earth kernel $\approx$ *1*;

$\varepsilon_{gr}$ - coefficient of reflection of the lower bound of external Earth kernel $\approx 1 - 0{,}72 \approx 0{,}28$;

$\sigma$ – Stephan – Boltzmann constant = $5{,}67 \cdot 10^{-8}$ *($W/m^2 \cdot K^4$)*;

$V_{nc}$ - the volume of an internal kernel of Earth for this period of time *($m^3$);*

$R_{nc}$ - radius of an internal kernel of Earth for this period of time *(m)*.

Dependence of temperature on border of an internal kernel of Earth for every period of time is given in table 12.

Table 12

| Mil.years | 200 | 160 | 120 | 80 | 40 | 0 |
|---|---|---|---|---|---|---|
| $T_{nc}^{0}$ $K$ | 6050 | 6000 | 5900 | 5760 | 5700 | 5600 |

Change of average density of Earth during the different periods of time can be determined by a formula:

$$\rho_{En} = \frac{3M_{En}}{4\pi R_{En}^3} .$$

Change of average density of Earth during the different periods of time is given in table 13.

Table 13

| Mil.years | 200 | 160 | 120 | 80 | 40 | 0 |
|---|---|---|---|---|---|---|
| $\rho_{En}$ $x10^{10}$ кг/м$^3$ | 5,56 | 5,47 | 5,5 | 5,54 | 5,5 | 5,52 |

It is possible to notice that both temperature and average density of Earth during the different periods of time, changes very little. Taking into account an error of calculations and a lack of reliable data, one may say that these two parameters, practically, remain constants. In this regard, it is logical to assume that temperature in other planets will depend on the average density of these planets too.

Pressure in Earth during the different periods of time can be determined on a formula:

$$P_{En} = R_{En} \cdot \rho_{En} \cdot g_{En} ,$$

where $P_{En}$ - pressure in Earth during the set time period;

$R_{En}$ - Earth radius during the set time period;

$\rho_{En}$ - the average Earth density during the set time period;

$g_{En}$ – acceleration of gravity on the Earth's surface during the set time period.

Dependence of power of IK of radiation of energy of Wh1 of Earth on average pressure in Earth for every period of time is given in tab. 14.

Table 14

| n | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| $P_{En}$ $x10^{10}$ kg/m$^2$ | 10,5 | 12,9 | 16,6 | 21,3 | 26,6 | 34,5 |
| $W_{whn} \times 10^{17}$ $W$ | 41,5 | 52 | 66,7 | 85,1 | 108,1 | 137,4 |

It is possible to notice that coefficient of dependence of power of IK of radiation of energy of Wh1 of Earth on pressure in Earth $P_{En}$, or planets $P_p$ it is equal:

$$\tau_{wh} = \frac{W_{whn}}{P_{En}} \approx 4 \cdot 10^7 \, W \cdot m^2 / kg \quad \text{or} \quad W_{wh} \approx 4 \cdot 10^7 P_p . \quad (9)$$

The formula of dependence of power of radiation of energy of a white hole of Earth on average pressure in Earth for every period of time can be presented in the following form:

$$W_{En} = W_{E_6} e^{-2,1(1-P_{En}/P_{E_6})} . \quad (10)$$

Let's calculate temperature of a surface of an external kernel of Earth:

$$T^0_{exc} = \varepsilon_{gr} \sqrt[4]{\frac{W_6}{V_{exc}\sigma}} = \varepsilon_{gr} \sqrt[4]{\frac{3W_6}{4\pi R^3_{exc}\sigma}} \approx 1400 K^0 ,$$

where $T^0_{exc}$ - temperature of an external kernel of Earth*(grad $K^0$)*;

$\varepsilon_{gr}$ - coefficient of a dullness of an external Earth kernel $\approx 0,72$;

$\sigma$ –Stephan – Boltzmann constant = $5,67 \cdot 10^{-8}$ *($W/m^2 \cdot K^4$)*;

$V_{exc}$ - volume of an external kernel of Earth *($m^3$);*

$R_{exc}$ - radius of an external Earth kernel *(m)*.

For magma temperature at Mokhorovichich's border and bark of Earth, according to a formula (8) taking into account $\varepsilon_{gr}$ - Earth's mantle dullness coefficient $\approx (0,62 \div 0,72)$, we will receive temperature $\approx (600 \div 800) K^0$. It is very well coordinated with modern data on an internal structure of Earth.

Let's try to calculate conditions of emergence of a white hole and its parameters. The analysis of pressure in stars and planets, and also their internal structure and living conditions allows assuming existence of several main types of white holes. The white hole of the first type (Wh1) arises with pressure equal $5 \cdot 10^{10} \, N/m^2$, at the same time conditions for overcoming the Coulomb barrier are created and there are thermonuclear reactions to sides of stability and can be supported further due to effect of tunneling. Temperatures of such white holes $T^0 = 10^8 K^0$. White hole of the second type (Wh2) arises with pressure above $5 \cdot 10^{10} \, N/m^2$, at the same time there are steady thermonuclear reactions due to overcoming the Coulomb barrier. Temperatures of such white holes will be from100 mil. $K^0$ and above. There is also the third class of white holes (Wh3) with a range of temperatures $2 \cdot 10^{10} K^0 \le T^0_{wh3} \le 2 \cdot 10^{12} K^0$, they will be considered below.

The analysis shows that the smallest space body suitable for this role probably is the Moon on which there are traces of volcanic activity, and, even, its manifestations were observed. Scientists from Massachusetts Institute of Technology managed to prove that at an early stage of existence the

Moon had a magnetic field exceeding magnetic field of Earth now. The news service Science NOW reports about it. Article of researchers is published in the Science magazine. It can be explained with existence of the small plasma kernel which is slowly rotating in a planetoid. We do not consider satellites of planets – giants on which cryo-volcanism traces as such processes can happen at rather small temperatures are found and have other reasons.

According to the existing theory, in the course of education by accretion from space dust of a proto planetary cloud, the Moon gradually contracted under the influence of forces of gravitational compression. At last, when pressure in it reached threshold value, there could be conditions for formation of a white hole. It is known that the Moon had a magnetic field similar earlier terrestrial which existed long enough, even to astronomical measures [61]. According to Renee Weber from the Marshall center of space flights of NASA and Raphael Garcia from University of Toulouse in France, on the basis of the seismic researches conducted by them, on the Moon still there is a heated kernel with a diameter of 330 km and the melted cloak with a diameter of 480 km. A number of the famous astronomers – researchers of the Moon, in particular, John Keller, the scientist of the LRO project from the Center of space flights of Goddard in Greenbelt, the State of Maryland, consider that on the Moon volcanic activity was carried out until recently. Now pressure in the Moon makes:

$$P_{Sel} = R_{Sel} \cdot \rho_{Sel} \cdot g_{Sel} \approx 9,43 \cdot 10^9 \; N/m^2 \;\; ,$$

where $P_{Sel}$ - pressure in the Moon;

$R_{Sel}$ - Moon radius = $1,738 \cdot 10^6$ m;

$\rho_{Sel}$ - average Moon density = $3,35 \cdot 10^3$ $kg/m^3$;

$g_{Sel}$ – acceleration of gravity on the surface of the Moon = 1,62 $m/s^2$.

We calculated pressure $P_{wh}$, proceeding from the modern radius and density of the Moon. Most likely, $P_{wh}$ at the beginning of formation of the Moon was slightly more and reached the minimum necessary pressure- $5 \cdot 10^{10} \; N/m^2$, but, eventually, it decreased because of expansion of the Moon, owing to an internal warming up and its small weight. It led to reduction of density of a celestial body and pressure in it. Therefore now the white hole in the Moon, practically, stopped the existence. On Mars pressure makes now $4,9 \cdot 10^{10} \; N/m^2$, what is a little lower than the Coulomb barrier, minimum necessary for overcoming, too. Therefore and on Mars magnetic field which earlier it had gradually disappeared. Loss of magnetic field led to reduction of density of the atmosphere and temperature by its surfaces. On Venus the plasma kernel exists, but it very slowly rotates because of features of abnormal rotation of Venus therefore cannot create noticeable magnetic field.

Let's calculate the power of radiation of energy of Wh1 in the Moon $W_{whSel}$ at that time:

$$W_{whSel} = \tau_{wh} \cdot P_{Sel} = 20 \cdot 10^{17}\ W,$$

where $\tau_{wh}$ - coefficient of dependence of power of IR of radiation of energy of Wh1 on pressure in the planet.

Having taken entry conditions in the Moon at its education for the minimum requirements for Wh1, it is possible to determine its minimum radius $R_{wh(\min)}$ on a formula:

$$R_{wh(\min)} = \sqrt{\frac{W_{wh}}{4\pi T^4 \sigma}} \approx 1,7 \cdot 10^{-4} m\ .\ \ (11)$$

So, we can write down the minimum conditions of emergence of a white hole (Wh1), and its parameters:

where $P_{wh(\min)} \approx 10^{10}\ N/m^2$ - necessary pressure for creation of a vacuum nonequilibrium;

$T^0_{wh(\min)} \approx 10^8 K^0$ - minimum temperature of Wh1;

$R_{wh(\min)} \approx 1,7 \cdot 10^{-4}\ m$ - the minimum radius of Wh1;

$W_{wh(\min)} = 20 \cdot 10^{18}\ W$ – the minimum power of Wh1.

It is also logical to assume that vacuum is non-uniform on the density. In that case, Wh1 radiation power in time will look as follows:

$$W_{wht} = W_{wh} \cdot k_{\rho vac} dt\ ,\quad (12)$$

where $W_{wht}$ - change of power of a white hole in time;

$k_{\rho vac} \cdot dt$ - change of density of vacuum in time.

Radius of an Earth white hole $R_{Ewh}$, calculated by a formula (11), is equal:

$$R_{Ewh} = \sqrt{\frac{W_{Ewh}}{4\pi T^4 \sigma}} \approx 4,4 \cdot 10^{-4} m,$$

at $T^0_{wh} = 10^8 K^0$ and capacity $W_{Ewh} = 137,4 \cdot 10^{17}\ W.$

Possibly, there are three classes Wh1 - it is the classes Wh1P1, Wh1P2 and Wh1S. In the class Wh1P1, pressure in a celestial body $10^{10} \le P_{wh} \le 10^{11}\ N/m^2$, and temperature $T^0_{whP1} \approx 10^8 K^0$. In this case, radiation power, after the beginning of work of Wh falls and the white hole works at a stability side, such celestial bodies as the Moon, Mars and Mercury belong here. In the class Wh1P2, with a pressure $10^{11} \le P_{wh} \le 10^{12}\ N/m^2$ and temperatures there are a little exceeding $T^0_{whP2} \ge 10^8 K^0$, Wh

works steadily, gradually increasing radiation power, Venus, Earth and all planets – giants, except Jupiter get into this group. At Jupiter pressure in the center reaches $P_{wh} \approx 2,3 \cdot 10^{12} N/m^2$, and it already belongs to the class Wh1S where space objects get with $10^{12} \le P_{wh} \le 10^{13}$ and temperatures in the center $T^0_{wh1S} \ge 10^8 K^0$. Wh1S of Jupiter, creating a powerful plasma kernel in its center, provides it with strong magnetic field and powerful thermal, electromagnetic and, even, x-ray radiation.

Increase of mass of planets, owing to action in them of Wh1, leads to gradual removal them from the Sun, lifting a heliocentric orbit. As kinetic energy of the planet orbiting round the Sun equals $E_p = 2m_p M_\odot G$, that increase in mass of the planet $m_p$ leads to increase in this energy that is equivalent to turning on of the engine of the spacecraft in an orbit and to its transfer to more remote orbit. For this reason, earlier on Earth and on Mars it was warmer.

Thus, the power of radiation of energy of a white hole depends on pressure in the planet and on its weight, and we can calculate the power of radiation of energy of a white hole in planets of terrestrial group of our Solar system on a formula (9).

Then, for planets of Solar system, the classes Wh1P1 and Wh1P2 it is possible to make such table of power of IK of radiation of white holes (Table 15).

Table 15

| *Planet* | Mercury | Venus | Earth | Mars | Saturn | Urani-um | Neptu-ne |
|---|---|---|---|---|---|---|---|
| $W_{whn} \times 10^{17} W$ | 19,8 | 112,2 | 137,4 | 19,6 | 167,6 | 114,4 | 180 |

**8. Classification of white holes. Temperature in stars, quasistar objects and intra galactic kernels.**

Planets – giants of Jupiter type and sub stars like Brown dwarfs belong to the class Wh1S. Wh1S differs from Wh1 of other types in the fact that at their emergence and existence, there is an overcoming the Coulomb barrier and these white holes begin to initiate and support weak thermonuclear reactions in such space objects. It is very difficult to count the power of their white holes as they begin to radiate actively energy not only in IK, but also in other ranges. The fact that these planets – giants radiate much more thermal energy can be an indirect sign of existence in such objects of a powerful power source, than receive, and in their atmosphere there are strong atmospheric storms which cannot be explained with influence of a maternal star. For example, Jupiter radiates (generally in infrared area of a range) 60% more than energy, than receives from the Sun [44], and the speed of wind exceeds 600 km/h [38]. Temperature of an upper atmosphere

makes about 120K$^0$, but according to the lander of Galileo, already at a depth of 146 kilometers it was 426K$^0$ [59]. It is supposed that at depths over 7 thousand km temperature reaches 6000K$^0$. Temperature of a surface of a sub star of the Brown dwarf Y classes WISE 1828+2650 ~ 25C0 (300 K$^0$) [23]. While the dispersion of radiuses of sub stars of all types does not exceed 10 – 15%, temperatures of their surface can vary from, about, 3000K$^0$ to 22000K$^0$, approaching in the top parameter of temperature of a surface small stars.

As, in this case, we face a large number of unknown parameters, we will try to simplify a problem of calculation of power of radiation of Wh1S, having limited to comparison of IR of radiation of temperature of a surface of these objects, in view of that their radiuses, differ all on $(1{,}1 \div 1{,}15)R_J$ or $k_{Rj} = (1{,}1 - 1{,}15)$, and radiation in other ranges, in percentage terms, is proportional to IK to radiation, then we can write such formula of dependence $W_{wh1S}$ from *T4*: $\Delta W_{wh1S} \div \frac{k_{pvac} T^4}{k_{Rj}^2 \varepsilon_{gr}^4}$,

or, owing to very small size of a variation $k_{Rj}^2$, and $\varepsilon_{gr} = 1$,

$$W_{wh1S} \div k_{pvac} T^4 \quad (12)$$

Unlike planets, in stars more rough nuclear reactions initiated and supported by White holes proceed. Therefore, temperatures have to be the minimum temperatures of white holes in a subsoil of stars $T_{wh}^0 \geq 10^8 K^0$, and, it agrees (12), these temperatures have to be proportional to the fourth degree of temperature of a surface of stars. Then temperatures of white holes of the Wh1S and Wh2 type can be calculated by a formula:

$$T_{wh2}^0 = \frac{T_S^0}{3} \cdot 10^6 K^0.$$

Temperatures of the white holes which are in the center of a star depending on its class and temperature of a surface are specified in table 16.

Table 16

| Star class | Range of temperatures of a surfacex$10^3$ T$^0$K | Range of temperatures of white holesx$10^9$ T$^0$K |
|---|---|---|
| Y | 0,3 – 2,2 | 0,1 – 0,73 |
| M | 2,2 – 3,5 | 0,73 – 1,17 |
| K | 3,5 - 5 | 1,17 – 1,7 |
| G | 5 - 6 | 1,7 – 2,0 |
| F | 6 – 7,5 | 2,0 – 2,5 |
| A | 7,5 - 10 | 2,5 – 3,3 |
| B | 10 - 30 | 3,3 – 10,0 |
| O | 30 - 60 | 10,0 – 20,0 |

Work of a white hole can be illustrated on the example of our Sun. The white hole which is in a solar kernel supports course of thermonuclear reactions in the kernel, and feeds with energy the Sun. The stream of neutrons expiring from a white hole untwists a solar kernel which, thereof

rotates four times quicker, than a star [64]. Energy of rotation of a kernel, by means of friction, is transmitted through inside layers external, being gradually slowed down.

Rotation of space objects is a consequence, promotions of their internal kernels a stream of the particles which are taking off from a cell of a nonequilibrium, having the impulse of rotation $P_G$ appearing at a particle at the expense of an additional impulse which was available for it in hyper space. In that case, energy of rotation of a neutron $E_{\omega n^0}$, taking off from a cell of a nonequilibrium it is possible to calculate by a formula:

$$E_{\omega n^0} = \mu_3 \frac{E_{\omega 3}}{\vartheta_n},$$

where $E_{\omega 3}$ - energy of rotation of a space object;

$\mu_3$ - the coefficient of friction of rotation of a body which is formed owing to influence of various space factors.

Considering that kinetic energy of the neutron which is taking off from a nonequilibrium cell with velocity of light equals $E_{\omega n^0} = m_{n^0} c^2$, it turns out that total energy of the particle which is taking off from a nonequilibrium cell will be:

$$\sum E_{n^0} = E_{nn^0} + E_{\omega n^0} = \frac{\vartheta_n m_{n^0} c^2 + \mu_3 E_{\omega 3}}{\vartheta_n}.$$

Therefore the internal kernel of any star will rotate much quicker than its external layers, and, than the star is brighter, than it is more and massive, that it has to rotate quicker.

White holes of Wh3kS which are in quasi star objects, (such as pulsars, quasars, etc.), and Wh3G which are in kernels of galaxies will be the following class of white holes. These white holes initiate and support not thermonuclear reactions, as in stars, and a thermo quark – gluon reactions, creating in internal kernels of these objects a quark – gluon plasma.

Temperature of white holes of Wh3kS probably lies in limits: $2 \cdot 10^{10} K^0 \le T^0_{wh3kS} \le 10^{11} K^0$. Wh3G temperature probably makes $16 \cdot 10^{11} K^0 \le T^0_{wh3G} \le 2 \cdot 10^{12} K^0$ (Thermodynamic balance of transition of the first sort a quark – gluon plasma).

Similar objects radiate energy in the wide range, from a powerful radio emission to x-ray. Same also much bigger luminosity of quasars in comparison with blue stars O classes, and the fact that there cannot be stars with bigger, surface temperature, than class stars Oh, as thermonuclear reactions exhausted the power opportunities.

As we, in this case, deal not with the usual plasma appearing as a result of thermonuclear reactions any more, and with more high-energy a quark – gluon plasma, we cannot judge Wh3

temperature any more, on temperature of a surface of these objects as, in this case, the big power of radiation is spent for other ranges of energy.

From hyper space, together emergence and existence of Wh3, any more not twirled stream of neutrons, and quarks which create the high-temperature jets consisting of high-energy elementary particles and energy in the form of electromagnetic radiation escapes, throwing out them along an axis of rotation of a white hole on huge distances from hundreds of thousands to millions of light years.

The kernels of galaxies having the huge weight, and very small coefficient of transmission of energy of rotation on external sleeves through the discharged environment, electromagnetic and gravitational fields rotate slowly, and, here, the quasars, pulsars and other quasi star objects having in Wh3kS which mass is much less than mass of kernels of galaxies rotate with a huge speed, pulsing and changing the gloss. They throw out jets, however, of smaller power and on smaller distance too.

Quark - gluon plasma forms an internal kernel of a galaxy, then, as the external kernel consists of high-temperature plasma in which thermonuclear reactions proceed. The external cover of a kernel of a galaxy (Baldj) is usual plasma with impregnations of the stars (Fig. 30) created in this area of a kernel.

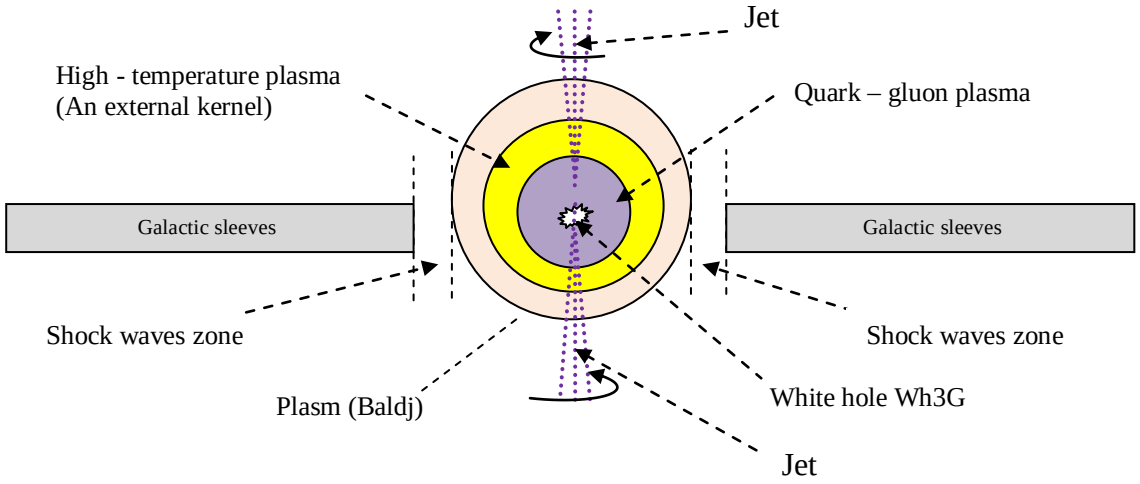



*Fig.30. The conditional drawing of structure of a galaxy with a white hole inside.*

As confirmation to it can serve the publications appearing recently that, accretion disks of ultra bright x-ray sources consist of high-energy T0 plasma of an order $T = 5 \cdot 10^4 K^0$. According to the head of the laboratory of physics of stars of Special astrophysical observatory of RAS (SAO RAS), the doctor physical.- math. Sergey Nikolaevich Fabrik's sciences, at supercritical accretion the pressure force of radiation exceeds force of a gravitational attraction (?) therefore from the areas surrounding a black hole a powerful stream **substance expires**. And it can be observed [28].

Researches were conducted on the object having a constant supercritical accretion disk - the double SS433 system consisting of a supergiant weighing 20 masses of the Sun and the black hole weighing about 10 masses of the Sun found in 1979 (Fig. 31).

The fact that, contrary to modern ideas of black holes, from them **substance" moreover** and on condition of **"the pressure force exceeding force of a gravitational attraction"** can **"expire a powerful stream** is represented a little strange**.** Whether it is simpler to agree, according to criterion of "Ockham's Razor", that in this object there is a source generating substance and energy, for example, such as a white hole, the Wh3 type.

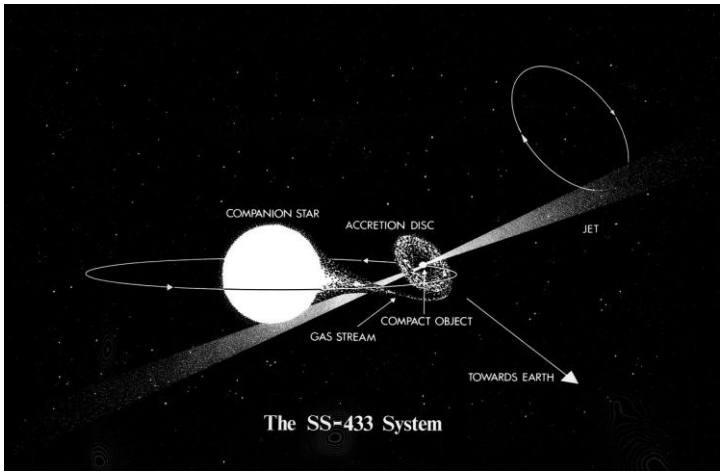



*Fig.31. The double SS433 system with a supercritical accretion disk.*

By the present moment in a number of galaxies powerful x-ray sources are open. Since 2000, they are found by means of Chandra X-ray Observatory, NASA. They were called ultra bright x-ray sources. These are objects which x-ray luminosity in hundreds and thousands times more, than luminosity of the brightest black holes of galaxies. This research disproves the opinion existing at the moment that formation of ultra bright x-ray sources is connected with the fact that the first stars which were formed right after the birth of our Universe on red shifts of z=15-25, had to be very massive - hundreds and thousands of mass of the Sun. Respectively, they had to make approximately the same massive black holes weighing one hundred - thousands of mass of the Sun. These are so-called "Black holes" of intermediate masses which will be taken later by the formed galaxies, and will get to congestions of stars, capturing them. It is interesting that SS433 unevenly pulses and has a precession.

But on modern representations black holes to pulse, or cannot cause a pulsation and furthermore, to be "ultra bright x-ray sources", and, here, white holes of Wh3kS can, just, easily apply for this role. Energy oscillation variations in an uncertainty zone, as shown in fig. 25, can give uneven oscillation of energy of big power, and convection processes and fluctuations high-

temperature a quark – the gluon plasma which is in a plasma kernel of an object SS433 will cause a precession at its rotation.

Today it is considered to be that the majority of galaxies was formed at merge of smaller objects. It is supposed that in our Galaxy we observe the final stage of this process: small galaxies satellites are broken off, their stars are taken; from intergalactic space gas clouds continuously arrive. Thus, formation of the Galaxy continues what mysterious clots of hydrogen weighing up to 10 million masses of the Sun and diameters about several tens of thousands light years (Fig. 32) testify to.

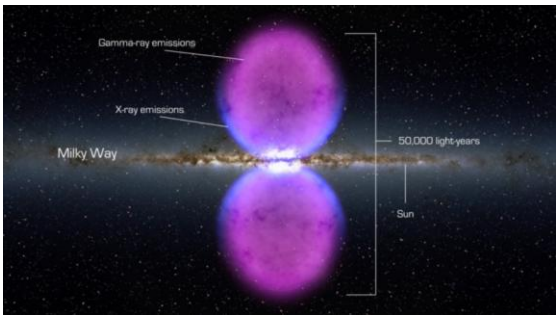



*Fig. 32. Gas clouds in a galaxy the Milky Way.*

They were opened in *1975*, and this the last *5 years* shown: some of these clouds as if fall on the Galaxy. It turned out that the Galaxy "breathes", pushing out gas, and involves it back, as if taking breaths and exhalations. All this speaks about existence of the huge sphere of the hot rarefied plasma surrounding our Galaxy. In our Galaxy about 100 *billion* stars, the majority of which is concentrated in a thin disk with a diameter about 100 thousand light years and about 3 thousand light years thick. They address around the center of the Galaxy almost on circular orbits. In particular, the Sun rushes with a speed about 220 km/s. Other *10 billion* stars form galactic "gala" - the huge sphere covering a disk. The interstellar space is filled with gas and dust, and the main part of this interstellar environment also moves on circular orbits around the center of the Galaxy and in a bigger degree, than stars, is concentrated in its disk. As well as in the atmospheres of planets, the interstellar environment is the most dense "at the bottom" - in the plane of a galactic disk, - and in process of removal from it density decreases. In the 21st century astronomers entered already with four hypotheses of the nature of this phenomenon: the gas which remained after formation of galaxies; circulation of gas in "the galactic fountain"; scraps of Magellan Clouds; intergalactic mix of gas and dark substance. To make a choice between them, new data were required. By the end of the 20th century astronomers surveyed all sky in the radio line of neutral hydrogen allowing to find gas with a temperature about 100 K0. In 1988 Aad Hulbosch from Nijmegen university and one of authors of article (Vakker) by means of the radio telescope of observatory of Dvingelo in the

Netherlands finished the review of the northern hemisphere of the sky. In 2000 Mr. Ricardo Morris with colleagues on the radio telescope Villa Elisa in Argentina surveyed the southern hemisphere. The third review was published in 1997 by Dap Hartmann and Butler Burton from the Leiden observatory. They carried out full mapping of neutral hydrogen in the Galaxy. Data of the FUSE satellite speak about presence at clouds of gas of very hot component. FUSE found lines of absorption of strongly ionized atoms of oxygen (which lost up to 5 of 8 external electrons). Such extent of ionization speaks about temperature near $T = 3 \cdot 10^5 K^0$, which can arise when cold *(100 $K^0$)* neutral hydrogen makes contact with exclusively hot (about one million Kelvin's) gas. But same it can be observed also when cooling extremely hot gas up to the temperature $T = 3 \cdot 10^5 K^0$. All this forms the galactic crown consisting of hot plasma with a temperature on edge of an order $T = 10^6 K^0$, on the structure reminding solar (Fig. 33).

*Fig. 33. Galactic crown.*

So, the first direct evidence of intake of fresh gas in the Galaxy is received. It brings the mass of new substance, equivalent *0,1-0,2* mass of the Sun in a year that in the sum makes from 10 to 20% of the lump necessary for dilution of galactic gas and an explanation of the chemical composition of stars. However, astrophysicists say what still remains not clear: whether Gallo's remains, deep intergalactic space or the dwarfish galaxy absorbed by our Galaxy are primary source of this gas?

As it was shown above, existence of white holes in the centers of internal kernels of galaxies could be a good explanation of this problem. Energy of Wh3 initiating thermo – the quark gluon reaction in a galactic kernel owing to what form it clouds of high-temperature gas have to stream, quite is enough for its heating to temperature $3 \cdot 10^5 K^0 \le T \le 10^6 K^0$. It is also a source of the new substance joining a galaxy, generally in the form of hydrogen clouds.

$$2n_0 \to 2p^+ + 2e^- + 2\nu_{\bar{e}} \uparrow = H_2 .$$

Now it is known that galaxies have various forms and structures (Fig. 34).

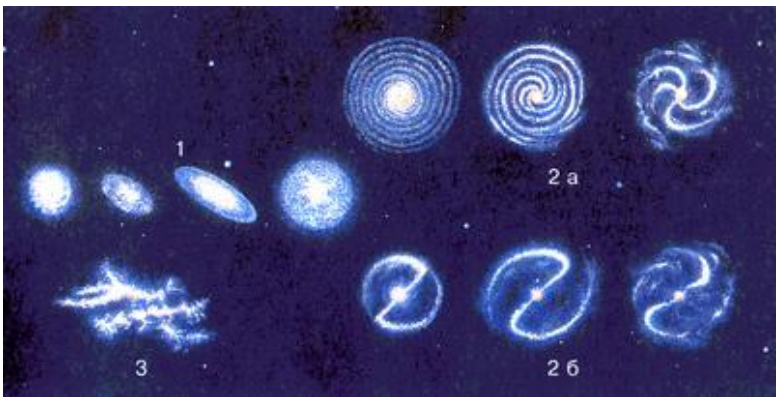



*Fig.34. Various forms of galaxies.*

Galaxies differ in a big variety: it is possible to distinguish sphere like elliptic galaxies, disk spiral galaxies, galaxies with a crossing point (bar) from them, lens galaxies , dwarfish, wrong etc. There are many descriptions of appearance of various galaxies and their internal structure. But it is, almost, impossible to find an accurate explanation: why galaxies have, exactly, such structure and the form?

If we assume as a basis the fact that in kernels of galaxies there are white holes of the Wh3G type, then the form of galaxies can be explained with existence in them one, or several white holes, and also their power and age.

*Fig.35. A spherical galaxy M2.*

So, for example, the form of spherical galaxies (Fig. 35) can be explained with rather recent formation of a galaxy or a white hole of small power. Rotation speed around an axis at such galaxy is small therefore compression at poles is absent. Such galaxy, or is not untwisted yet, or Wh3G do not have enough energy for its promotion, and this process goes slowly.

*Fig.36. Elliptical galaxy.*

As we see, elliptical galaxies have more dense structure, in comparison with spherical (Fig. 36). Possibly, it is a galaxy older; it is flattened from poles. The white hole already untwisted a kernel of this galaxy to bigger speed; in comparison with spherical that gave its form of an ellipse.

*Fig.37. Spiral galaxy.*

Spiral galaxies (Fig. 37) make the most widespread type of galaxies in the Universe. These are well untwisted galaxies having the blin-like form and, as a rule, the big disk consisting of miscellaneous (from the 2nd to 10) quantities of the sleeves dispersing in different directions. Apparently it is galaxies which are more senior than spherical and elliptic galaxies, and Wh3G located in the center of their internal kernel untwisted them to the speed at which they took the blin-like, disk-shaped form.

*Fig.38. Wrong galaxy.*

The wrong galaxies (Fig.38) can be obliged by the form as existence of several white holes which are the centers of structure, and a consequence of interaction of galaxies at collision. In the latter case, all the same, such galaxy will have several centers in which Wh3G can settle down.

Between a kernel of a galaxy and sleeves there is a space width in several million light years. This space, through которое in sleeves is delivered the substance from a galaxy kernel produced by a white hole formed at the expense of shock waves, owing to a kernel pulsation. Pulsations, in turn, arise because of a variation of allocation of energy in a zone of uncertainty (Fig.25). The prevailing helicoids structure of galaxies can be explained with existence in their kernels of one powerful white hole.

Great attention of astrophysicists is occupied by questions of education and formation of sleeves of a galaxy which rotate with a speed of a galaxy, a little other than kernel speed. It is experimentally established that angular speed $\omega$ this movement is function of radius, i.e. $\omega = \omega(R)$ , decreases with removal from the center of a galaxy. At such nature of rotation big gas clouds or other extended educations stretch and become similar to a part of a spiral branch. However spiral branches could not arise in such way. Differential rotation is capable to create the structures similar to observed sleeves; it is less than in $10^9$ years. During several turns of the Galaxy which age exceeds $10^{10}$ such structures had to collapse, spatial distribution of hydrogen, dust and hot stars to become irregular that in most cases is not observed (Fig.39).

*Fig. 39. Sleeves in a spiral galaxy.*

B. Lindblad (Sweden) stated the first the idea that spiral branches can be density waves. In 1964 Ts. Lin and F. Shue (USA) showed that in galaxies there can really be waves of density of a spiral form rotating with an angular speed $\omega = const$ (i.e. the form of the front of such waves is not distorted by differential rotation of a galactic disk) and extending on radius with a certain group speed $v_{гр уп}$ . As in the Galaxy of gas it is not enough (2-5%), waves extend on the star population in which they can be excited, and gas already reacts to indignation of the gravitational potential connected with the waves running on system of stars, i.e. its movement in gravitational field of sleeves is not self-coordinated.

In other words, certain waves of density which are created by a source of emergence of such waves have to participate in formation of sleeves of a galaxy. In classical model with a black hole

inside, such source is not observed. Existence of a white hole in a kernel of a galaxy can quite be such source as process of allocation of energy of Wh3G, is followed by its oscillations which have the pulsing character. Owing to these fluctuations, also the kernel of a galaxy pulses, causing density waves which are transmitted through interstellar gas. These waves of density also form galaxy sleeves.

## 9. Explanation of some astrophysical problems.

### 9.1 Explanation of "Paradox of the weak young Sun".

By means of this concept it is possible to explain some astrophysical problems which explanation causes difficulty now. One of such problems is, so-called, "A paradox of the weak young Sun". This astrophysical paradox arose when scientists realized that our Sun is nearly 30% brighter, than was four billion years ago. But, if this is true, then Earth had to receive much less heat in the past, and, so the surface of the planet would be entirely frozen. At the same time geological researches of Achaean sedimentary breeds show that during this era on Earth there was a humid and warm climate. Some scientists put forward the theory that Earth at that time was closer to the Sun [48], respectively, she received more energy. However if the Sun radiated 30% less energy, then, how closer to it there would have to be Earth? According to ideas of existence in the Sun of a white hole which initiates and supports the thermonuclear reactions proceeding in its subsoil, we have no need to say that our star far back in the past was so weak. Moreover, it is possible to reconsider evolution of our star and emergence of planets of solar system. Having the internal power source supporting thermonuclear reactions and supplying the Sun with fuel our star can behave in a different way. About 5 - 6 billion years ago the power of radiation of the Sun exceeded force of the magnetic and gravitational field constraining plasma, the star blew up, having dumped a small part of the cover, (1 – 2%) having again decreased in sizes (Fig.40).


*Fig.40. The sun dumps a part of the cover as a result of explosion.*

The mass of the Sun fell, also pressure respectively fell in its center that, in turn, led to reduction of power of radiation of a white hole. The planets making solar system of that period, explosion safely out of Oort cloud limits, perhaps part of them departed to interstellar space. An

Oort cloud, and, perhaps, and the Kipper belt, were partially formed of splinters of these planets (Fig. 41).

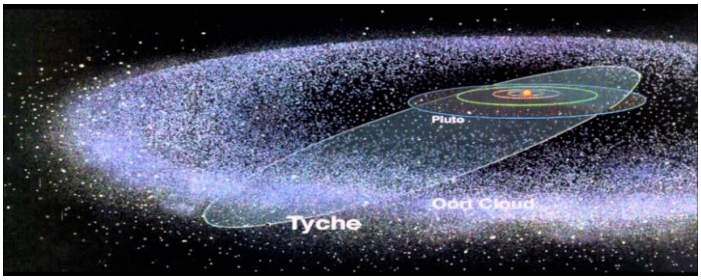



*Fig.41. Kipper belt and Oort cloud.*

Such scheme can explain existence of the "Wandering planets" in interstellar space appearing there as a result of explosion of their maternal star.

From a proto planet plasma cloud, new planets were gradually formed. In that case, the power of radiation of the Sun can drop by only several percent, but also planets were a little closer to a star earlier, and, in process of increase of weight, began to move away from it slowly.

Moving on an orbit around the Sun, the speed of the planet is in an interval between the first and second cosmic speeds of a star. As it was already shown above, increase in mass of a space body, is equivalent to increase in force applied to a body, or creation of the draft transferring a body to higher orbit. Same it is possible to explain gradual removal of the Moon from Earth. And, this removal cannot be uniform as if as it is considered, the Moon appeared at Earth 4,5 billion years ago, then during this time, being removed as now, on 4 cm a year, it, at that time, would have to be closer to Earth, approximately, on 180 000 km, or is 47% closer, than now. If the mass of the Moon increases because of a white hole, then increase of weight, and, therefore, and removal speed from Earth are uneven and go after very flat exhibitor.

**9.2 A problem of the sizes of flora and fauna of Earth during the prehistoric period.**

As indirect demonstration that earlier on Earth the attraction was much less serves that on the Pan-gay high ferns and horsetails grew, and, also huge multi ton dinosaurs who could not exist presently roamed about it. Indirectly presence of smaller acceleration of gravity on Earth at the time of the Mesozoic Era confirms existence of dinosaurs at that time.

Let's try to calculate a possibility of increase in radius and mass of our Earth and, as a result, strengthening of its gravitational field, proceeding from the fact that hundreds on Earth lived millions years ago huge pangolins – dinosaurs.

So, according to V. F. Blinov: giraffe

*180 million years ago* $g = 4{,}2\ m / s^2$;

Now $g = 9{,}81\ m / s^2$.

At the time of the Jurassic Period on Earth there lived the highest of the known pangolins – brachiosaurs, on another one of species of a brachiosaur is called Giraffe titan, living approximately at this time (152 - 145 million years ago), (Fig. 42 (a)) which are considered as analogs of modern giraffes (Fig. 42 (b)) of that time.

*(a)*

*(b)*

*Fig.42. A brachiosaur (Giraffe titan) (a) and a giraffe (b).*

Average height of a brachiosaur made *12 meters*. Average height of a modern giraffe is *5,2 meters*. Heart of a brachiosaur on volume, approximately, equaled to heart of a giraffe. Considering the fact that the head of a brachiosaur was very small and, his brain, approximately, equaled on volume to a brain of a giraffe, we will accept that the mass of blood which needed to be downloaded to the head, too, approximately was identical. Let's take for $g_1$ acceleration of gravity on Earth in the Jurassic Period, and for $g_2$ acceleration of gravity now - $9{,}81\ m/s^2$. Let's take for $H_1$ the possible height of a brachiosaur – *12 m*, and for $H_2$ height of a modern giraffe of equal *5,2 m*.

Then, proceeding from these data, it is easy to count that the energy necessary on delivery of blood to the heads of a brachiosaur and a giraffe equals:

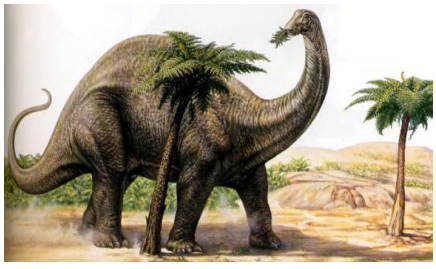
$$E = mg_1H_1 = mg_2H_2 \ , \quad \text{or} \quad g_1H_1 = g_2H_2 \ .$$

From here it is easy to count acceleration of gravity during this period when brachiosaurs lived:

$$g_1 = \frac{H_2}{H_1} g_2 = \frac{5,2}{12} \times 9,8 = 0,43 \times 9,8\ м/c^2 = 4,21 m/s^2$$

The biggest animal on Earth presently – the Elephant (Fig.43 (a)), weight of its 7 - 8 tons. It is so heavy that cannot jump. One of the largest dinosaurs – the Apatosaurus (Brontosaur) (Fig.43 (b)) living at that time on Earth weighed, about, 16 - 18 tons.

*(a)*



*(b)*

*Fig. 43. An elephant (a) and an Apatosaurus (brontosaur) (b).*

Let's count a ratio of scales of these animals. Let's take for $m_1$ – the mass of the Apatosaurus, $g_1$ acceleration of gravity on Earth in the Jurassic Period = *4,2 m / s*$^2$, for $m_2$ – the mass of the Elephant, for $g_2$ acceleration of gravity now - *9,81 m / s*$^2$. Then:

$$P = m_1 g_1 = m_2 g_2, \qquad m_1 = \frac{g_2}{g_1} m_2 = \frac{9,8}{4,2} \times 7,0 = 2,33 \times 7,0 = 16,31 tons$$

It is considered that during the Jurassic Period about 180 million years ago of the Pan-gay broke up into Gondwan and northern continent Lavrasia which were divided by the ocean Tetis. The fauna was presented by dinosaurs, including huge Argentinozavr, and Apatosaurus. Then, owing to drift of earth's continental plates, the Pan-gay broke up into continents which we observe [25] now.

**9.3 Power sources of hyper new stars.**

Within this concept it is also possible to explain the reasons and the mechanism of explosion of hyper new stars which source of huge energy cannot be explained with thermonuclear reactions and still is a subject of discussions (Fig. 44).

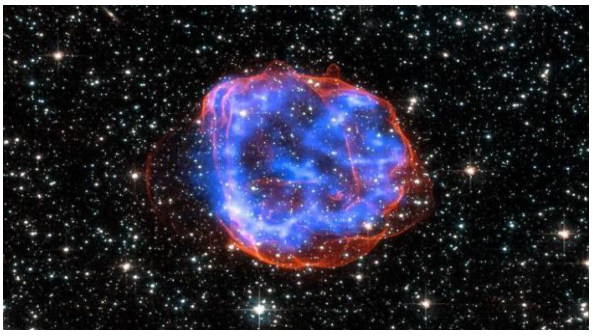


*Fig. 44. Explosion of hyper new SN2007bi.*

Hyper new are the stars which are blowing up with a huge power. Energy of explosion of hyper new can exceed 1045 J [51]. Their explosions, as a rule, are followed long scale – splashes. Usually, carry stars weighing more than 100 - 150 solar masses to hyper new. It is quite possible that 440 million years ago explosion of a hyper new star enough near Solar system took place, and the blow on the ground from this hyper new turned out a gamma beam stream rather powerful to cause Ordovician and Silurian extinction(more than 60% of species of sea invertebrates disappeared).

As existence in such objects of white holes of the Wh3 type was described above, leads to education a thermo quark – gluon reactions at which the exceeding thermonuclear are emitted energy much. Same it is possible to explain and powerful scale – the splashes which are formed at explosion of super new and hyper new stars which nature still remains undecided.

### 9.4 Change of power of radiation and temperature of stars in time.

As it was shown in a formula (14), heterogeneity of density of vacuum, to be exact, to a boundary region of hyper space, leads to the fact that the level of radiation of a white hole changes in time, in process of movement of a space body in space. These can explain, for example, change of power of radiation of the Sun, both short-term, and long-term, his inconstancy and unexpected surges in activity, change of structure of its surface. Possibly, the same can be told also about other stars, quasistar objects and kernels of the galaxies which are in our Universe. It, most likely, influences planets to a lesser extent.

### 9.5 Local anomalies of temperature of background radiation of the Universe.

According to data of paragraph 5, temperature of background radiation of the Universe depends on the volume density of radiation of the World environment. These can explain anomalies of background radiation, such as, for example, "relic cold spot", so-called "Bruise" in Eridan's constellation where microwave radiation on 70 $mkK^0$ is colder, than temperature of background radiation of the Universe (Fig. 45).

Some physicists claim that the relic cold spot which extent makes about 1,8 *billion light years* can be the print of other Universe outside ours caused by a quantum complexity between the Universes before division by space inflation [58].

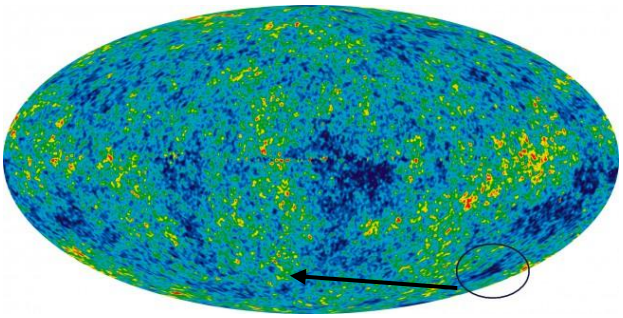


*Fig. 45. A relic cold spot in Eridan's constellation*.

Professor of University of Northern Carolina Laura Mersini-Hafton considers: "Standard cosmology cannot explain such huge space hole … it is an obvious print of other Universe behind edge sew". Actually, such temperature anomalies can be explained with the smaller volume density of radiation of the World environment in these areas of the Universe for various reasons: smaller density of vacuum; the smaller density of the environment, or topological features of hyper space in this place, and from the point of view of hyper space, this topological feature can be very small size.

**9.6 Distances to quasars and their red shift.**

The discrepancy of extraordinary high red shift found by the famous American astronomer Helton Arp at the quasars which are physically connected with galaxies which have low red shift and are located relatively near us. It can be explained with properties of the World environment in which, owing to the big mass of quasars and extremely bystry rotation, there are strong indignations distorting and increasing the specific volume density of radiation of this Wednesday. Respectively, according to a formula $\Delta E_f = k_{abWe} h\nu$, where $k_{abWe}$ - the coefficient of absorption of the World environment, this coefficient will be significantly more, than at located, relatively, nearby the galaxy rotating incomparably more slowly.

**9.7 Inapplicability of the Second beginning of thermodynamics to evolutionary processes in the Universe and Network structure.**

In 1865 R. Clausius put forward the theory according to which the Universe as the closed system submitting to the Second beginning of thermodynamics has to aspire to an entropy maximum (a minimum of free energy) therefore over time in it all evolutionary processes have to stop. This theory received the name of "Thermal death of the Universe". There are various hypotheses trying to explain why the Second beginning of thermodynamics is not applicable to our Universe, but all of them are disputable, and a large number of hypotheses says that on this matter still there is no accurate physical explanation.

According to conclusions which can be made on the basis of this article our Universe is not closed, and exchanges matter and energy with hyper space through white and black holes where particles and material bodies can disperse to the speed which is in number exceeding velocity of light. Through white holes matter and energy comes to our three-dimensional space, and through black leaves it. In that case black holes exist where it is possible to find places with lowered, rather background, temperature. For this reason, the Second beginning of thermodynamics is inapplicable to the evolutionary processes happening in the Universe.

It is possible to explain not with isolation and an opportunity to exchange matter and energy with a certain outside world topology of cellular structure of the Universe, at big scales.

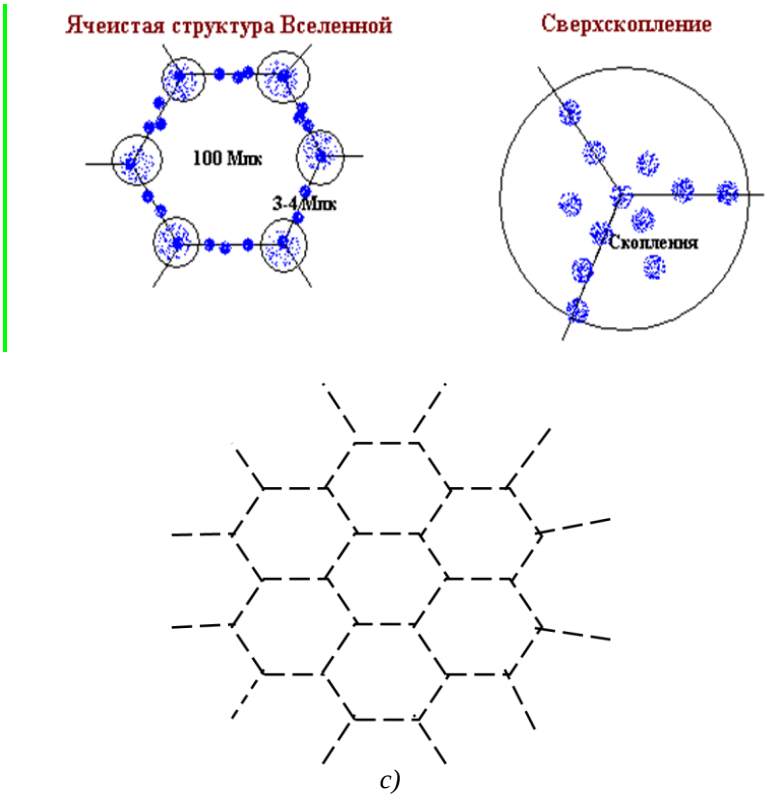



*Fig. 46. Structure Sverkhskopleny of galaxies in cells of network.*

Try to explain it is possible by means of Synergetic, using a concept of "Cooperative action of complementary structures". At scales about 300 Mpk the Universe is, almost, uniform [46] and represents set of threadlike congestions of the galaxies divided by areas in which there is practically no shining matter. These areas (*emptiness*, *voids*) have the size about one hundred of mega parsec. (Fig.46). Formation of such cellular structures very much reminds the self-organization processes happening in Benares (Fig.47) cells. Which just are also formed at synergetic cooperative complementary processes in the conditions of environment nonequilibrium. As a result of the arising fluctuation, nonequilibrium streams of the environment direct up and disperse in the parties. It leads to collision and the competition to the next streams that, at the end – the ends, stabilizes system, choosing the optimum, demanding minimum quantity of power expenses, cellular structure. If in the environment there are particles, then they will be pushed aside by the central streams to the periphery (walls of a cellular cell).

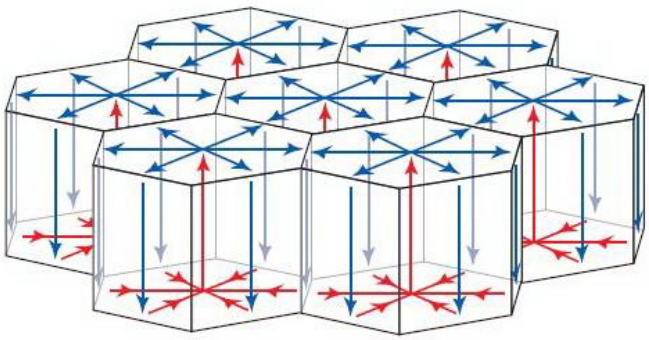


*Fig.47. Scheme of formation of Benares cells.*

That on open spaces of the Universe there are self-organized processes within synergetic laws has under itself logical justification.

Synergetic or the theory of difficult systems — the cross-disciplinary direction of science studying the general regularities of the phenomena and processes in difficult nonequilibrium systems on the basis of the principles of self-organization inherent in them [13]. But the constant power source which could serve white holes (nonequilibrium cells) which are continuously delivering energy from hyper space is necessary for course of such process.

The same mechanism of self-organization of complex structures can create also more difficult systems, for example, such as cellular structure of the Universe, or network of galaxies (Fig. 48,49).

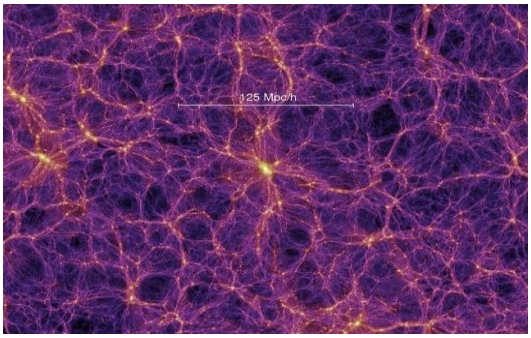



*Fig.48. Cellular structure of the Universe.*

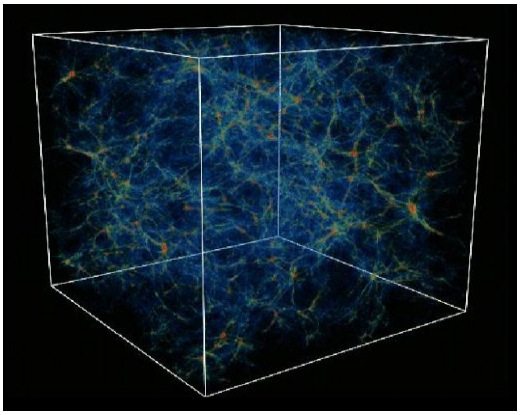


*Fig.49. Network of galaxies in the Universe.*

**9.8 Photometric paradox.**

For the first time this paradox was formulated in all its completeness by the Swiss astronomer Jean-Philippe Louie de Shezo (1718 — 1751)in 1744 though the similar ideas were introduced earlier also by other scientists, in particular, Thomas Digges, Johann Kepler, Otto von Gerike and Edmund Galya. Sometimes the photometric paradox is called Olbers's paradox in honor of the astronomer who drew attention to it in the 19th century. The stream of energy of the radiation accepted from a star decreases in inverse proportion to a distance square to it. But the angular space (space angle) occupied in the sky by each star also decreases in inverse proportion to a distance square what follows from that the superficial brightness of a star (equal to the energy stream relation to the space angle occupied in the sky by a star) does not depend on distance. And it means that the night sky over our heads has to be filled with stars, but we do not observe it. This paradox is explained by an age extremity, and, therefore, border of expansion, the Universe, and deep shift to the red area of a range of far galaxies.

Actually, as we calculated, red shift can arise not because of Dopler's effect and expansion of space as a result of "Big Bang", and because of energy loss by photons in the World environment. Proceeding from it, it is possible to count limit border of possible optical observations of stars and galaxies.

Let's take the specific loss of a part of energy calculated by us in paragraph 6 a photon, equivalent to loss of a part of velocity of light at flight of a distance in one $Mpk\,\Delta Sk_{abWe} = 73,92$ *(km/s)/Mpk*, we will also calculate the radius of border of possible optical observations of stars and galaxies on a formula:

$$R_{lb} = \frac{c}{\Delta Sk_{abWe}} \cdot 3,2 \cdot 10^6 \approx 13 \cdot 10^9 \; light\; years.$$

Thus, all shining objects which are located at distance more than 13 *billion light years* will be inaccessible for us at observation from Earth. It means that we will not see the light in the night sky Earth from these stars and galaxies. But, the further we will be able to send the space telescope to Universe depths, the further we will be able to glance in its open spaces.

**9.9. Hyper space and Multi universe.**

The same as in any volume the infinite number of the planes, also can be placed and in hyper volume the infinite number of volumes can be placed. Thus, in hyper space there can be a set of the three-dimensional Universes. Whether these Universes among themselves can be reported somehow? One of possible options – the uncertainty zone (a quasi four-dimensional potential barrier) which is carrying out communication of our Universe with Tachyon area (Fig. 50).

*Fig.50. Quasi four-dimensional potential barrier.*

In physics it is still known under the name "Mole Hole" though, in this case, the black hole, the mechanism of transition to "another dimension" in which is not described in any way, means. According to Steinhardt and Tjurok's hypothesis, near our abusive - the Universe one more three-dimensional bran – other Universe separated by tiny distance "floats". In that case, Multiverse (Fig. 51), will consist of a set of the Universes "floating" in hyper space and reported among themselves through black and white holes through uncertainty zones.

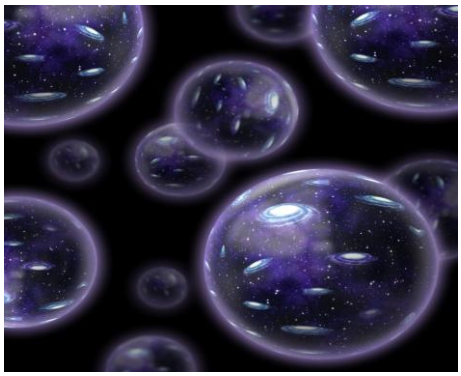


*Fig.51. Multiverse.*

Then the schedule of transition of matter and energy in these Universes from our Universe will look as follows (Fig. 52):

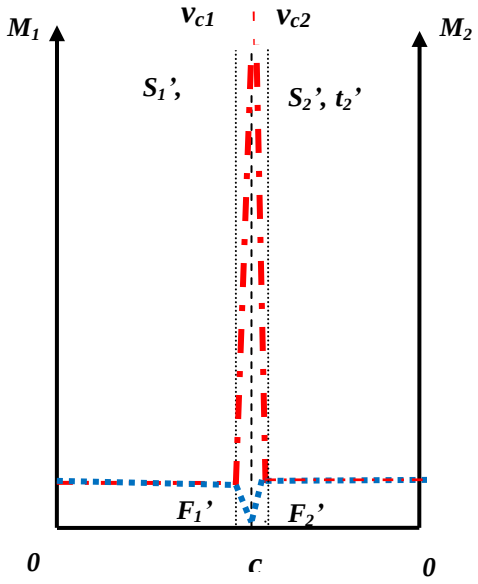



*Fig.52. Schedules of change of power and existential characteristics upon transition from one three-dimensional Universe to another.*

where $M_{1,2}$ – characteristics of material properties ( $M = f(S,t,F)$ , respectively our and next Universes;

$c$ – velocity of light;

$v_{c1}$, $v_{c2}$ – borders of an interspatial barrier (a transition zone) of matter from three-dimensional in a four-dimensional state respectively our and next Universes;

$S_{1,2}$, $t_{1,2}$ – respectively sew distance and time also next the Universes.

$F_{1,2}$ - respectively sew influence also next the Universes.

**10. Conclusions.**

10.1. On the basis of the analysis and a conclusion of formulas of some characteristics of material objects, moving at sub light and hyper light speeds it is shown that STR formulas are easily brought out of the movement of objects at any rectilinear uniform shift. At any uniform shift on any curve these formulas are a special case of more general formulas. It is also shown that perhaps small speeding of light, upon transition through a potential barrier. In such a way the infinite and zero characteristics which are present in STR clean up. It is shown that at increase in speed of movement of an object, not the linear size in the direction of the movement, and the imaginary size of a way which there passes the light beam is reduced. Time of information transfer (influence) in an object increases, at the same time on it time is slowed down. Therefore "The twin paradox" stops being a paradox as the twin who departed on the rocket really will move with greater speed rather World environment and, the brother who remained on Earth, and all processes by his ship will be slowed down. At increase in speed of a material object not its weight, but force which needs to be reported to an object changes to reach the same acceleration which can be reached at a smaller speed of

movement in space, at rather smaller level of influence. The equations of some characteristics of the material objects moving with hyper light speeds in hyper space are removed.

10.2. Physical processes of transition through "a light barrier" are described. Definition of a zone of uncertainty as to the specific area in which forces of three-dimensional and four-dimensional space begin to work at the same time is given. The processes happening in this zone, and also behavior of the particles crossing this zone from hyper space are described. Possible emergence of conditions of a nonequilibrium condition of "The boiling vacuum" and emergence of a zone of a nonequilibrium is described.

10.3. It is shown that it is possible to calculate precisely temperature of background radiation of the Universe, proceeding from the processes coming in an uncertainty zone, and also from the same reasons with accuracy less than 1%, to calculate cosmological red shift. Having shown in such a way that the background radiation of the Universe is a power noise of "The boiling vacuum", and cosmological red shift can be explained not with expansion of the Universe and Doppler's effect, and energy loss by photons on the processes happening in an uncertainty zone. The specific density of one cubic meter of dark matter, on the basis of the virtual mass of the neutrons arising on uncertainty zone border is calculated. On the basis of these data the sizes of the spheroid surrounding our Galaxy are calculated.

10.4. It is shown that on the basis of an uncertainty zone, and processes in it occurring, it is possible to assume that under certain conditions, in such space objects as planets, stars, quasi star objects and kernels of galaxies there can be white holes generating matter and energy creating magnetic field of objects, rotations of these objects, responsible for speed, and maintenance of thermonuclear reactions in them. The minimum conditions of emergence of white holes are calculated. On the basis of this assumption, parameters of change of weight, radius, acceleration of gravity, temperature of an internal kernel of Earth for the last 280 million years are calculated. Increase in weight and the sizes of Earth within the theory of "the Growing Earth" is proved. Dynamics of process and a source of this increase is shown. The mechanism of drift of magnetic poles, loss of magnetic field at the Moon and Mars is explained now. A number of formulas for calculation of these sizes is removed. On the basis of these formulas calculation is made and the table of sizes of allocation of energy in planets of Solar system is given.

10.5. Classification of white holes depending on type of a celestial body in which it arises is entered and develops: planets, planets – giants of type of Jupiter, sub stars and Brown dwarfs, stars of classes from Y to O, quasi star objects and kernels of galaxies. The table of temperatures of internal kernels of these objects on the basis of the offered formula is given, and the assumption of their internal structure, from usual plasma, to high-temperature and a quark – gluon plasma is output.

10.6. The explanation of a number of cosmological paradoxes which explanation causes difficulty now is offered.

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