GEOMETRIC-QUANTUM-MECHANICAL MODEL OF THE UNIVERSE

In this work, it built geometric-quantum-mechanical model of the Universe, explained reasons of matter's existence in the Universe. It quantized gravity field – found graviton, based structure and functioning of elementary particle of matter, built geometric-quantum-mechanical model of hydrogen atom, shown geometric models of chemical elements, explained evolution of galaxies, black holes and the Universe. It suggested schemes of experimental devices for research gravity and evolution processes in the Universe.

Introduction

Definition of reasons matter's existence is the main problem of physics, astrophysics, astronomy, chemistry etc. – is the problem of the whole of all natural sciences. In spite of great achievements in individual areas of natural sciences, hasn't been solved neither problems of these areas, nor problems of the whole: is not found elementary particle of matter, still is not built atom's working model, unknown what consists of matter and what kind of energy provides its existence, what is the nature of galaxies, black holes, and what they exert influence on the organic life on the Earth. Evolution of the Universe – the environment of matter’s existence – is still a mystery. The main reason of such state is separate research works not coordinated between different areas of science in search of the whole.

Here are a few examples of present state of the following three research areas.

In fundamental physics 40 years ago it was completed theoretical development of the Standard model, where elementary particle of matter is a point, at which known neither structure, nor composition and nor energy sources for its existence and functioning. Answers to these questions can be found based on quantum theory. Scientists of fundamental physics could not quantize the point element. They, due to “inability” quantize of a point particle and other causes, had moved away from the Standard model and discovered “New physics”, where the elementary particle of matter can be a string. They, in evidence of building of material particle out of a string and its quantization, have developed such mathematical formulas, solution of which is not expected in this century, and “for direct experimental confirm of the String theory is required to create such particles’ accelerator, power of which must exceed power of existing accelerators in $10^{14}$ times” (!) [7]. The developers of the New physics set great hopes on the Large Hadron Collider (LHC, Geneva), which could indirectly confirm experimentally reality of the String theory (to confirm existence of symmetric pairs of particles). In 2012 the LHC really has confirmed, but only that the so-called New physics likely not real. In that 2012 the LHC has confirmed existence of the Higgs' Boson – the elementary particle of matter. Nevertheless, it is not known structure of this particle, is unknown what it (matter) consists of, what kind of energy feeds atom, is not built atom's “working” model corresponding to the Standard model.

Astronomers and astrophysicists had achieved great successes: the Mars Rover «Curiosity» is directly exploring Mars, it was studied visible characteristics of the Sun and planets of the Solar system. Astronomers look into depths of the Universe, on objects at a distance of billions of light years, it was found more than 600 planets outside the Solar system, where can be life. It was taken thousands of photographs of galaxies with a Black Hole (BH) in their center, and Stellar Black Holes (SBH) within the galaxies, photographs of new stars’ birth – Supernova etc. However, still is insufficiently studied structure of the Sun and planets (the Earth), are unknown evolution of galaxies, structure and behaviour of BH
and SBH. No clear answer, that the Sun emits constant energy for milliards of years only at expense of its internal “fuel.” (It is known, reduction of thermal radiation of the Sun only to 6% will lead to the fact that on the Earth will come glacial period, and the glacial periods were). How are stars (the Sun) “lighted”? How and when the Universe has begun? (or has it begun?). What is the evolution of the Universe, the Earth and the planets of the Solar system? What is the cause of the climate change and natural cataclysms on the Earth etc.?

**Scientific-practical chemistry** – is the great achievement of the humanity – it studied and results of the research are used widely. Today is not possible to imagine the life of the civilization without chemistry. However, is unknown how chemical elements are formed and what is the structure of geometrical models of their atoms, which could give great opportunities for computer “alchemists” in creation new synthetic materials and medicines with more effective properties. It is not clear origin of radioactivity. In black holes radioactivity is missing, so, obviously, they arise in the process of galaxies’ evolution.

Thus, not solved neither problems of these private areas of the natural sciences, nor problems of the whole. We have combined problems of the certain areas in one basis and have tried to solve them using results, achieved in these areas, and has long been known of physic’s laws, describing them by geometric construction. Common problematic objects of study in these areas are: the environment of matter’s existence and atom’s structure.

**The environment of matter’s existence** – is the gravity field that fills infinite space of the Universe. It is known, gravity field is discredital, i.e. consists of quanted particles. Today this “famest” is in the same state as that Democritus had supposed about matter’s “atom” 2500 years ago. It is necessary to find particle of gravity – graviton, i.e. to quantize gravity field. Quantization of the gravity field is the basis and the main problem of all natural sciences. That is necessary for all: for scientists of fundamental physics that are looking for building and reasons of matter’s existence; for theorists who try to combine the 4 fundamental forces (gravitational, electromagnetic, weak and strong) and to build a “Theory of everything”; for astrophysicists to determine the nature of gravity, dark matter, dark energy and to understand structure and evolution of the Universe. In spite of the large number of theoretical and experimental works yet has failed to quantize gravity field. Physicists say: “…During transition to quantum gravity it will need some kind of quantization of the geometry of space-time where physical meaning of such quantization is absolutely unclear and any successful undiscrepant attempt to carry out is absent.”

**Atom’s structure** varies in accordance with conditions of the environment, where it gets in the circulation process of matter. For example, hydrogen atom getting into entrails of BH is compressed (accumulates potential energy), liberating from the captivity of gravitation radiates kinetic energy. The Universe consists mostly of hydrogen. Of all the chemical elements’ atoms of the Universe 90% are hydrogen atoms. Black holes consist of “pressed” hydrogen; “evaporation” of black holes is hydrogen atoms’ separation. The existing today atom’s theoretical model with its electron, forever rotating carried consumption any energy round stationary kernel-proton (without neutron) by «permitted» and huge orbit is unable to perform such functions, because it is not self-governing, not «viable». In this, it is necessary to build atom’s model, which by its properties would meet the requirements of the environment, where it gets in the circulation process of galaxy. In this, it is necessary to use the elementary particles found experimentally, theoretically and by quantization of the gravity field.

In this work we construct geometro-quantum-mechanical model of the Universe with all existing objects, explain the phenomena occurring in it, using the known laws of nature.
It attempted to base evolution processes of the Universe and functioning material bodies in the Universe (graviton, elementary particle of matter, atom, black holes, galaxies and the chemical elements) consistently, without assumptions and relativities. One of the main ideas of the work is that **Black Hole is the source of energy and material in evolution of the Galaxy (of the Sun, planets, and organic life on the Earth), its “evaporation” is the creative phase of the evolution cycle of matter in the Galaxy.**

Schemes of devices for experimental proof existence of energy and material flow from Black Hole suggested.

Description of the suggested model of the Universe is given in the following sections:

1. Quantization of the gravity field, graviton
2. Elementary particle of matter – biser
3. Geometric-quantum-mechanical model of hydrogen atom
4. Energy-mass (matter) circulation of Galaxy
5. Evolution of the Universe
6. Geometric models of chemical elements
7. Experimental installation – Astrosynchrogravitron
8. Conclusions
9. Hypothesis
10. Conclusion (converted to divine interpretation)

The work represents graphic depict and description functioning of the Universe’s model built out of the well-known «bricks»: the results of theoretical and experimental researchs and the known natural laws. Assumptions, distortions and relativities is not possible in geometric describing of scientific research results. Therefore, research works in all areas of scince are accompanied by their graphic (geometric) building and are ended by experimental corroboration. Scintists say: «The all – is the geometry».

The work consists of 59 pages of text with 53 graphic figures. Description of the work is available also for high school pupil learned of geometry, physics, astronomy, chemistry, and watching for the current scientists’ successes.

1. Quantization of the gravity field, graviton

Quantization of the gravity field means conversion it using impulsive quantum force into material particles comparable with the size of Planck’s constant – gravitons. Gravity field fills the whole Universe, so quantized gravity field is the space of the Universe, filled by gravitons (pulsating material particles), – is the space that has pulsating supersymmetric thetrahedronal crystalline structure.

Graviton consists of Gravity (substance - **gravina**) and has a spherical shape. Sphere is natural only rational shape of the material bodies. In the Nature, there are no acute «corners» – sharp forms and movements. Only spheres of equal diameter and identical properties are tightly packed into a supersymmetric spatial geometric formation.

Geometric spatial supersymmetry (GSS) – is a geometric formation in the limited spherical space consisting of densely packed spheres of equal diameter, where each sphere is contacted with 12 neighboring spheres. The contact points lie on 3 planes of the same properties: 6 points are on each plane, 2 of which are common. 3 lines of mutual intersection of the planes form between themselves spatial angle of 120° and are intersected at one point – in the center of the sphere, i.e. 3 planes are intersected in one point (Fig. 1). In addition, the packed spheres form 2 more planes in the form of repeated parallel sandwiches. In Fig. 1 six points on the vertexes of the «ellipses» is based on one of
those planes. On the second (parallel) plane lie 6 points of intersection of 3 lines (located
at an angle of 120° to each other) with these «ellipses». One of the remarkable properties
of GSS is, that total sail area of the planes is constant – it does not change during rotation
of the sphere in any direction. Location of the fields on one of the three planes of
supersymmetry shown in Fig. 2 (a fragment of the plane). This view on the figure remains
unchanged when looking at the sphere from any direction.

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\text{Fig. 1} \hspace{2cm} \text{Fig. 2}
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The (imaginary) planes, parallel to all of these planes, fill the space. Distance between
the parallel planes is equal to 0,81 sphere's (graviton’s) diameter. Therefore, we called
such spatial structure – **supersymmetry**. The geometric spatial supersymmetry is the main
tool for substantiation construction of the Universe and the reasons of matter’s existence in
it. We will describe some of its properties during presentation of the work.

Large-scale-ruler of the Universe (Fig. 3) is the second instrument used in the work.

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\text{Fig. 3. Large-scale-ruler of the Universe}
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Mass and energy – are the two states of matter. There is no mass without energy,
there is no energy without mass. Quantitatively, they are equivalent. Therefore,
**energy-mass** is the same concept of the matter’s essence – **it is matter. The formula of
matter – \(E=mc^2\)**. Matter is manifested and exist by impulse-quantum transition of these two
stats to each other. Elementary particle of matter – biser – is the particle, this transition of
which occurs by frequency equal to \(1/2\) Planck’s frequency. In the elementary area of the
Universe – in Galaxy – the alternating transition (circulation) of energy-mass occurs for
10-12 milliards years (see below). In the Universe building and motions of physical bodies,
physical phenomena, gravitational and electromagnetic fields and their interactions, as well
as physical quantities are impulse-quantum.
Graviton is compressed and expanded (by Planck’s frequency). Graviton, while compressing, acquires impulsive mass; in expanded state it becomes a massless particle – a particle of energy. Thus, graviton is pulsating particle by alternating properties of mass and energy, i.e. property of matter. However, it is not the particle of matter, because its mass is manifested only in its tension state in the dense crystal structure of infinite space. **Graviton – is the elementary particle of potential energy of the gravity field.**

For graviton’s existence, the number of forces acting on each graviton must be 12. **This condition is created only in the limited spherical space.** For example, spheres of equal diameter in a spherical vessel of certain diameter are densely packed and form a homogeneous supersymmetric structure, only if all peripheral spheres are contacted also with the wall of the vessel, i.e. if they have the 12th point of contact. This structure is destroyed and the system ceases to exist as the uniform environment, if such contact is absent at least of one sphere. In the Universe the border of the «vessel» – is the last layer of gravitons, located at infinity, i.e. **Infinity of space is the precondition for the existence of gravity field. Gravity field can exist only in the infinite space.**

Gravity field – potential energy – fills infinite space of the Universe. Infinite space and gravity field are «formed» simultaneously and exist forever. **Infinity-Gravity – is the essence of the Universe.**

There are sufficient conditions and “tools” for conversion gravity field into gravitons – into material particles: gravity field has (potential) energy; mass and energy are equivalent (according to Einstein), energy can be converted to mass. For this conversion there is the second Newton's law: by Planck’s acceleration to compress a clot of energy using the energy of the gravity field.

Physical effects of quantization of the gravity field and interaction of quanted particles we carry out by joint application quantum and classical mechanics. **A quant of mechanical force compressing clot of energy by Planck’s acceleration, creates a quant of mass – the particle having Planck’s constant (length, mass, time and other).**

Spheres of equal diameter in the limited spherical space form a tightly packed supersymmetric structure, where each sphere contacted with 12 neighboring spheres. If all the plastic spheres in such packaging to compress impulsively simultaneously, they will be compressed without changing distances between centers, i.e. are squeezed in 12 points forming flat contact areas (the substance's density of the sphere will be increased).

(A simplified explanation: If a ball to squeeze from two sides, it’ll be inflated in the middle. If the ball to place between 12 other similar balls and to inflate them also from two sides (or from one side, but without motion of the balls and without changing distances between their centres), every ball, inflating, will limit its own and contacted balls’ inflating. In this time on contact points are formed flat areas and in free spaces between the areas appear swollen ledges. Of course, each of the 12 balls, in one’s turn, must touch with 12 other inflating balls...)

Impulsive compression of the graviton occurs by impulsive pulling, by his impulsive mass, 12contakting gravitons having the same impulsive masses, i.e. the graviton is self-compressed. In spatial supersymmetric structure such self-compression of all neighboring gravitons creates expanding tension of gravitons (breaking his matter – gravina). As the result, when this tension reaches to certain level (f and g; see below), graviton is expanded impulsively; density of gravina is reduced to vacuum state, the mass disappears, remains a «clot» of energy – graviton’s strain tension. Now, the force tearing
the graviton to vacuum state, causes tension in the gravina towards the center – to compression. If this stress reaches to certain value (f), graviton is «slamed», density of gravina is increased impulsively, appears mass, which attracts 12 neighboring gravitons and is self-compressed... The cycle is repeated.

Graviton – the smallest particle – has the smallest diameter – Planck’s length – and all the Planck’s parameters: mass, time, frequency of impulses, acceleration and other. Therefore graviton’s parameters are known, their definition is not required. However, we are interested in: how to justify quantization of gravity field – establishment and functioning of graviton. In this part of the work we will try to explain the process of quantization of gravity field, to calculate the mentioned parameters of the graviton, and show, how an impulse of energy passes through graviton (through spatial crystalline structure of the Universe’s space).

Fig. 4. shows process of quantization of the gravity field – impulsively compression of a plastic sphere (graviton) and formation its quantized mass in supersymmetric structure by impulsive force (for example, by antigravity energy of Black Hole). (About antigravity energy, see Section 4).

Fig. 4. Quantization if the gravity field. Impulsively compression of a plastic sphere (graviton) and formation its quantized mass. $E_{agr}$, $E'_{agr}$ – impulses of antigravity energy; $\nabla$ – graviton’s diameter (is the reduced Planck’s length $1,6162 \cdot 10^{-35}$ m); $t_p$ – Planck’s time ($5,3911 \cdot 10^{-44}$ s); $m_p$ – impulsive quanted mass of graviton ($6,1439 \cdot 10^{-52}$ kg∙s); $a_p$ – acceleration of compression (acceleration of density’s increasing) – Planck’s acceleration
(5.5608 \times 10^{51} \text{ m} \cdot \text{s}^{-2}); f – impulsive force acting on 11 points; fi – counteracting force of inertial mass; Fi – impulsive summary calculation force, \(Fi=11f+fi\); ℓ – length of the compression path.

In spatial supersymmetric structure graviton’s self-compression is equivalent to the compression of it by 12 neighboring gravitons by simultaneous inflating them with the help of external force – by compression of each these 12 gravitons from one side by force equal to the pulling force f.

Graviton is compressed in 12 points by forces f from 12 contacted gravitons. These forces directed radially to the center of each graviton. For achieve such compression effect it is enough to press each of these 12 gravitons by force f from one side. For explaining of the compressing process, we select (conditional) 12 parallel forces f acting on 12 gravitons from action side of a external force (for example, from action side of antigravity energy Eagr), and replace them by force equal to the sum of these forces – Fi=12f, acting to one (middle) graviton (Fig.4). (Graviton is compressed simultaneously in 11 points by forces f. The 12-th point is the «point» of contracting inertial mass (by force fi) without forming flat area; the area is formed in an energy transfer by this graviton to next graviton). Fi=11f+fi. fi=f. Here, the summary calculation impulsive force Fi=12f=(Eagr–Eagr):ℓ1. ℓ1=(12ℓ) – summary calculation length of compression. ℓ – length of the compression path – segment’s height of the sphere compressed by force f. In the process of impulsively compression, in the interval from 0 to ℓ1, the acting force increases from 0 to Fi, because of increasing the resisting force of the inertial mass (by the second mechanics’ law). During this period, plasticity of the graviton varies from superfluid to superhard state. Elastic compression of the graviton on the length ℓ1 happens at a variable speed – at acceleration a (at acceleration of increasing gravina’s density, because of pregressive increasing of the contact area on the sphere).

Graviton’s mass: \(m=Fi:a\). Here, acceleration of compression \(a=\frac{c'}{t}\), where \(c'\) – variable compression speed on the length ℓ1; \(t=\frac{ℓ1}{c'}\) – compression time on the length ℓ1. Then: \(a=\frac{c'^2}{ℓ1}\). Manifestation of the mass and its value are determined by the compression acceleration a on the length ℓ1 and does not change during all acting period of force: \(t+\ell1=tp=\nabla/c\), where \(t=0\) – passing time of the force through graviton’s section \(\nabla\ell\), compressed to super hard state;* \(tp=5,3912 \times 10^{-44}\) s – Planck’s time; \(\nabla=lp=1,6162 \times 10^{-35}\) m – graviton’s diameter – Planck’s length; \(c\) – is passing speed of the energy through graviton. \(a=\frac{c'^2}{\nabla}\). Then \(\frac{c'^2}{\ell1}=\frac{c'^2}{\nabla}\).

The impulsive force Fi creates impulsive mass \(m\nabla\). The mass is increased by increasing the force. The increased mass counteracts more to the acceleration. Balance is set when the force, creating the mass, is compensated by counteraction force of the inertial mass, i.e. the force Fi cannot push off the mass \(m\nabla\) by acceleration over certain value – more than \(\frac{c'^2}{\nabla}\) (Planck’s acceleration).

(*Passing time of the percussion wave of elastic deformation through superhard body is zero, because elasticity coefficient of such body is zero. We will explain it by a simplified example: a locomotive pushing train cars, geared by spring buffers (this is an example of an elastic body). In this, the cars started in turn consecutively – the wave of the pushing force from the first car to the last car passes within a few seconds. If the locomotive will push the cars without buffers and intervals between the cars (it is an example of a solid body), all the cars will move out from the place simultaneously – the pushing force from the first car to the last car is transferred instantly – the passing time of the wave of acting force is equal to zero.)
Let's return to the calculation of the graviton's parameters using force $f=F_i/12$ (this force in supersymmetric structure compresses graviton in 12 points).

Quantized graviton's mass (the mass of a impulse) created by force $f=F_i/12$:

$$m_\sigma = f_c^2/\nabla=(F_i/12)c^2/\nabla=(E_{agr}-E'_{agr})/12 t_\sigma \cdot \nabla/c^2= h/12 c^2= 6,1439 \cdot 10^{-32}\text{ kg}\cdot\text{s} \quad \text{Planck's mass (according to Einstein }m=E/c^2), \text{ where } (E_{agr}-E'_{agr})=h=6,6262 \cdot 10^{-34}\text{ J}\cdot\text{s} \quad \text{Plank's constant – quant of energy acting on the compression length }t_\sigma; \quad \nabla=t_\sigma (\text{from accelerations' equality}); \quad c \quad \text{– passing speed of the energy through graviton} – 2,9979 \cdot 10^8 \text{ m}\cdot\text{s}^{-1} \quad \text{light's speed}.

Graviton's frequency of impulses:

$$f_\sigma = c/\nabla=2,9979 \cdot 10^8 \cdot 1,6162 \cdot 10^{-33}=1,8549 \cdot 10^43\text{ s}^{-1} \quad \text{Planck's frequency}.

Graviton's mass for a second (in SI):

$$M_\sigma = m_\sigma \cdot f_\sigma = 6,1439 \cdot 10^{-32}\text{ kg}\cdot\text{s} \cdot 1,8549 \cdot 10^43\text{ s}^{-1}=1,1396 \cdot 10^{-8}\text{ kg} \quad \text{kg}$$

The force $F_i$, accepted above conditionally for explanation of the quantization process of gravity field, explains energy passing through graviton: an energy (antigravity, electromagnetic) impulse passes through graviton (through spatial supersymmetric crystallin structure of the gravity field) at the light's speed. The force $F_i$ (i.e. external force) does not participate in quantization of the gravity field.

Impulsive work (energy): $W=F_\sigma t_\sigma=h$. The impulsive deformation work of the plastic body (graviton), according to the Hook’s law: $W=\frac{1}{2}Dg\cdot 12\ell^2$. Equality of works: $h=\frac{1}{2}Dg\cdot 12\ell^2$, where $Dg$ – is graviton's plasticity. $Dg=0$ – corresponds to the graviton's superfluidity in its expanded state. $Dg=2h/12\ell^2$ – corresponds to the graviton's superhardness in its compressed state.

Here $\ell=Va:f_\sigma$, where $Va=1,4187 \cdot 10^{-6}\text{ m}\cdot\text{s}^{-1}$ – is approaching speed of two masses to each other (from physics' text-book).

$$\ell=1,4187 \cdot 10^{-6}\text{ m}\cdot\text{s}^{-1} \cdot 1,8549 \cdot 10^43\text{ s}^{-1}=7,6484 \cdot 10^{-50}\text{ m}. \text{ Then, the impulsive hardness – the graviton's superhardness: }Dg=2\cdot 6,6262 \cdot 10^{-34}\cdot(7,6484 \cdot 10^{-50})^2:12=1,8878 \cdot 10^64\text{ kg}\cdot\text{s}^{-2}.$$

**Forces and energy of the gravity field**

In spatial supersymmetric structure each graviton attracts impulsively 12 neighboring gravitons by gravity force of their impulsive masses:

$$g_\nabla=G\cdot m_\sigma^2/\nabla^2=6,674\cdot 10^{-11}(6,1439 \cdot 10^{-32})^2:(1,6162 \cdot 10^{-33})^2=9,6603 \cdot 10^{-44}\text{ N}\cdot\text{s}^2 \quad \text{constant.}

Here $G$ – is the gravitational constant.

The gravity force between two gravitons in a second (in SI):

$$F_g=g_\nabla f_\sigma=9,6603\cdot 10\text{ N}\cdot\text{s}^2 \cdot 1,8549 \cdot 10^43\text{ s}^{-1}=1,7919\cdot 10\text{ N}\cdot\text{s}.$$

It can be accepted that the resultant point of the action forces $g_\nabla$ is located in the center of gravitons and these centers are connected by strings of fixed length equal to the graviton's diameter (Fig. 5).
Fig. 5. Tension state of gravitons

Under action of these forces the strings are under impulsive stretching tension $S_v=12g_v=1,1592\cdot10^{-42}$ N·s²=constant
Looking at Figures 4 and 5 we can conclude: $f = g_v$; $F_i = S_v = 12f = 12g_v$.
The impulsive force, compressing graviton, is equal to the impulsive strain force in the graviton (this is one of the properties of existing forces in supersymmetric structure; it explained above).
Graviton has Planck’s constants. Therefor we accept: graviton’s energy is $h=6,6262\cdot10^{-34}$ J·s. It is potential energy of the gravity field’s particle. **Graviton – is the elementary particle of the gravity field’s potential energy.**
Specific potential energy of the gravity field:
$$Ep = h \cdot 1.093 \cdot 4/3\pi(lp/2)^3 = 6,6262\cdot10^{-34}[1:1,093\cdot4/3\pi(1,6162\cdot10^{-35})^3:8] = 2,7432\cdot10^{69}$$ J·s·m⁻³.
Here 1.093 – coefficient taking into account volume of empty space between spheres (The void between packed spheres occupies 9.3% of total space).
The infinite energy of the Universe is used for building and ensure the self-development of the whole material world and to provide ever-recurring energy-mass circulation cycles of the Universe.

**Gravity between massive bodies and energy commutation**
Gravitons perceive stretching and pushing forces in dense packed supersymmetric spatial structure. (A necklace – bisers on a string – has this property. So we called: gravitons on the imaginary string - **necklace**, space of the Universe - **Newtonia**). The necklace – is the conductor of gravity, antigravity and electromagnetic energies – is an imaginary line by which impulses of stretching and pushing forces transmitted from one graviton to another. Imaginary lines connecting gravitons’ centers – are the strings – are the frame elements of tetrahedronal crystal structure. They are elements of the necklaces and impulses of energy are communicated through them.
Fig. 6. **a**, Commutation impulses of electromagnetic and antigravity energies along a necklace; **b**, Passing impulses of gravitational forces between two masses along a necklace.

Fig. 6a shows how an impulse (of antigravity, electromagnetic) energy $E$ passes through the necklace as the resultant of tangential components of the energy on contact points. The sum of the components of the energy in the intervals equal to the graviton’s diameter, is equal to the energy $E$. Fig. 6b shows gravity between two masses. The amount of the tangential components of the stretching force $f_g$, in the intervals equal to the graviton’s diameter, is equal to impulsive stretching force between two gravitons $g_\nabla$. (These figures show the simplified 2D schemes. Here, touch points and vectors of the resulting and tangential components of the force are on the same plane. In fact, the vectors of resulting are installed in the direction of acting force, and tangential components lie on 3 planes, which form space angle of 120°, – 3D).

A necklace, being between two masses, with their ends comes into contact with particles of these masses – gravitons at the ends of the necklace are attracted to particles of the massive bodies. In the necklace occurs stretching force. Elementary impulsive gravity force is equal to the impulsive attraction between two gravitons: $g_\nabla=9.6603\cdot10^{-44}$ N·s², or the attraction force in a second $F_g=1.7919\cdot10^{-8}$ N·s.

**Gravity between two masses is the impulsive tug of these masses to each other by necklaces.** In each compression impulse of a graviton, the necklace is reduced to $t$. Speed of dragging of the masses by necklace $V_a=f_\nabla t=1.4187^{-6}$ m·s⁻¹ – constant (from physics’ text-book). The wave of successive reductions of gravitons between masses is spreaded at the light’s speed, as the impulses of energy for dragging the masses passes by necklaces also successively at the light’s speed.

Here, the Newton’s formula $F_{gr}=m_1\cdot m_2\cdot D^2$ is explained so: when approaching the masses to each other the number of necklaces, dragging these masses, increases in proportion to the visual area of their cross section. $F_{gr}=f(n_{neckl}\cdot t\cdot R^2/D)$

In the Newtonia graviton conducts quants of energy by frequency $c/\nabla$ without losses. That happens due to addition of energies’ amplitudes (Fig. 7).
In influence of external impulse of electromagnetic energy (for example, light, radio waves) on the graviton, to its amplitude $A$ graviton’s (carrier) energy amplitude $\nabla a$ is added. The last one compensates energy losses during passage of an energy impulse through graviton. Graviton passes energy impulses in any quantity and in any direction. In this, during graviton’s an impulse only one energy impulse passes (as sources of energy are on different distances from this graviton; on one point only one energy source can be; the energy’s spreading speed is constant – equal to the light’s speed).

2. Elementary particle of matter - biser

*Biser* – the particle of matter, which has dual Planck’s mass – dual mass of graviton. Biser – so we called one of the bosons – elementary particle. We consider, that is the Heggs’ Boson, discovered (confirmed) in 2012 on the LHC by collision of two protons. Proton is built out of bisers. See Fig. 15 and 16.

Biser was formed (is formed) at the beginning of the next evolution circulation cycle of energy-mass (matter) of the Universe (See section 5. Evolution of the Universe).

Gravitons, as the sources-carriers of energy, provide biser’s vitality on resonance frequency of masses – 2 (i.e. the biser’s mass is manifested by graviton’s two impulses). Fig. 4 and Fig. 8 show, how at the beginning of impulsive compression of the graviton in 12 points, in free spaces between spheres are formed impulsive projections that are inside the biser and impulsively (twice) extend it from inside to the value $b$. These projections impulsively fill the free space equal to 9.3% of the total space.

Biser exists at the expense of gravitons’ energy, but functions independently of them. Constant resonance energy transfer from gravitons to bisers exists always.

Biser’s quantum mass is manifested due to the inertial resistance its substance (gravina) to accelerated expansion (by the second mechanic’s law). Biser’s hardness and fluidity are determined by its impulsive expansion and contraction. In the extended state it
is superhard, in the contracted (relaxed) state – superfluid. Biser's diameter is at 1.26 times more than the graviton's diameter. Therefore, within bisers in any its position in the space filled by gravitons, is always a graviton or its parts, i.e. constant transmission of energy from gravitons to biser exists always (Fig. 9 and 10).

Biser's physical properties:
Impulses' frequency \( f_B = \frac{f_\nu}{2} = 9.2745 \times 10^{42} \, \text{s}^{-1} \).
Quantized mass (the mass of an impulse) \( m_B = 2m_\nu = 1.228710^{-51} \, \text{kg} \cdot \text{s} \).
Quantized mass for a second (in SI) \( M_B = m_B \cdot f_B = 4.5582 \times 10^{-6} \, \text{kg} \).
Diameter \( B = 1.26 \sqrt[\nu]{2} \times 2.0364 \times 10^{-35} \, \text{m} \).
Impulsive attraction between two bisers:
\( f_e = G \cdot m_B^2 / B^2 = 6.674 \times 10^{-11} \cdot (1.2287 \times 10^{-51})^2 / (2.0364 \times 10^{-35})^2 = 2.4297 \times 10^{-43} \, \text{N} \cdot \text{s}^2 \).
Attraction force between two bisers for a second: \( F_B = 9.0137 \times 10^9 \, \text{N} \cdot \text{s} \).

Biser existes by gravity energy obtained with the help of gravitons, however, it functions independently of them. Biser's impulsive frequency (its superhard and superfluid states – manifestation and disappearance its mass) in 2 times lower than graviton's frequency. The time of biser's superfluid state in 2 times more than the time of graviton's super hard state. Fig. 11 shows graphs of mutual states of biser and graviton during biser's movement in the environment of gravitons.

![Biser's motion in graviton's medium](image)

**Fig. 11. Elementary particle of matter - biser - moves in the environment of gravitons no meeting resistance**

Graph in Fig. 11a shows changing of superhard and superfluid states of the biser and graviton without their addition for the period of biser's one impulse. Graph in Fig. 11b shows the result of adding their superfluid and superhard states. The total value of their superfluid states (area of the white field) more than the superfluid state of biser's single impulse. It remains constant in any of their mutual arrangement. During biser's one impulse solid state of the environment, which can countact on biser's movement, is manifested in
the form of two short peak graphs covering 50% of the free space in a short time, i.e. they do not have delaying effect. The graphs show, that bisers, i.e. all material bodies, are moved in the Newtonia, when bisers (material bodies) themselves and gravitons are in the vacuum state.

Conclusion: Material bodies are moved in the space of the Universe, filled by gravitons (in spatial supersymmetric crystalline structure of the gravity field,) at the speed, reaching the light's speed without any resistance.

* * *

Vacuum

Vacuum – void state of Universe’s space – the result of addition (of resonance) of void state of gravitation’s medium (gravity field – supersymmetric crystalline space), pulsating by Plank’s frequency, and of biser (of matter), pulsating by ½ Planck’s frequency, – not pulsates. Diagram of these pulsations’ addition is shown in Fig. 11b. Space of the Universe for material bodies always is in void, vacuum, state.

(We “see” the space of the Universe in its vacuum state only. The pulsating superhard and superfluid states of space (of the gravity field) are occur at the moment (during 9,2745\times10^{-42} \text{s}), when we (the Earth, the Sun, planets and galaxies) are in void state, i.e. when we are not).

* * *

Electric charge. Biser’s electrical properties.

Electric charge – is the interaction effect of the biser and (potential) energy of the gravity field. The charge is manifested when biser is driving in the gravity field, i.e. in the environment of gravitons. The value of the charge depends on bisers’ linear velocity relatively to the energetic field. Rotating dipole systems are charged bipolar. For example, a dipole consisting of 2 bisers’ conglomerats, interconnected by Siamese contact (see below), remains neutral, if it does not rotate round the common gravity center. When rotating, the ends of the dipole rotating in opposite directions charged (+) and (-).

3. Geometric-quantum-mechanical model of hydrogen atom

Hydrogen atom is the building material of all the material world, from chemical elements to black holes (BH), and it is the source of energy in the building. In the Universe of all atoms 90% are hydrogen atoms. The substance of BH consists of «compressed» hydrogen. Hydrogen is the main part of interstellar gas. In the interstellar space hydrogen is (spreads from BH) in the form of atoms, molecules and molecular clouds. In entrails of BH atom is compressed collapsly, its proton and electron lose charges and turn into neutrons. All particles of collapsly compressed matter of BH have the same sizes, mass and properties. Hydrogen atom getting liberate from gravitational captivity radiates impulse of a quant antigravity energy, that was spent at its compression in entrails of BH. Atom, to perform these functions, must have ability to change its shape and properties depending on environmental conditions.

Accurate representation of microstructure of the atom today not yet. Each presented design of the atom is only a model that has not proved experimentally. Today there is a theoretical model of the atom with its electron, rotating forever without consumption any energy around stationary proton-kernel (without neutron) on “permitted” and relatively huge orbit. Its mass equate with the mass of the proton, and the electron’s mass is neglected because of its smallness. Economic rotation of the eccentric system is not possible, because only one mass (electron) round the central mass is rotated by beating, consuming energy and slowing rotation. In this case, the center of rotation must be shifted to the direction of electron. Such atom’s model is not viable, not self-controlling, is unable to perform the required functions. Therefore, hydrogen atom, most likely, has another,
rational design – consists of a proton, neutron and electron, as atoms of all the other chemical elements. That is confirmed by the photographs of the hydrogen atom (Fig. 12, 13) [5, 6] and also by the fact, that in the description of the experiments' results, obtained at the particles' accelerators, was saying about three quarks of proton and three quarks of neutron [8].

Today there are almost all particles to build atom's geometric-quantum-mechanical model corresponding to the Standard model: the Higgs' boson (biser), various types of quarks. Properties of the Standard model are known and successfully used, as well as are known the requirements, what should be atom to explain, what kind of role it plays in the evolution of the Universe.

Based on these conditions, we propose following concepts (postulates) of the structure and properties of atom that is necessary to perform the required functions (we base them below):

- Electric charge is the effect of interaction of bisers and (potential) energy of gravity field, i.e. gravitons in the supersymmetric structure. The electromagnetic field is the effect of attracting charged masses with the help of necklaces. Charge and electromagnetic field are manifested and saved only in the rotating atom.

- Atom consists of hollow nucleons with a single-layer shell made of bisers, and of the electron – conglomerate tightly packed bisers. The nucleons are interconnected by a contact «Siamese twins» – siamese contact. (The presence of such contact can be detected in graphic study of gravitons' location on the supersymmetry plane).

- Atom's nucleus and electron are rotated as a single system and synchronously. They are bound by forces of balance of centrifugal, gravitational and electromagnetic interactions.

- Masses of proton, neutron and electron are the same (Proton’s mass less than the neutron’s mass to 0.002·10⁻²⁷ kg or to 0.1%).

- Proton and neutron in enteralis of black hole is compressed to the size of electron. Electron has constant diameter, which is remained in the compressed and free atom.

Fig. 12
Fig. 13

Hydrogen atom – the basic atom for building geometric-quantum-mechanical model corresponding to the Standard model – is presented in Fig. 14, 15 and 16. Hydrogen atom is a rotating disk consisting of concentric rings of electromagnetic fields. The outer ring is
the electromagnetic field of the rotating electron’s charge (−), the inner ring is the field of proton’s charge (+). Neutron rotates round its own center.

Figure 14. Hydrogen atom - concentric rotating disk of electromagnetic fields’ rings of electron and proton

Figure 15. Hydrogen atom
Atom consists of hollow nucleons, connected by siamese contact, and of electron – the conglomerate of tightly packed bisers. Nucleons’ design is the same. Their spherical shell is one layer of bisers. In the nucleon the three planes of supersymmetry – planes of quarks – disposed peculiarly: they cross atom’s axis at one point (three straight lines of mutual intersection of the planes are intersected in the centre of the sphere and form an angle of 120°. See Fig. 1 and 15). These planes intersect the shell, where bisers form 3 closed resonant circles. (In Fig. 16 the quarks’ plane is shown lying on the atom’s axis, conditionally, for simplify explanation).

Atom’s diameter $Da = 352B + 32V$, nucleon’s – $88B + B$, and electron’s – $31B + B$. In atom’s elements is concentrated equal number of bisers – $28000^*$: in the nucleons – on the surface they form a single layer (Fig. 15), in the electron they form dense conglomerate (Fig. 18). On the elektron’s surface are 3500 bisers. Diameter of the siamese contact area $d = 13B$, number of bisers - 152.

(*Bisers’ number of proton less to 152, because of the siamese contact. It is known that the mass of the proton is less than the mass of the neutron to $0,002 \cdot 10^{-27} \text{ kg}$).

The cone of the electromagnetic and gravitational fields (Fig. 15 and 16) ensures strong link between nucleons and electrons and their synchronous rotation.
The main condition for determining the size of the nucleon: nucleon must have such size that bisers’ oscillation on its resonant circles should resonate by the frequency of gravitons, i.e. by the frequency of the gravity energy field. Linear resonance between biser and graviton is 1,26 (see the graph in Fig. 16). The first harmonic of resonance appears when $58 \gamma : 46B = 1,26$, i.e. the resonant circle of the nucleon should be integer number of sections by length 46B. Circles consist of 6 resonant sections in 46B. Length of circumference – 46B x 6 = 276B. Fig. 19 shows one resonant section.

The wavelength of linear resonance is equal to two biser’s diameter – 2B. The resonance of mass – bisers’ pulsation under influence of gravitons – in a single-layer shell is symmetric (bisers, compressed between themselves in the shell, pulsate radially symmetrical). Therefore, adding of waves of length and pulsation das not occurs. Bisers are oscillated radial only under action of the resonance waves: at the ends of the section they are oscillated by maximum amplitude, and in the middle of the section bisers pulsate only by own frequency without oscillated. Bisers on the nucleons’ surface are linked between themselves by difference of gravitational and electric forces. The repulsive electrical forces of unipolar charges relax the gravity forces between bisers. The relaxation is maximal where bisers’ amplitude of oscillations is maximal. Here are mobile connections.

(Contact areas of nucleons Cg, shown in Fig. 15, 16, are located in the middle of resonant areas, where bisers on the field pulsate only by their own frequency. Atoms with the help of these («calm») areas are joined together by gravitational forces and form chemical elements. We emphasize, that these areas do not form siamese contacts).

Proton and neutron have the same design, but they function differently.
Neutron rotates round its center, therefore bisers, located on opposite halves of the sphere, cross the necklaces in different directions and charged different polar (+ and -). Constancy of the charge is provided by constancy of velocity biser's interaction relatively to the energetic field. On the neutron's surface appear electric currents flowing from one half to the other along the resonance circles consisting of charged bisers. They form electromagnetic fields – original windings of a «ball engine». Interaction between the magnetic field of windings and the impulsive gravity energy, creates a torque relatively to the center of the engine. Neutron's quarks create additional torque when hindering forces are occured. Here rotation center is in the center of triangle quarks' routes. Synchronous impulses of quarks having impulsive mass, act as reactive forces. Such engine – **neutron impulsively rotates atom round the center of forces' balance in any direction with constant angular velocity, synchronized with the gravitons’ frequency. Neutron with closed system of electric currents has neutral field.**

(Hypothesis: electron and proton are charged different polar thanks to unidirection of the energy stream – on direction from BH. Impulsely charging of proton and electron occurs at the moment if impulsively liberation of the hydrogen atom from captivity of BH.)

Proton, as well as the electron, rotates round the neutron's center. All bisers on its surface cross the energetic field in one direction and charged equally (+). The value of the charge depends on the interaction velocity of bisers and gravity energy. Length of the proton's circumference – $46Bx6=276B$. Here, 6 sections of resonance are placed so, that the bisers' maximum oscillations' amplitude at the beginning of one section coincides with the maximum at the end of another section. That provides continuous resonance of standing waves with 6 maximums of amplitudes on the circle, lying on the quarks' plane. Gravitational connections between bisers are relaxed on the places of highs amplitudes, due to increasig the magnitude of the electric charge, i.e. repulsive forces. In these 6 places are the bisers, which could be quarks. However, only 3 bisers on the resonant circumference can be as quarks, which are not connected with the maximum amplitudes on the same circles, lying on the other two planes (Fig. 15). Thus, **proton contains 3 quarks' planes with 9 quarks. Neutron also has 9 quarks on the 3 planes located mirrorly to proton.**

Quarks – carriers of energy – regulate atom's functioning. The forces acting between atoms, and in cramped conditions, create braking effect to atom's rotation: electron's rotation frequency is slowed down; its charge and centrifugal force are reduced. Electron begins to fall into rotation center (its rotation radius is decreased). Simultaneously with this, rotation frequency of the proton is reduced. **Proton has constant rotation radius.** Therefore, it, to save atom's rotation frequency, which is the main condition for atom's existence and functioning, reduces its mass and charge – loses 3 quarks. (Quarks act by the principle: they “fly out” of their “nests” because of atom’s “shaking” as, if electron strike against “the wall”). On the proton's surface, where 3 quarks are lost simultaneously, 3 holes on vertices of the equilateral triangle are formed. (In Fig. 16 yellow arrows form an equilateral triangle – the quarks' routes). To these holes are directed the quarks, which had just left the neighboring vertices. Thus, quarks synchronous jump from one vertex of the triangle to the other. When lossing the quarks, the attracting forces between electron and proton (gravity and electromagnetic forces) are reduced simultaneously. The braking torque is reduced due to the reduction of electron's rotation radius. The neutron-engine restores rotation frequency with the help of its quarks. Electron stops falling. Rotation frequency, charge and centrifugal force are restored. Electron returns to the previous level. At the same time, proton, after receiving the lost quarks (after
their transition to the holes on the tops of the triangle), also restores its mass and charge. **Quarks, during their movement from holes to holes inside the proton, cross the gravity field (energy) and restore proton’s charge.** Quarks *take away energy from gravitation energetic field and transfer it to proton.* (Quark, taking energy from the gravity field, loses its speed. However, it, moving by shortest straight path, reaches to the top of the triangle simultaneously with the resonant wave moving along the arc). Atom, after recovery of energy and its rotation radius, met next resistance, loses quantum energy and again begins to fall... The cycle repeats. Thus, **electron rotates on the orbit undulativly.**

In our atom's model, quarks correspond to the known u-, d-, b-quarks of the proton and neutron. The routes of considered quarks have the same length and properties. **Other types of quarks, in all probability, that are those, which are exchanged by their seats being on different planes.** We could not find explanation to existence of such quarks, as a “‘strange’, ‘charmed’ and others which have much more mass and very quickly decay into protons and neutrons”. Probably, they are autsid-quarks.

The nucleon’s mass is concentrated in the biser’s shell. The nucleon’s inner cavity is “immovable” environment of the Newtonia and is not element of its mass. The quarks’ motion in the nucleons’ cavity – is moving masses, separated from their mass, – is the motion using internal forces. Therefore, **quarks’ trajectories of moving and their length, relatively to the proton, remain constant and does not depend on its position and rotation frequency.**

Let’s consider atom’s state and functioning in the rarefied and contracted environments. Atoms in the confined space interact between themselves by attracting gravity force of their masses and by repelling force of electrons’ unipolar electromagnetic fields. In the rarefied environment (for example, in gases), mutual influence of atoms is minimal. In increasing of the pressure, atoms are rebuilt and tightly pressed against each other. Interacting retarding forces appear. These forces are manifested in atoms’ mutual contact in their different positions, different angles and directions. Atom, to maintain constancy of rotation speed, turns away (is repelled) from the direction of load (from “interfering” neighbor) with the help of quarks: 3 quarks of proton, residing on corresponding planes, are exchanged places. At the moment of quarks’ transition, proton loses mass and charge belonging to this quarks. Impulsely changing of the masses on the plane, which is at an angle to the rotation axis, turns atom to the direction, where the resistance is less.

The atoms’ position relatively to each other without resistance is there, where their rotation planes are parallel and revolutions are synchronous. Therefore, atoms “try” to stand next, rotate synchronously in parallel planes. If its "characters" match, such atoms are joined and form a new chemical element and begin to rotate round the new center of the forces’ balance at other constant speed. In the compound atoms, roles of the proton and neutron vary depending on their location: in the center and close to the center of the nucleus, where the tangent velocity is abcent, they are neutrons, on the periphery, where the velocity is large (are charged), they are protons. In intermediate positions, where the tangent velocity is small, nucleons are charged less, accordingly to the rotation radius.

Disks rotating atoms under quite lot of pressure are stood parallel on one plane and can no longer turn away. Electron’s frequency of impulses – the changing frequency of the disc’s radius – is increased. Impulsive changing of the radius – electron’s oscillation on the orbit – occurs with the help of quarks by above described scheme. The oscillation frequency depends on density of the medium, of the static pressure: the greater pressure the higher frequency, the more gravity energy is taken – the more temperature rises.
How is going on atom’s compression and decompression? The results of investigation known “photos” of galaxies and BH [1, 2, 3, 4, 10] have shown, that they are phases of the energy-mass circulation: galaxies are contracted and expanded cyclically. (See more detail in Section 4. Circulation of the energy-mass (matter) of Galaxy).

During the contraction period of Galaxy, all the heavenly bodies are accumulated into one BH in its center. In this center is also Central gravitational field (CGF), which is formed and exists only during celestial bodies’ rotation round this center. In the accumulation process of BH, atoms of all the chemical elements under static pressure are compressed, melt (at the depth of the lava) and are broken down into hydrogen atoms. The compression continues until atom can rotate in cramped conditions. At rotation stopping, centrifugal and electric forces disappear; atom is complete compressed collapsly by intra-atomic gravity: nucleons are compressed to the size of electron, and they all lose charges, turn into neutrons.

The antigravity impulse, caused by disappearance of CGF at the end of accumulation of all masses into one BH, frees the “earth’s crust” (the layer above lava) from gravity (by explosion scatters pieces of the crust into space of the future expanding Galaxy. The cause of explosion see Section 4). This impulse releases hydrogen atom from collaps compression – reduces intra-atomic gravity. However, atom remains pressed, while it stays under static pressure of the overlying rocks. Static pressure at the depth of lava disappears after explosion of the crust. Pressed atoms begin to straighten up layer by layer, starting from the surface of BH. Neutrons (not yet charged proton and neutron), joined by siamese contact, can’t get away from each other. Therefore, the exempt from the static pressure “siamese twins” – nucleons – are “inflated,” and “free” electron under action of impulse breaks away from them not inflating. The nucleons’ inflating ends when all 28000 bisers form a single-layer hollow sphere of diameter D=88В. (Bisers in the shell are pressed to each other by impulsive gravity, which manifests by their impulsive masses. That is why, nucleons are inflated as soap bubbles, shells of which are manifested by surface-tension of soap molecules.)

In the straightening process of atom, elements of which in compressed state in BH were on different layers, an impulse of torque is manifested. Atom starts to rotate round the center having the lowest rotation moment – round neutron’s center. Electron and proton crossing energy corrent in opposite directions are charged (+) and (–). Atom’s rotation at the constant frequency is carried out by the neutron.

**Hydrogen atom, getting rid of the static pressure, straightens up – emits an impulse of a quant antigravity energy, equivalent to the energy expanded during its compression (due to impulsive separation masses of nucleons and electron). (It is known, that impulsive decreasing of masses causes antigravity energy).**

Hydrogen atom – the rotating electromagnetic disk, the smallest self-regulating particle – exists and functions by means inexhaustible gravity energy. It is able to penetrate to interatomic space, to connect with atoms, that have resonance-similar properties, and form chemical elements. Atom enters into steel and earth’s thickness, and into stars’ interior, into the “furnace” their thermonuclear “reactors”. Thanks to such unique properties of the hydrogen atom, the material (organic and inorganic) world is formed and exists in this variety.

**Forces and energy of the atom**

Atom’s rotation frequency – is the main parameter determining its properties and balance of interacting forces – is the atom’s constant.

Graph in Fig. 20 represents the full function cycle of the hydrogen atom from its free state in the void to the collapsly-compressed state in BH.
Equation of balance of centrifugal $F_{cf}$, electric $F_e$ and gravitational $F_g$ forces' interactions:

$$F_{cf}=F_e+F_g \rightarrow 4\pi^2n_H^2\left(me\cdot R_H+mp\cdot Rp\right)=C\cdot e^2\cdot Dp\cdot e^2+G(mp+mn)me\cdot(Rp+R_H)^2,$$

where (by the equation and Fig. 20):

$m_H=me+mp+mn=3,34834\cdot10^{-27}=1,11813\cdot10^{-27}+1,11666\cdot10^{-27}+1,1183\cdot10^{-27}$ kg, where $m_H$ – hydrogen atom's mass (consisting of proton, neutron and electron), $me$, $mp$, $mn$ – reduced masses of electron, proton and neutron. (Proton is easier than neutron on the value of bisers' mass on the siamese contact to $1,002\cdot10^{-27}$ kg); $n_H$ – atom's rotation frequency; (To compare: the known electron's mass $me=9,10956\cdot10^{-31}$ kg, proton's – $mp=1,67261\cdot10^{-27}$ kg, neutron's – $mn=1,67482\cdot10^{-27}$ kg; Atom's mass – $3,34834\cdot10^{-27}$ kg); $R=176B$ – atom's radius; $C=1,602\cdot10^{-19}$ C – Coulomb's constant; $e=1,602\cdot10^{-19}$ C – the electron's charge; (The elementary charge – is the charge of a biser. Its value is determined by the Coulomb's constant divided by the number of bisers, located on electron's surface – 3500, $e_B=4,5771\cdot10^{-23}$ C. The electron's charge is concentrated in the 3500 bisers lying on its surface. The energy of the charges of electron and proton are
equal: $3500eBVe^2R_H=28000eVp^2Rp$, where $Ve=2Vp$; therefore, the charge of bisers on the electron’s surface is equal to the bisers’ charge on the proton’s shell – charges of electron and proton are equal. Electron’s internal bisers are neutral; they are joined together by gravity their impulsive masses). $G=6,674\cdot 10^{-11} \text{ m}^3\text{kg}^{-1}\text{s}^{-2}$ – gravitational constant; $B=2,0364\cdot 10^{-35} \text{ m}$ – biser’s diameter; $Rp$ – proton’s rotation radius. (Hydrogen atom’s diameter $D_H=7,8197\cdot 10^{-33} \text{ m}$).

Atom rotates under influence of two energies: by the interaction energy of the neutron’s electromagnetic field and (potential) energy of the gravity field, and by the action energy of neutron’s quarks. The first energy is manifested by interaction of electromagnetic field currents, flowing along neutron’s resonance circles, and gravity energy; it creates impulses of torque. This energy is taken by neutron out of gravity energetic field and is spent only on the atom’s «idle» rotation at the constant frequency without radiation energy (without electron’s oscillations on the orbit). Atom’s rotation frequency $n_H$ depends on the frequency of the energetic field, equal to the gravitons’ frequency – $n_{\nu}=1,8549\cdot 10^{43} \text{ s}^{-1}$, on the number of resonance circles (“motor windings”) – 3, on the number of resonant sections in the circle – 6 and on the resonance of mass graviton-biser – $n_{rm}=2$:

$$n_H=n_{\nu}:3\cdot 6\cdot 2=1,8549\cdot 10^{43}\cdot 36=5,1525\cdot 10^{44} \text{ s}^{-1}$$ – constant (for hydrogen atom).

Electron under braking effect of the external force makes one oscillation on the orbit for two revolutions (spin 1/2). (Electron during the first revlution falls to the center – its rotation radius decreases. Proton and neutron react to this change of balance (with delay): at the end of the first revolution «lose» 6 quarks. Under influence of this quarks’ impulse the rotation is accelerated, and at the end of the second revolution electron returns to the previous level). For regulating this process, proton and neutron use energy of 6 quarks. One quark flying by distance of $72B$, takes away energy from $72\times 2=144$ gravitons. (Energy of one impulse of the graviton $E_{\nu}=6,6262\cdot 10^{-34} \text{ J}\cdot \text{s}$ – Planck’s constant). Atom’s rotating frequency constance is provided by 3 neutron’s quarks – by the second energy of the “engine”. The neutron’s (atom’s) rotation center is located in the center of the equilateral triangle formed by the tracks of three quarks, therefore the “reactive” impulses of quarks stimulate atom’s rotation in slowing its rotation frequency under action of external forces. The energy, taken from gravity field by these 6 quarks, is added to the atom’s radiation energy. Then, an impulse (an oscillation) of the electron – atom’s radiation energy for one cycle (2 revlutions): $E_h=6,6262\cdot 10^{-34}\cdot 144\cdot 6=5,725\cdot 10^{-31} \text{ J}\cdot \text{s}$.

Frequency of electron’s impulses depends on external forces decelerating and accelerating of rotation: in increasing of environment’s density (in increasing of pressure), in mutual transmission and reception thermal energy by atoms, in chemical reactions, etc.

Atom, maintaining constancy of rotation frequency, respectively responds to external influences. For example, how is heat energy transferred? A hot atom, having a greater frequency of rotation and oscillation frequency of the electron on the orbit, affects to a cold atom so, that «tries» to increase its frequency. The cold atom, for retain the frequency of rotation, takes energy from the gravity field (using quarks) and is «warned». In this, the cold atom, rendering «resistance» to the hot atom, reduces its frequency. Decreasing of the rotation frequency occurs in the mode of generation of energy: by transferring energy into the energetic field, however, that for this transferring takes the appropriate energy from the field. As the result, the hot atom is cooled, the cold one is heated – is installed average temperature.

At the depth $D_l$ all chemical elements are melted by heat radiating energy of the compressed atoms. In Fig. 20 the temperature of lava «6000 K» adopted conditionally,
based on the boiling temperature of the very refractory chemical element – tungsten – 5773 K. Atoms of all the molten chemical elements, under influence of increasing pressure, decay into hydrogen atoms. At further increasing of the pressure, atoms cease to rotate, the temperature falls, and at 13,76 K atom freezes. It can be accepted, that at this temperature atom does one turn releasing energy \( E_H = 5,725 \cdot 10^{-31} \text{ J} \cdot \text{s} \), i.e. for increasing temperature to 1K is spent energy of \( 5,725 \cdot 10^{-31} \cdot 13,76 = 4,1606 \cdot 10^{-32} \text{ J} \cdot \text{s} \).

**Electron’s oscillation impulse on the orbit – is the expression of temperature. The radiation energy of an impulse – is the elementary unit of temperature.**

Atoms, in formation of chemical elements, are connected by contact areas \( C_g \) on the proton and neutron by *force of interatomic bond* \( F_{ac} \). For example, the force of the bond between two hydrogen atoms, which form helium, is determined by equation:

\[
F_{ac} = 30 n_c G_m B^2 : (1,1B)^2 + G(m_p + m_n) : (88B)^2 \cdot n_H : R_H / R_{he} \text{ Nm}^2 \text{kg}^{-2},
\]

where 30 is the number of bisers on \( C_g \); 1,1B – the average distance between centers of the contacting bisers; \( n_c = 2 \) – number of contact connections; \( m_p, m_n \) – impulsive masses of proton and neutron. \( n_H = 5,1525 \cdot 10^{41} \text{ s}^{-1} \) – atom’s rotation frequency; \( R_H / R_{he} = 1/1,4 \) – ratio of hydrogen’s and helium’s radiiuses.

Atom’s collapsely compression under action of internal gravity (in absence of electrical and centrifugal forces) occurs by absorption energy – the temperature falls from 13,76K to 2,723 K, i.e. by 11,04 K. *Absorption energy of the collapsely compression \( E_c \), equal to the antigravity energy \( E_{ag} \), releasing during atom’s liberation from compression*: \( E_c = E_{ag} = 4,1606 \cdot 10^{-32} \cdot 11.04 = 4,5933 \cdot 10^{-31} \text{ J} \cdot \text{s} \).

The compressed collapsely substance of Black Hole has the maximum density of matter – \( \rho_m \). This substance consists of neutrons of diameter 32B (the electron’s outer diameter), forming a sandwich with the distance between layers 26B.

\[
\rho_m = m_e : 1,093 V_{oe} = 1,11813 \cdot 10^{-27} : 1,093 \cdot 4 \cdot \pi (32B / 2)^3 = 7,5 \cdot 10^{75} \text{ kg} \cdot \text{m}^{-3}.
\]

Here \( V_{oe} \) – electron’s volume; 1,093 – coefficient taking into account the volume of empty space between spheres.

Breaking of siamese contact between nucleons is possible under action centrifugal force developing at rotation frequencies under action of high temperature, for example, in the thermonuclear reaction (in the Sun), when \( F_{cf} > F_{sc} + F_e + F_g \). Proton is detached from the neutron, leaving to neutron 152 bisers (the number of bisers on the siamese contact). The resonance on the circles is violations; bisers are divided into 2 parts. One part of the circumference by length of 46Bx2, i.e. by diameter of \( D_{n1} = 29B = 5,9055 \cdot 10^{-34} \text{ m} \) saves the hollow form. The second part of the bisers form a dense conglomerate by diameter of \( D_{n2} = 30B = 6,1092 \cdot 10^{-34} \text{ m} \). Electron saves its diameter, loses charge and turns into neutrino – \( D_{n3} = 32B = 6,5165 \cdot 10^{-34} \text{ m} \). Neutron saves its hollow form, is rotated. It forms the largest neutron particle – \( D_{n4} = 89B = 1,812 \cdot 10^{-33} \text{ m} \).

Increasing of temperature in the Newtonia from 0 K to 2,723 K – is the result of action necklaces for communication energies of electromagnetic waves and for tuging of the masses.
4. Energy-mass (matter) circulation of the Galaxy

Over the last few decades astrophysics have learned that black holes (BH) play a big role in the galaxies’ evolution. Astronomers have thousands of galaxies’ photos of different shapes and sizes. It was found that almost every galaxy in its center contains BH. Is found black holes inside and outside the galaxies that emit electromagnetic rays. It were taken photos of exploding massive bodies – new stars (Supernova), elliptical galaxies with massive BH, disk galaxies with BH of medium size and galaxies with invisible objects in the center. BH and galaxies are still mysterious.

By studying the pictures of BHs and galaxies, obtained using results of the works [1, 2, 3, 4, 9, 10, 11, 12], we can conclude that Black Hole and Galaxy are the phases of evolution cycle of the Galaxy. We arrange these pictures in the following order and do our interpretation (Fig. 21).

![Fig.21. Evolution of galaxies](image)

Fig. 21a. A Black Hole – is accumulation of all the stars of former Galaxy – has milliards of solar masses (M☉).
Fig. 21b. A Supernova – “explosion” of a BH. The explosion scattered from the surface layer of BH pieces of “earth-crust” – centers of future stars and their satellites.
Fig. 21c. A gas cloud around a BH with the mass of milliards M☉. The start of «evaporation» of BH – hydrogen atoms' liberation from their compressed state – liberation of the energy expended for compression them; increasing of masses and dimensions of celestial bodies.
Fig. 21d. An elliptical galaxy with BH in the center; weight >10⁹ M☉– expansion of the galaxy; increasing of masses and dimensions of celestial bodies; emergence of stars and Stellar black holes (SBH) by the mass of >1000 M☉.
Fig. 21e. A spiral galaxy (as the Milky Way) with BH medium value in the center (the mass of the Black Hole in the center of the Milky Way 4,3⋅10⁶ M☉); further formation and growth of star- clusters; BH by mass of >1000 M☉.
Fig. 21f. A spiral disk galaxy of large diameter with a relatively small BH in the center; increasing of the number of BHs and their masses (>1000 M☉).

Fig. 21g. In the contraction period of Galaxy is continued increasing the number and masses of BHs; accumulation SBH of medium size (thousands M☉) into more massive SBH (millions M☉). This figure of a Dark galaxy, where all stars are gone out – they are dark, but emit electromagnetic waves.

Examining the sequence of these pictures, one can notice, that the sum of current mass of BH (Mc) and the total mass of stars on orbits (Mst) is equal to the mass of the initial BH, or to the total mass of the galaxy (Mgal): Mbh=Mgal=Mc+Mst=constant (for each galaxy). Identical: the value of the Central Black Hole is inversely proportional to the disk's size of the Galaxy, i.e. the mass (the potential energy) of the galaxy accumulated in BH (Mbh), transformed into the mass (the kinetic energy) of rotating stars. The energy of the Galaxy is equal to the sum of potential and kinetic energies: Egal = Epot + Ekin = constant.

Thus, Black Hole and Galaxy are two states of the galactic system – repetitive circulation cycle's state of energy-mass (matter) of the Galaxy.

Below we will try to justify exclusivity of the evolution chain (cycle) of Galaxy, considering each link of the chain separately.

In the Galaxy there are three types of celestial bodies: luminous (stars) and dark (BH, SBH, planets) and expanding (Supernova). Luminous stars exist in expanding galaxies, dark bodies (SBH, planets) exist in the expanding and contracting galaxies. All these bodies – evolution elements of the Galaxy, being in constant changing, transitory to each other, state. The third type of bodies – are Supernova – are the BH and SBH, being in exploding state. In astronomic scales of time and distances, we perceive them as stationary or stationary temperaril.

Fig. 22a – Structure of nonluminous celestial bodies (BH, SBH, planets).
Fig. 22b – Structure of luminous celestial bodies (stars, the Sun). T – temperature curve; pm – maximum density of the heavenly bodies' substance.

Fig. 22a shows structure of all the nonluminous celestial bodies in the Galaxy: from small planets to BH. They have a crust, consisting of the known chemical elements (as on the Earth), a layer of melted chemical elements – lava, and the kernel consisting of compressed hydrogen.

The crust consists of comparatively loose rocks. This is confirmed by the observed astronomical phenomenon, as from the surface of a lesser BH a jet of matter flows to the
large BH at their location close to each other [3, 4]. The status of the chemical elements is changed as the deepening of their occurrence. Increasing of matter's density under influence of the static pressure is accompanied by heat radiation due to deceleration of atoms' rotation in the constrained conditions. (Atom has constant rotation frequency. Atom, to maintain this consistency at rising pressure (density of medium), increases electron's radial oscillation frequency on the orbit. The greater pressure the greater electron's oscillation frequency, the more gravity energy is transferred by quarks, and the more temperature rises (was explained above)). At first, the larger atoms are got warm, which rise the temperature to 6000 K, determining by boiling point of the very refractory element – tungsten – 5773 K. At the pressure of >1000 atm. the melted large atoms begin to disintegrate into smaller atoms, to hydrogen atoms. The smallest atom – hydrogen atom – for a long time “resists” to the increasing cramped conditions; at first compacted to the density of iron, then, at the (melting) temperature 13,76 K stops rotating and is compressed collapsly to the maximum density of matter. In the most dense matter all particles have equal and minimum diameter of atom’s element – of electron. Therefore, hydrogen atom’s collapsy compression occurs when its nucleons are compressed to the size of electron by decreasing temperature from 13,76 K to 2,723 K. Thus, in the core of the heavenly body with the size greater than a certain, is set constant temperature of 2,723 K and constant density of $7.5 \times 10^{75} \text{ kg m}^{-3}$.

Fig. 22b shows structure of the luminous stars in Galaxy. The outer layer of boiling chemical elements by temperature of 6000 K (on the yellow star – on the Sun – 5778 K) is the “protective housing” of the thermonuclear “reactor” by temperature >$10^6$ K. As deepening into stars’ intrails, hydrogen atom’s activity is reduced due to the pressure increasing, thermonuclear reaction weakens and goes out, temperature is decreased. Further, process hydrogen’s condensation occurs by the same sequence as in dark BH shown in Fig. 22a. Below of the certain depth in the star are settled costant parameters: temperature – 2,723 K, density of matter – $7.5 \times 10^{75} \text{ kg m}^{-3}$.

We will consider interaction forces acting in the systems of rotating masses for substantiation of formation and explosion of BH (the birth of Supernova) (Fig. 23).
Fig. 23. Interaction of forces in the systems of masses. \( m_1, m_2, m_3 \) – elements’ masses of the system; \( r_1, r_2, r_3 \) - radiuses of the spherical masses; \( D \) – primary distance between masses; CGF – central gravity field; \( R_1, R_2 \) – distances of masses \( m_1, m_2 \) to the center of the torques’ balance – to the gravity field center; \( F_{gr} \) – gravity force; \( F_{cf} \) - centrifugal force; \( E_{gr} \) – gravity energy; \( E_{syst} \) – energy of the system; \( E_{kin} \) – kinetic energy of the rotating masses; \( \omega \) – rotation angular speed of the system; \( n_1 \) – linear tension state of necklaces; \( n_2, n_3 \) – three-dimensional tension state of gravitons (in large rotating systems with large cross-section).

Two masses \( m_1 \) and \( m_2 \) are attracted to each other by gravity \( F_{gr}=G \cdot m_1 \cdot m_2 \cdot D^2 \) (Fig. 23a). Potential energy of the system \( E_{syst}=F_{gr} \cdot D \). Mass of the system equivalent to the potential energy \( (M=E_{sys}/c^2) \), concentrated in the point of torques’ balance \( m_1 \cdot R_1=m_2 \cdot R_2 \). That is the central gravitational field (CGF) having properties of
masses and dimensions. (CGF – is graviton’s tension state in necklaces under gravity force between masses). Diameter of the CGF in the scheme: \( D_{\text{CGF}}=r_1+r_2 \); – in nature: \( D_{\text{CGF}}=1.24\cdot\sqrt[3]{\sum m\cdot p} \). (Here \( p \) – density of matter’s mass).

Masses \( m_1 \) and \( m_2 \) are attracted by the mass \( M \) – they fall on it accelerating \( a \). At the moment of contact of solid bodies their masses are added – the mass increases impulsely – a gravity impulse is radiated \( F_{\text{gr}}=G(m_1+m_2):2(r_1+r_2)^2 \). The energy, created by the masses’ striking \( E_{\text{str}}=a[m_1(R_1-r_1)+m_2(R_2-r_2)] \) is spent for changing of the masses’ structure. The changing of the structure is manifested in the form of elastic deformation of the material or its destruction, depending on the force of the strike and mechanical properties of the masses’ material.

Interaction of forces in the rotating system, consisting of two masses, is shown in Fig. 23b. In this system 2 forces interact: gravity force between two masses (described above) \( F_{\text{gr}}=Gm_1m_2:D^2 \) and centrifugal force of these rotating masses \( F_{\text{cf}}=\omega^2(m_1R_1+m_2R_2) \). Potential energy of these two rotating masses – is CGF, possessing by properties of mass and dimensions. It attracts the masses. Here, the \( F_{\text{gr}} \) and \( F_{\text{cf}} \) are added.

System’s energy at the moment of masses’ contacting:
\[
E_{\text{sys}}=E_{\text{gr}}+E_{\text{kin}}=G(m_1m_2):r_1+r_2+\frac{1}{2}\omega^2[m_1(r_1+r_2)^2+m_2(r_1+r_2)^2].
\]
(Here \( \omega_1 \) - angular velocity of the system at the contacting moment). That is unrealized energy due to impossibility of merging the centers of solid bodies’ mass with the concentration center of the potential energy. The bodies are pressed together by gravity force. This force may destroy or elastically deform the bodies depending on its volume and mechanical properties of the bodies’ material.

Fig. 23c, 23d show rotating systems consisting of three masses. (In Fig. 23c is shown a diagram with relative sizes in the circles (2, 3, 6), as an example of geometric definition of the gravity center of the three masses (m, 2m, 3m) and the central gravity field CGF. (This example is initial position of the system shown in Fig. 23d). The CGF, having equivalent mass equal to the sum of the potential energies of gravity and rotating masses, is located in the system’s center of gravity, and attracts the masses to the center. System’s angular velocity is increased. In approaching the masses to the center. Their approaching to the center stops after mutual solid contact without merging of masses’ centers; center of each mass is outside their common center of gravity. The common center of gravity was and remains in the center, where is CGF. Thus, at the moment of solid contact of the masses, their common gravity center is merged with the center of rotation system without merging these individual masses’ centers.

The system’s energy at the solid contact moment of the masses:
\[
E_{\text{sys}}=E_{\text{gr}}+E_{\text{kin}}=G(m_1m_2m_3):R_m+\frac{1}{2}\omega_1^2\sum m\cdot R_m^2.
\]
Here, \( \omega_1 \) – angular velocity of the system before masses’ contacting; \( m \) – is the total mass; \( R_m \) – is the average radius of the spherical masses – is the average distance between masses.

The system’s energy at the moment of masses’ contact (at the moment of centers’ merging) undergoes changes: The separate solid masses do not merge into one massive body (all three masses find themselves in the position shown in Fig. 23d; centers of the separate masses are outside the common gravity center); kinetic energy of the system is not completely transits to potential energy. \( E_{\text{kin}}=E_{\text{pot}}+\Delta E_{\text{kin}} \). In rotating systems, by the law of conservation of energy, kinetic energy is completely converted to potential energy only at the confluence of the rotating masses’ centers with the system’s center, which ends increasing of the rotation velocity. In this case, the centers are merged without further increasing the angular rotation velocity; it remains without changes from the moment of masses’ contact – \( \omega_1 \). Therefore, some of the kinetic energy, which is not transferred to potential energy, “disappears” – transits to another form of energy – to antigravity energy \( \Delta E_{\text{kin}} \rightarrow E_{\text{ag}} \). This transition is as follows:
In the equality \( \Delta E_{\text{kin}} = \frac{1}{2} m R^2 \omega_1^2 \), at the contacting moment of all rotating masses, the medium rotation radius \( R \) and the angular rotation velocity \( \omega_1 \) remain without changes. So the "disappearance" \( \Delta E_{\text{kin}} \) happens by "disappearance" of the mass \( m \), i.e. the mass of the system is reduced impulsively to this amount. As is known, \textit{impulse of reducing mass generates impulse of antigravity energy}. This impulse weakens gravity connections of the internal structure of the masses.

Fig. 24. shows a device’s scheme for experimental verification of interaction forces in rotating systems.

![Experimental device for testing interaction forces in rotating systems](image)

Fig. 24. Experimental device for testing interaction forces in rotating systems. 1 – display; 2 – guide (dielectric) tube; 3 – core of the solenoid (fragment of the «central» mass); 4 – distributor of measuring signals; 5 – elastic cord; 6 – multiple-solenoid; 7 – switch; 8 – direct current motor; 9 – reducer; 10 – germetic case; 11 – valve for vacuum pump.

The cores of the solenoid (in the scheme there are 3 pieces, but is enough 2) are pressed to each other and to the center with the help of elastic cord (5). Motor (8) through reducer (9) rotates the entire system at a sufficient rate that the centrifugal force, stretching the elastic cord (5), has placed the fragments of the mass to the position shown in the figure (the fragment, which is closer to the center, stay pressed against the central roller). At this moment, the commutator is turned on that controls the sections of the solenoid: fix the position of the fragments with the distance \( \ell \), and has opportunity to move the entire group (of three fragments) in any direction along the guide tube without changing the distance. The cord between fragments is relaxed. At first, it stretches fragments to the right position (by the scheme), then moves them toward rotation center, «helping» to elastic cord to drag the group to the roller, but by some braking. The switch (7) switches off the clutch (or switches the engine from position of «engine» to the «generator»). The system continues to rotate by inertia. According to approaching of the group to the center its speed increases. At the moment of «solid» contact of the left fragment with the roller, i.e. of the entire group of fragments by preserving their fixed position (fixed position of fragments is imitation of the closely packed state of the whole mass), increasing of the speed is stoped (in presence of friction forces between tiles and the wall of the guide tube, and between parts of the rotating system). At this moment in the electric current of the commutator is marked a peak change caused by impulsive increasing of the distance \( \ell \), imitating impulse of antigravity. The oscillagram of «left» and «right» parts of the device are recorded separately as duplicating the reading of one experiment.

Fig. 25 explains this contradiction by the example of infrared radiation from the layer of lava in BH.
Fig. 25. Observation infrared radiation from black hole.

Radial rays are «returned» to the BH’s surface under influence of gravity Fgr. Tangent rays are deflected to inside of BH under influence of gravity, therefore into telescopes fall the rays emanating from source, which is behind the horizon at a distance of angle α.

The observed phenomenon of light’s deflection near massive bodies is explained by attracting impulsive masses of necklaces by these massive bodies. The light passes through these deflected necklaces.

All material bodies (all material particles) in the Universe linked by gravitational “threads” and attracted to each other with constantly acting pulsating force by law $m/D^2$. Under action of this force all material bodies of the Universe are congregated together. In the process of the congregation the small masses (revolving on orbits) fall on the large masses. People are attracted to the Earth, the small celestial bodies fall on planets (on the Earth), the planets fall on the Sun, the Sun with their planets falls to the nearest Stellar black hole (SBH). The SBHs are attracted to each other and form larger SBHs. These SBHs fall into the center of the galaxy and form one Central Black Hole (CBH) with the mass equal to milliards of Solar masses. However, irrevocable accumulation (burning) do not occures. Otherwise, the Universe would be represented as a solid lump of something massive substance. As we can observe the Galaxy – the star-clusters rotating around one center, i.e. falling into one center, we can confirm conclusion made by the “photos” in Fig. 21, that in the Galaxy happen repeating cycles of energy-mass circulation, consisting of periods of expansion and contraction, and that we were born in this expansion period.

The expansion period – the creation period – begins by explosion of BH (by birth of Supernova). At the beginning, the antigravity impulse throws about into space of future Galaxy debris of the crust – centers of future stars, SBH and planets. Hydrogen atom liberated from the static pressure, “straightening” emits quant of antigravity energy. Therefore, BH (consisting of “pressed” hydrogen) is “evaporated” [3, 9, 10] releasing antigravity energy, which spreads at the speed of light c, and emitting hydrogen atoms, which spreads at a seed of $c/R$. The expansion period is continued milliard of years, during which in the Galaxy massive celestial bodies of various sizes are formed. These bodies, spreading radially from the center, are increased in sizes due to mutual gravitation (clustering) and formation chemical elements aut of hydrogen atoms.

The size of a celestial body reaches to the value, at which chemical elements under static pressure at certain depth from the surface, are melted (because of the difficulty of atoms’ rotation in cramped conditions, the temperature is rised to 6000 K (Fig. 22a). New chemical elements, including radioactive elements, are formed out of hydrogen atoms (from evaporating BH); radioactivity occurs. The pressure and temperature reach to the level, in which begin radioactive decay and thermonuclear reaction, supported by hydrogen supplied from the BH. Stars appear (“are lighted up”) (Fig. 22b). The masses of the stars
continue to increase. Stellar black holes are formed. Atoms in their cores are densely packed up collapsly and lose their ability to rotate; thermonuclear reaction goes out (Fig. 22a). Hyperdense SBHs are not deformed, therefore large SBH are not smooth sphere, but are shapeless conglomerate, collected from spherical bodies of different diameters on one massive SBH (Fig. 21g).

Atoms of chemical elements, located on the surface of a BH, found themselves between “millstones” of two BH at their mutual contact under influence of the enormous gravity, are destroyed mechanically emitting all spectrum of electromagnetic radiation.

Chemical elements are broken to particles of the diameter equal to the electron’s diameter (32B), bypassing the hydrogen phase of decomposition (under high pressure and high temperature in the layer of lava).

During expansion of the Galaxy, on some planets organic life is formed, where favourable conditions exist: definite heat from the star, the size of the planet (the value of gravity), the availability of water and air. Life arises on a isolated planet and not transferred from one planet to another.

The Galaxy’s expansion period continues to the full evaporation of BH, to complete transition potential energy to kinetic energy. At the end of this period, the whole mass of the Galaxy rotates round its center, where the central gravitational field with equivalent mass, equal to the mass of all rotating bodies, is concentrated (Fig. 21a). Stars go out due to exhaustion of internal “fuel” and termination of hydrogen’s entering. Organic life on the planets stops. “Dark” and “cold” contraction period of the Galaxy begins. In this period, only gravity dominates, which continues to collect the celestial bodies to more larger SBH (Fig. 21g, Fig. 26b).

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**Fig. 26.** Formation of SBHs and Stellar Supernovas in the contracting Galaxy (a, b); Formation of BH in the Galaxy's center out of SBH (c, d); Explosion of the central BH (Supernova) by formation spiral Galaxy (e, f).

The SBHs revolving on decreasing orbits are approached closer to the center of the Galaxy (Fig. 26c). Rotation speed of the SBHs is increased as they approach to the center.
Their approaching to the center and increasing the speed stops by solid contact of the SBHs (Fig. 26d, Fig. 23c, 23d. In Fig. 26e shown equivalent scheme of approaching of masses’ and CGF’s centers to each other before their merging). At the contacting moment of all SBH – at the moment of impulsive termination of increasing their rotation velocity, part of kinetic energy of the Galaxy, which is not transited to potential energy, transits to another form of energy. This process of energy transition is equivalent to the impulsive disappearance of the rotating mass, equivalent to the vanishing kinetic energy. (We repeat: An impulse of antigravity energy $E_{agr}$ is manifested at the impulsive reduction of a mass). The impulse $E_{agr}$ “destroys” gravity, i.e. attracting gravity force is replaced by repulsive antigravity force. This impulse explodes the upper crust of the BH and scatters its debris into space of the future Galaxy. Fig. 26f shows “explosion” process of BH by formation spirals of Galaxy (there are photos of such process). Further, Galaxy’s expansion process occurs by the scenario described above. All observed disk galaxies have a spiral form. This confirms the statement above described, that BHs consist of SBHs, which are “exploded” and “evaporated” individually, starting from the periphery of BH. The one arm of the spiral is the trace of one exploding SBH.

In the Galaxy is observed also emergence of “small” Supernovas. We call them - Stellar Supernova unlike the Central Supernova (explosion of the BH in the center of the Galaxy. Fig. 26b). This occurs, when several SBH are merged together and exploded even before falling them into the center of the Galaxy, by the same way as was described above. The emergence of the Central Supernovas is more rare. Therefore, most of the observed Supernova likely are Steller Supernovas.

The graphic image of the evolution of Galaxy is shown in Fig. 27.

![Fig. 27. Energy-mass (matter) circulation of the Galaxy.](image)
In the contraction period of Galaxy kinetic energy transits to potential energy – mass on orbits (kinetic energy) is decreased (the blue curve, 1), mass in the center (potential energy) is increased (the black curve, 2). As the result, in the center is accumulated a mass, equal to the total mass of the Galaxy, – is formed BH – the kinetic energy transits completely to the potential energy (8). Expansion period of the Galaxy – the creation period – begins by “explosion” of the BH (Supernova, 5) – the BH (8) is merged with the Central gravity field (7). Now, the potential energy transits to the kinetic energy – the mass of the BH (potential energy) is decreased by releasing antigravity energy and “building material” of the Galaxy – hydrogen (the red curve 3), and the mass rotating on orbits (kinetic energy) is increased (the green curve, 4) due to formation chemical elements out of hydrogen. Organic life on planets appears and exists at the second half of the expansion period (6). In Fig. 27 the sum of the energy and mass’s areas E + M = constant. The time of a galactic cycle is 10-12 milliards years.

(Astrophysicists and astronomers, studing of the Galaxy and the Black Hole, could clarify this time and predeterminate the long-term (secular) prognoses of climate changes on the Earth – glacial periods and periods of warming, as well as prognos of evolution of the Earth and organic life on it).

The circulation cycles of matter of the Galaxy are repeated sinusoidal by decreasing amplitudes and increasing frequency because of braking effect of the attraction forces between galaxies and radiation light energy by galaxies to their outside. The last cycle occurs when a BH is formed by accumulation SBHs falling without rotation (vertically) and, therefore, is not exploded. In one of these galactic “sinusoids” we now live. In 10-12 milliard years on following branches of sine wave will appear “people” similar or dissimilar to us. Evolution experience of matter’s development is not transfered from one cycle to another: the previous cycle ends by matter’s disintegration to bisers, the subsequent cycle starts by forming bisers – elementary particles of matter.

About “dark” phenomena in the Universe. Anomalous increasing rotation speed on the galaxies’s periphery is observed. Astronomers, astrophysicists could not explain the reason of such phenomenon and declared that there could be unknown, unseen “dark” matter, affecting to behavior of the visible matter. In our opinion, the “dark” phenomena do not exist, as mentioned anomal phenomenon can be explained by the laws of gravity. Let's try to explain this phenomenon graphically in the expanding and contracting Galaxy. We will repeat the above description circulation cycle of matter in the Galaxy by more detailed demonstration of acting forces (Fig. 28).
Fig. 28. Evolution of Galaxy

Fragments of the exploded BH (corc’s fragments of the BH of various sizes) are scattered into space of the future Galaxy (Fig. 28a). To the fragments the following forces act: centrifugal force (impulse of antigravity force of the BH’s «Bang» and antigravity force, generated in “evaporation” of hydrogen) and centripetal force (the gravity force between these fragments and BH). The Galaxy’s expansion continues to equalizing these forces. These forces are in the complex interdependent connection. The fragments, separated from the rotating BH, are speeded by flat-expanding spiral orbits. The gravity force between mass of the BH (Mbh) and the mass of the fragment (celestial body) \(m_{fr}\) is changed according to the Newton’s law: \(F_{gr}=G\cdot Mbh\cdot m_{fr}\cdot R^2\). The mass \(Mbh\) is reduced in the expanding process of the Galaxy because of “evaporation” of its mass (emanation of hydrogen), and the mass of the celestial bodies \(m_{fr}\) is increased due to the “sedimentation” on them these “evaporations” (chemical elements formed out of hydrogen atoms) (Fig. 28b). In the celestial bodies, when they reach certain size, thermonuclear reaction begins, stars “are lit”. The celestial bodies are enlarged – are formed Stellar black holes (SBH). The increased mass increases centripetal forces. The centripetal and centrifugal forces are equalized and the expansion of the Galaxy is terminated before complete “evaporation” of the BH. The celestial bodies radiating energy lose their masses because of radiation energy, expenditure of internal reserves of “fuel” (“pressed” hydrogen), and hydrogen’s decreasing from BH (In Fig. 28 S1 – is the star before reducing its mass, S2 – is the star
after mass’s reduction). (The flow of the hydrogen from BH is decreased by law 1/R². Hydrogen atoms in radial movement in the Galaxy are attracted to the massive celestial bodies, change their trajectories to them. As the result, small amounts of hydrogen reach to the peripheral stars). The attraction of BH the stars, rotating on smaller orbits (S₁), more than the attraction the stars, rotating on large orbit (S₂): Fgr₁ > Fgr₂. Gravity fgr between S₁ and S₂ reduces distance between their orbits. The lasser mass (S₂) is attracted to the greater mass (S₁). The orbit of S₂ is reduced and the orbit of S₁ is increased. In this case, the orbit’s radius of S₂ is reduced to a greater extent than the orbit’s radius of S₁ is increased. In the zone of the Galaxy, where kinetic and potential energies remains constant – in the zone of equality of centripetal and centrifugal forces (see the chart “energy conservation law” – the green and blue fields), reduction of the orbit’s radius of the star S₂ increases its speed to V₃ (Fig. 28c). Thus, on the periphery of the Galaxy a zone with anomalous increased angular rotation velocity of stars is formed. In other words, the contraction of the Galaxy starts earlier than the BH will be evaporated completely, and before the stars become dim. Further reduction of rotation radius and increasing of angular rotation speed of celestial bodies continues in the contracting (dark) Galaxy of extinguished stars, where there are only centripetal forces (Fig. 28d). In the period of contraction, further escalation of the celestial bodies is continued due to their merging under action of mutual gravity. More larger SBHs appear. When several SBH are merged they are exploded – Stellar Supernova (SSN) are emerged. The increased masses attracted more by Central gravitational field. Contraction of the Galaxy occurs rapidly (Fig. 28f). At the moment of solid contact of the SBHs in the center of the former Galaxy, kinetic energy is not fully transits to potential energy (the green field in the energy diagram). This leads to the explosion of the Central BH (Fig. 28a, and Fig. 26f). The cycle of energy-mass (matter) circulation of the Galaxy is repeated.

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The device (Fig. 29) experimentally models evolution cycle of Galaxy described above. (Rotating system of the device consists of two symmetrical and synchronous working assembly. Therefore, description of the device and its function can be done in one of its halves).
Fig. 29. Experimental device for study evolution of Galaxy. 1 – graphical display of measured parameters; 2 – distributor of measuring signals; 3 – motor-reducer; 4 – worm-reducer; 5 – switcher of the engine; 6 – direct-current motor; 7 – reducer; 8 – guide (dielectric) tube; 9 – multisectional-solenoid (inductive coil); 10 – core of the solenoid (fragment of the «central» mass); 11 – elastic cord; 12 – fragment of the mass with a water tank; 13 – water; 14 – exhaust valve; 15 – hermetic housing; 16 – valve to the vacuum pump.

The guide tube (8) has ability to change its position from vertical (I) to the horizontal position (III) using motor-reducer (3) and worm-reducer (4). The vertical position of the guide tube (I) imitates a Black Hole in the galactic center, intermediate position of tubes (II) – imitates explosion and “evaporation” of BH. Horizontal position (III) imitates the Galaxy at the end of its expansion, when the whole mass of BH is transits into the rotating mass of the “stars.” At the beginning, at certain constant angular velocity $\omega$, reducing of $\alpha$, is seeking for the position of the mass’s fragments shown in Fig. 24. At this time, these masses are stretched from each other on the distance $\ell$, and the left fragment still have not tier off from the bottom of the tube (8). (During carrying out of experiments it is necessary to consider the effect of friction forces of the cores (10) against the wall of the tube. The friction force under action of gravity varies from zero in the vertical position of the tube to the maximum in its horizontal position. The friction force, that occurs under the action of centrifugal force, depends directly proportional to the angle $\alpha$.) This position of the fragments relative to each other is fixed by solenoids controlled by the commutator. In this, the cord between fragments is relaxed. (Now, commutator can move them in such posture along the guide tube). Releasing of water from the chamber of the fragment (12) with the valve (14) imitates reducing masses of the stars due to the expenditure of energy (“pressed” hydrogen) and for radiation the "light" in the its reaching to the peripheral layers. (Reducing the mass of the core reduces inductance of the solenoid). Measuring of the forces interacting within a circulation cycle of matter in the "galaxy" goes as follows. The system in the tubes’ vertical position accelerates to certain $\omega$. The motor (6) is switched off using button (5), or switched to the “generator” mode. Currents of driving at high speed $+J$ and generation $-J$ are written on the display. The tubes are transfered gradually, at first to horizontal position, then – to the vertical. The commutator in the first case, increases the radius of the expansion of the «galaxy» $R$, and, in the second case – in contraction of the “galaxy” – reduces $R$. The experimental data are recorded on the chart of the display (on the R-axis).

5. Evolution of the Universe

It is known that:
- The Earth rotates round its axis at a speed of 1670 km/h – 464 m/s, round the Sun – 30 km/s. The Sun rotates round the center of the Galaxy (GI) at a speed of 220 km/s. The Galaxy, in turn, rotates round the center of Supergalaxy GII at a speed of 630 km/s. Further, extrapolating, can be assumed that we, being on the Earth, “fly” at the speed of light round the center of the last Supersystem of the Universe Gc. (The constancy of light’s speed limits number of Supersystems’ orders).
- The Sun is from the center of the Galaxy at a distance of 26000 light-years (9.5 billion km) and makes one turn in 240 million years.

In the Universe all processes are impulse-quantum – from gravitons to Supergalaxy systems of higher order – Gc. (Graviton’s time of a impulse (energy-mass circulation) –
5.3912 \times 10^{-44} \text{ s}, hydrogen atom’s – 5.1525 \times 10^{-41} \text{ s}, an impulse (cycle) of Galaxy GI – 10-12 billion years, impulse of the Universe – of a period of energy-mass circulation < \infty \text{ years}).

All the rotating celestial bodies have flat disk form.

In the Galaxy GI occurs cyclically repeating energy-mass circulation by the above described scenario.

In the Supergalaxy system GII – in the field of the Universe, consisting of clusters of galaxies GI – interaction process of rotating masses and gravity field (GF) is different (Fig.30).

![Fig. 30. Contraction of the galactic system GII – “falling” of the galaxies GI into Central gravitational field (CGFII)](image)

In the Supersystem GII there are millions (?) of galaxies GI, including our Galaxy (the Milky Way). They revolve round the CGFII, possessing potential energy, equivalent to the kinetic energy of the rotating masses of the system GII. Galaxies GI approach rotating to this field – the galactic system GII is “contracted”. Galaxies GI “immersed” into CGFII by alone. The falling galaxy can be in any state in its energy-mass circulation: in the process of contraction, expansion, or in the form of BH. CGFI and galaxies GI absorbing by the CGFII increase the size (diameter) of this field of potential energy. Therefore, it can be said that the galaxies GI do not fall into CGFII, but the CGFII, widening, embraces the galaxies GI. (During one cycle of expansion and contraction of the GII in galaxies GI occur millions (?) repeated cycles of energy-mass circulation by subsiding sinusoides). As it was mentioned above, the potential energy of the CGFII equivalent to the kinetic energy of the rotating masses, exists only as long as there are masses orbiting round the CGF. Here, in the present case, the “sinking” single galaxies GI inside the CGFII continue to “fall” into the center, equivalent potential energy of which was created by masses of all the rotating galaxies GI. In the CGF gravitons are in volumetrical strained state. Every graviton in the CGF is, at the same time, in the chains of many necklaces, which are between rotating masses and pass through rotating center. The chemical element’s atom, being found in the field of strained gravitons, disintegrated to bisers, because of disturbance of gravity between electron and nucleons. Galaxies GI are disintegrated; stars, SBHs and BHs, i.e. all the chemical elements are disintegrated to the last particle that has mass – to bisers. After disintegration of all the GI in this region of the Universe remains a cloud-island of potential energy – cloud filled by bisers, being under gravity strain, i.e. under strteching again action of gravitons. The cloud’s diameter is equal to the diameter of the initial GII. (Potential energy of the cloud is gravitons’ strained state in necklaces. Necklaces strained in the rotating systems. All the rotating celestial systems have flat form). In the GII – in the
cloud – the contraction period ends by biser’s disintegration, and the expansion period begins by biser’s formation.

How biser is formed? In the energy field, two graviton’s impulses – two compression of a clot of energy – creates a biser. (The clot of energy is graviton’s impulsive superfluid state; it shown above). Biser acquires impulsive mass equal to two impulsive mass of graviton. Particles having three or more impulsive masses in this process are not formed. The particle formed after two graviton’s impulses goes out of gravitons’ influence and begins independent of gravitons functioning, though it exists only by their energy.

**Biser is formed in the beginning of recurring cycle’s expansion of energy-mass (matter) of the galactic system within two gravitons’ impulses.**

Transition of the contraction period into the expansion period occurs within graviton’s two impulses for $9.2745 \times 10^{-42}$ s (Fig. 31a, b, c), throughout the volume of the cloud simultaneously (Fig. 31k, L). It occurs so-called “Big Bang” without explosion. It begins hydrogen atom’s formation out of bisers. Out off hydrogen atoms are formed chemical elements, stars, planets, galaxies GI. These formations occur in CGFII in individual (millions?) its areas simultaneously. Expansion of the system GI – increasing its size as in galaxies GI – not happens.

![Fig. 31](image)

At the beginning, in the cloud-island filled by bisers, evolutionary formation of a viable system out of bisers by the method “trial and error” begins, i.e. begins natural search-choice of the bisers’ combination – of the hydrogen atom, capable to further evolution development. We will consider one of possible combination of hydrogen atom’s
formation, which could be happened in the following scenario (Fig. 31). Bisers, having impulsive mass (without charge), are attracted to each other by gravity and form conglomerates of various sizes (Fig. 31e). The sizes of the rotating conglomerates are increased only to certain value. The limiter of the size is the value of the biser's electromagnetic charge, which depends on interaction biser’s speed and energy of gravity field. The linear speed of the bisers, which are on the conglomerate’s periphery, is increased by increasing of the conglomerates' radius. In proportion to the increasing of the biser’s tangential velocity, its electric charge is increased. The bisers, charged unipolar, repel each other. When the repelling force of the charge exceeds over the gravity force, these bisers leave the upper layer having great tangential velocity. Thus, at certain constant angular velocity, the shapeless conglomerate assumes the spherical shape of the certain diameter (Fig. 31f). Two such conglomerates are attracted by gravity and joined together. Bisers on the contact place of the two conglomerates, which has not yet charged (the future proton and neutron), become common, form the siamese contact. In the environment with chaotic motion of the conglomerates, interaction their gravity forces creates impulse of torque between the two connected conglomerates, which charged different-polar – appears electromagnetic dipole. The rotating massive dipole captures by gravity the third conglomerate and involves it in rotation (Fig. 31g). If this conglomerate approaches to the negatively charged end of the dipole, he is charged negatively, becomes electron. The negatively charged end (conglomerate) of the dipole become the rotation center of the system and loses charge. At the time of electron’s approaching to the dipole, its rotation radius is reduced and angular velocity is increased. Now, the electron becomes as a "steward" – increases the rotation speed of the whole system. However, increasing of the rotation speed is limited by the centrifugal force, which opposes against the forces of gravity and electromagnetic attractions between electron and proton. Equilibrium between these forces is established – is formed hydrogen atom (Fig. 31h).

Electric charge depends on the rotation speed, and interaction of gravity and electromagnetic fields depend on the distance. Centrifugal force sets the system's constancy – constancy of the rotating speed (constancy of the charge) round the center of the smallest torque – round the neutron. Proton cannot increase the rotation radius because of the siamese contact. The system’s elements (proton and electron) must be charged so that, rotating on different radiuses, their charges should be the same. Electron rotates on the large orbit and charged more, and proton rotating on the smaller circumference should have a greater number of bisers on its surface so that, the total charge was equal to the charge of the electron. That is possible in condition of increasing their number by increasing surface area of the proton – by its inflation out – by formation a single-layer sphere, where between bisers there are attracting force of their impulsive masses and repulsive electromagnetic force. Nevertheless, such system cannot be managed, if the diameter of the spheres and number of bisers on their surface will not correspond to the value, necessary for formation and functioning of quarks. Therefore, it is continued selection of conglomerates’ diameters, dipoles and the number of bisers on their surface, until on the hollow sphere of definite diameter can be installed resonant waves, where can be bisers-quarks, which could control the system (atom). Nature has a lot of time, in “some” millions or milliards of years, after numerous trials and errors, such conglomerates’ diameter (88B) and bisers-quarks appear. Quarks “work” simply: in the atom’s collision, because of “shaking” in collision of the electron against “the wall,” they fly out from one of the “inconvenient” shaking place, sit back, but on empty space from the neighboring quark (Fig. 16). Atom under quarks’ influence becomes self-managing – it may change its position in the space depending on the environmental conditions. Such atoms are easily merged together and form chemical elements (Fig. 31i). In this case, formation of
the chemical elements occurs in the CGF on the separate (millions?) areas (Fig. 31j, k), where, then, galaxies GI are formed simultaneously (Fig. 31 L).

Let’s return to Fig. 31g. If the third conglomerat approaches to the positively charged end of the dipole, is charged positively, and becomes positron – is formed «antihydrogen atom» – antiparticle. The antiparticle has the appearance and parameters of hydrogen atom, but by opposite sign charges (Fig. 32).

Fig. 32. Antihydrogen atom – antiparticle

Hydrogen atom and antiparticle – the two oppositely charged rotating disks are attracted to each other by charges of electromagnetic fields and gravity. At the moment of disk’s contact, occurs instantaneous disappearance of charges. Centrifugal force tears atom’s masses. Antigravity impulse (which occurs in masses’ division) “blows up” these two atoms. They are disintegrated to 168000 bisers by releasing energy: $E_{expl}=2E_H=2\cdot5.725\cdot10^{-31}$ J·s = $1.145\cdot10^{-30}$ J·s, where $E_H$ – radiation energy of atom’s one revolution.

Two conglomerates can rotate round their common center, but not around the center of one of them – an atom, consisting only proton and electron (without neutron), cannot be formed.

Rotation slowing of galaxies GI and their subsequent falling into the CGF II (contraction of the galactic system GII) occurs due to gravitational interaction between themselves, CGF and neighbouring Supergalaxies GII, rotating round common center of Supergalaxy the third order GIII, which in composition of millions (?) of the same as GIII rotates round the center of the Supersystem GIV...
Fig. 33. Contraction of galactic system GIII.

Contraction process of the Supersystem GIII goes on the same as the GII in the CGFII (Fig. 33), by ebove-described scenario, inside the CGFIII. The “sinking” Supersystems GII can be in any state: in the form of rotating systems or of cloud-islands. These systems, absorbing by the “increasing” CGFIII, are “dissolved” in this field of volume-strained gravitins, because of atom’s decay (see above). After absorbing of all the GII in this area of the Universe, the second-order cloud-island remains. By the same way, the Supersystems GIII are absorbed by CGFIV, forming the cloud-island of the third order...

The last Supergalaxy system of higher order Gc – has a disk-forming shape of the diameter \( D_U = \infty + \nabla \), where local processes of energy-mass circulation occur in the systems: GI, GII, GIII GIV... Gc. The mass of the entire system is concentrated in its peripheral layer by thickness \( \infty + \nabla \). CGFc equivalent to this mass is a disk of a radius \( R < \infty \), and is located in the center of the system.

The state of the Universe at the End of the Next Cycle of the Universe and at the Beginning of the New Cycle is the infinite space of the gravity field, in which islands of galactic systems of all orders in different evolution states are scattered.

The full evolution cycle of the Universe is shown in Fig. 24.
Fig. 24. The evolution cycle of the Universe. GI – Galaxy; GII, GIII – galactic systems; RCGF – radius of the last central gravity field; C – cloud-island of potential energy, where atoms are formed out of bisers; Pe – potential energy; Du – diameter of the Universe; L – thickness of the peripheral layer of the Universe.

Each point in the infinite space is its center. Therefore, the number of Supergalaxy systems Gc and evolution cycles of the Universe is equal to infinity.

6. Geometric models of chemical elements

Accurate idea about atoms’ structure not yet. Each represented atom’s design is only its model, which is necessary to prove.

The main distinguishing feature of chemical elements is their atom mass. The atom mass is measured with the help of mass-spectrometer. The measured mass of the hydrogen atom equal to 1,674·10⁻²⁷ kg. Is accepted, what hydrogen atom consisted of only proton and electron. By the electron’s mass is neglect for its trifle (in 1836 times less of proton’s mass). This electron’s mass is calculated proceeding, also, from assumption that the atom consisted only of the two elements (?). Dalton (1808) proposed the mass of the
hydrogen atom to use for determining the relative masses of other chemical elements. However, its applying brought to errors in measurements. Later (in 1961), was decided, to accept for the unit of relative atom mass \(1u = \frac{1}{12}\) part of the carbon's mass = \(1,662 \cdot 10^{-27}\) kg (this corresponds to the relative mass of the hydrogen atom – 1,008). In the Periodic system of elements (PSE) the relative chemical elements' masses differ to aliquot to value 2 x 1,008. This multiplicity is equal to the mass of the hydrogen atom consisting of proton, neutron and electron:

\[
mp + mn + me = 1,00728 + 1,00867 + 0,00055 = 2,0165; \text{ or } \]
\[
1,6726 \cdot 10^{-27} \text{ kg} + 1,6748 \cdot 10^{-27} \text{ kg} + 0,0009 \cdot 10^{-27} \text{ kg} = 3,3483 \cdot 10^{-27} \text{ kg}.
\]

Thus, this confirms our idea that hydrogen atom consists of nucleons and electron, and that all atoms of chemical elements were built and are built by combination of hydrogen atoms' compounds.

In the constructed atom, roles of the proton and neutron are changed: in the center and closer to the kernel they are neutrons, on the kernel's periphery they are protons, electron can change its orbit depending on the radius and rotation frequency for smoothing the beating, which may appear in joining to the next hydrogen atom and formation next element according to the PSE. Therefore, in the collected chemical element it is not the hydrogen atom.

Atom is a rotating disk consisting of concentric rings of electromagnetic fields. The outer ring – is the electromagnetic field of the rotating electrons (-), the inner one – is the field of the rotating kernel's protons (+). Interaction between atoms occurs by electrons' electromagnetic field. Atoms are connected between themselves by lateral surfaces of the disks (by the contact areas that are on the nucleons' surface. See Fig. 15) and by rims of disks. The electron's charge (the rotating electrons electromagnetic field) is constant for all atoms: \(e = 1,60219 \cdot 10^{-19} \text{ C}\) (Coulomb's constant). The charge's volume depends on linear (tangent) velocity of the electron – on the interaction speed of bisers and gravity energy, i.e. on the atom's rotation frequency and its radius. Atom of each chemical element has definite diameter and its constant rotation frequency.

Atom's mass is determined by multiply of 4 values: biser's mass of a impulse, number of bisers in the atom, bisers' number of impulses at one revolution of the atom and atom's rotation frequency in a second. Hydrogen atom's electron, which has rotation radius 176B, is charged to the elementary charge at rotation frequency \(5,1525 \cdot 10^{-41} \text{ s}^{-1}\). \(B = 2,0364 \cdot 10^{-35} \text{ m} – \text{ bisers diameter. These hydrogen's parametrs can be used for determining relative parameters of andere chemical elements.}

Below we show some examples of combination geometric models of chemical elements by artificial selection of hydrogen atoms' combinations in accordance with PSE. Atoms of the first 8 elements of PSE have a single-layer disk structure, the rest of elements have two or more layers. Besides, the number of disks' layers of atom corresponds to the number of electrons' orbits, shown in the schemes of PSE.

Atoms' designs and sizes are set according to the formula of the forces' balance:

\[
\Sigma F_{cf} = \Sigma F_{e} + \Sigma F_{gr}, \text{ where } \Sigma F_{cf} – \text{ the sum of centrifugal forces of electrons and protons; } \Sigma F_{e} – \text{ the sum of electric charges' forces of electrons and protons; } \Sigma F_{gr} – \text{ the sum of gravity forces between masses of electrons and nucleons. According to this formula are set the layers' number, electrons' number on the layers and atom's dimensions. (The detailed equation of forces' balance presented above in section 3).}

Following conditions are taken into account in compilation of atoms' geometric schemes: atom's are connected only by contact areas; by lateral surfaces of the disks in
the rotation center. Atoms can be connected by rims, in synchronization of their rotation under great pressure.

Fig. 35 shows examples of construction of helium, lithium, beryllium, bor and hydrogen molecule out of hydrogen atoms.

![Fig. 35. Examples of geometric arrangement of chemical elements by combination hydrogen atoms. RH – hydrogen atom’s radius.](image)

In Fig. 35 hydrogen atom is shown in two versions: as it presented in the Peridic system and as we present in this work. Model of the hydrogen molecule built of two atoms. It does not stand up to criticism: it has extremely weak inter-atom bond and, when it interacts with other atoms, is quickly breaked down into two atoms.

The atoms’ building-forms determine their physical and chemical properties, their ability to combine with each other and form new chemical elements. For example, one of the modifications of helium, formed out of two hydrogen atoms, has one electron orbit and small diameter, chemically inert – cannot connect with other atoms. In Fig. 35 the right and left schemas of helium have the same design, but have different rotation planes. Such atoms are not able to connect even between themselves. (Helium atom – is a hydrogen molecule connected “by mistake” out of two hydrogen atoms. Helium in interstellar space is formed in the hydrogen atoms’ stream from BH).

**Carbon** (Fig. 36) is built out of 6 hydrogen atoms, electrons of which are located on two orbits – in 3 on the orbit, has three planes of symmetry. It has unique properties. It has the following modifications: diamond, graphite, filler and graphene. Perhaps, there is another modification – so-called Graphenkord.

Here, we had built atoms’ geometric schemes according to PSE – accepted that electrons revolve on different orbits. However, we consider that electrons in the atom’s single-layer disk are rotated synchronously on the same orbit and are distributed evenly on this orbit because of the equally repulsive forces their unipolar charges. (However, we had left the atom’s geometric schemes with different electron’s orbits without change; for selection of combinations of atom’s connections it has no importance).
Diamond (Greek: adames = not submissive) is the hardest substance. Diamond does not conduct electricity, in the pure oxygen burns at 800°C; in the air – at 3000°C. Diamond’s crystal has tetrahedronal structure.

Graphite (Greek: graphein = to write), opposite of the diamond, is a very soft substance, oily to the touch, stratified-squamous and easy to stratify. Graphite passes electric current. It melted at a temperature of 3700°C.

Filler. Pure carbon under the action of laser beams or electric arc is condensed on a cold surface. It contains a cellular molecule of 60 carbon atoms, has a spherical shape. Each atom is connected with the three neighboring atoms by the graphite connection.

Graphene - 2D-dimensional crystal of carbon, having one-atom-thickness – has high mechanical strength, extremely high electric and thermal conductivity and other unique properties.

Construction of two modifications of carbon – graphite and graphene is shown in Fig. 37, 38.

In the graphite the carbon atoms are linked by outer rings of electromagnetic fields, forming divided flat groups of atoms. It is a weak link. The weak-linked atoms can rotate asynchronously. Parallel layers of associated atoms are shifted relative to each other; therefore, here electromagnetic fields of these layers relax gravitational connections between layers.

The graphene modification of carbon differs from graphite; graphene atoms are connected by inner rings of electromagnetic fields. Six atoms form a hexagonal ring with the connection of “six-toothed wheels.” Atoms in such connection rotate according to the rules of gear-wheel transmission: rotation directions of contacted atoms are opposite and rotation frequencies are synchronous; form a strong “toothed” gearing – the graphene connection of atoms. In such connection, participate not only magnetic fields, but also
gravity between electrons and protons, forming a stable and durable connection. Such
connection is formed in the cramped conditions under high pressure and at high
temperature. The high electrical conductivity of graphene by the plane of connections is
explained by the fact that “relay” transfer of electrons between atoms (as the conductivity in
the conductors) occurs at very low voltage (because distance between connected
electrons is minimum) and compulsorily. In the usual conductors, for a revolution of the
atom, only one electron transits, and at the graphene – three electrons, and they forcibly
throw over from atom to atom with the help of the “tooth gearing.”

It is possible existence carbon’s another modification. Parallel layers consisting of
graphene crystal, connected by lateral surfaces turned on 60° round the center of rotation,
where all the 12 nucleons of an atom connected with 12 nucleons of another atom by 24
contact areas, forming strong interatomic connection. The sequence of the parallel
connections forms firmly united, synchronously rotating beams of threads one atom thick.
This connection we called graphencord. It consists of 6 threads of one atom thick, has a
hexagon tubular section (Fig. 38) of diameter 11,5R_H=4,122·10⁻³² m. Graphencord is a
high-temperature superconductor, ultra-strong on break. These properties are saved to the
temperature not less than 500°C. That is explained that the distance between parallel
layers are minimal (1,3·10⁻³³ m), electrons are rotated synchronous, electronic transitions
occur in the direction of the thread’s axis. Gravitational coupling between the layers occur
by atoms’ 24 contact areas by forces of interatomic bond:
Fac=30ncG·m_B²·(1,1B)²+G(mp+mn):(88B)²·n_H Nm² kg⁻², where 30 – is the number of
bisers on Cg; 1,1B – average distance between centers of contacting bisers; nc=24 –
number of contact areas, mp, mn – impulsive masses of the proton and neutron. n_H –
atom’s rotation frequency. As a material for manufacturing graphencord can be melted
diamond; can be made by stretching it through a crystal draw plate under great pressure
and great temperature during manufacturing synthetic diamond out of graphite. It is
necessary, during its pressing and stretching to twist the melted graphite.

Another feature of the carbon atoms is their ability to gear between themselves at an
acute angle (Fig. 39).

![Fig. 39. Carbon atoms can be geared at acute angle](image)

This property of the carbon used for building its diamond modification.

**Monocrystal of diamond** (Fig. 40) is a tetrahedron formed out of 3 hexagonal rings
by the graphen connection. In the diamond crystal there are 10 carbon atoms, 4 of which
are located on the vertices of the tetrahedron, 6 – in the intervals between them. Atoms on
the vertices are rotated in the same direction and synchronously. 6 atoms on the sides of
the tetrahedron are rotated in the other direction and also synchronous. Therefore, the
crystals can connect by vertices and sides, forming a solid crystalline structure. The tip of
the diamond crystal consists of only one carbon atom. The conductivity of diamond is equal
to zero, as the possible electric currents locked in the single crystal.
Fig. 40. Monocrystal of diamond. \( R_H \) – hydrogen atom’s radius

**Oxygen** (Fig. 41) – single layer; is built out of 8 hydrogen atoms.

Atoms of the oxygen and hydrogen are connected “willingly” even at very low temperatures, forming ice. (Ice is found on all the celestial bodies). In Fig. 42 are shown geometric schemes of the water’s molecules and its various forms of connection, as well as the postures of hydrogen atoms relative to the rotation plane of oxygen, forming 3 phase states: ice, water and steam. (In this figure water’s molecule is shown according to “traditional” formule \( \text{H}_2\text{O} \), but with two hydrogen atoms of \( \text{U}_H=2,0016 \). It, by the new idea, should be consisting of a hydrogen atom).
Fig. 42. Water molecule and its 3 phase states

In Figures 43, 44 and 45 were presented atoms of fluorine, neon and sulfur by addition hydrogen atoms to the first (“oxygen”) layer. **Fluorine** (Fig. 43) is formed by joining one hydrogen atom. In this, occurs eccentricity, which is compensated by some decreasing of the attached atom’s radius and by corresponding increasing and deviation orbit of the electron located on the first layer.

**Neon** (Fig. 44) formed by joining two hydrogen atoms without eccentricity.

The **sulfur** (Fig. 45) formed by the joining the second layer consisting of 8 hydrogen atoms – the “oxygen” layer, turned to 90° round the rotation center.
Often atoms’ models are considered only for limited use. It is necessary the PSE to replenish with the geometrical models of chemical elements. This will open new opportunities for computer “alchemy” for creating new chemical substances and medicines with more accurate, useful, and effective properties. Thus, it is necessary to have research data, establishing influence of different external acting factors (electromagnetic, x-ray and radioactive radiation, spectras of light, ultrasound, temperature, gravity) on the behavior of each chemical element, that to influence to them individually for their connection or disconnection in synthesis new substances.

Radioactivity
Radioactivity in Black Hole is absent. It is manifested in the expanding Galaxy after formation radioactive elements by compounding hydrogen atoms, as well as all chemical elements. It is considered, the radioactivity is the spontaneous disintegration of heavy elements’ atoms by emitting helium (consisting of two protons, two neutrons and two electrons). However, this explanation is not beneath criticism. For example, is considered, that the uranium with a relative atomic mass of 238,029 is decaid into helium-4 with the atomic mass 4,0026. The period of half-life of the uranium is $4.47 \times 10^9$ years. According to the law of conservation of energy (mass) the uranium will disappear after emission 60 helium atoms for a second. And for preservation its “longevity” uranium should emit no more than a piece of helium atom for every 10 000 000 years (!). Therefore, in all probability, the radioactivity supported by external energy. We suppose, it is a rejection reaction of heavy-element’s atoms of hydrogen and helium, originating from the energy-mass current from BH. Besides, the statement that during radioactive decay it emits only helium, is also questionable: it may be 2 hydrogen atoms; in the interstellar space, i.e. in the current of energy-mass from BH, hydrogen takes up 88.6% and helium only 11.3%.

In our gipoteze, the process of radioactive decay occurs according to the scheme in Fig. 46.
Atoms of hydrogen or helium, rotating by high-speed, fall in inter-disk space of the uranium atom, rotating slowly. The electrons repel and the nucleons are attracted. The forces of repelling and attracting are tear the unbidden “strangers” on α- and β-particles. The kinetic energy of uranium in 120 times more than the kinetic energy of hydrogen, and 60 times – energy of helium. At the time of the tearing of the “aliens” uranium loses energy, which is manifested in the form of electromagnetic γ radiation, by frequency equal to the rotation frequency. Accordingly, impulsively slows the rotation frequency, which is restored by quarks of the core. In case of ingressing of hydrogen or helium atoms between last disk, uranium loses the disk and becomes a new chemical element with the lowest ordinal number in the Periodic system. And, on the contrary, if the hydrogen atom by synchronizing its rotation speed, is attached to the side surface of the rotating cylinder of the uranium atom, is formed a new chemical element with the greater ordinal number. The disintegration of the radioactive element continues to loss of its radioactivity – to transformation into non-radioactive element. On the Periodic table – it is the lead with a ordinal number 82 and relative mass 207.2.

The teared particles of hydrogen and helium atoms change their properties. The α-particle – nucleons, connected by siamese contact, – at the beginning, rotating by inertia, becomes electromagnetic dipole and, soon, spending energy of torque, stops rotating, loses charge. Hollow nucleons are slamed to the size of electron and become a slow twin-neutrino. The β-particles – electrons, tearing off from the kernel, – stop rotating, lose their charge and become slow neutrinos. These uncharged particles have low energy and low speed of movement: α-particles do not pass even through the sheet of paper, β-particles pass «only» 4m aluminium, while the neutron particles emitted by thermonuclear “reactor” (in the Sun), pass through such obstacles not noticing them.

The decaid particles of the radioactive elements become cosmic wanderers, not meets the atoms of the elements. Over billions of years they will be in a cloud-island and can form hydrogen atom.

* * *

In nature, there are two fundamental interactions: gravitational and electromagnetic. Centrifugal force regulates these interactions. The so-called “strong” and “weak” interactions – are the derivatives from the two basic interactions acting in quantum microcosm. The common equation of balance of interaction forces relatively to rotation center:

\[ \Sigma F_{\text{centrifugal}} = \Sigma F_{\text{attraction}} - \Sigma F_{\text{repulsive}}, \]

where \( \Sigma F_{\text{centrifugal}} \) – the sum of centrifugal forces, manifesting by rotating masses round balance center; \( \Sigma F_{\text{attraction}} \) – the sum of attracting forces relatively to balance center (Attracting forces: in the Galaxy – it is the gravity between BH and celebodies rotating on orbits, inversely proropotional to changing masses of which is going on by the law of energy (mass) conservation; in atoms – it is the gravity force of nucleons’ and electrons’ masses, also attraction force of opposite charges of proton and electron, the value of which is directly proportional to its rotation frequency; \( \Sigma F_{\text{repulsive}} \) – the sum of repulsive forces relative to the balance center (Repulsive forces: in Galaxy – it is antigravity force of BH and reduction of gravity between BH and the shining stars, masses of which are reduced because of energy radiation; in atoms – it is repulsive forces of bisers’ unipolar charges, also reduction of proton’s masses and charges in the moment of quarks’ action).

* * *
7. Experimental installation - Astrosynchrogravitron

Astrosynchrogravitron (Fig. 47) is designed for study gravitation and antigravitation, energetic and hydrogen’s currents from BH, for research the Earth.

Fig. 47. Astrosynchrogravitron. 1 – chamber for placing detectors, measuring and astronomical instruments; 2 – hermetic spherical room; 3 – gyroscopic hinges; 4 – water pump; 5 – water column; 6 - high pressure pipe (to «detonating fuses”of the synchrotron); 7 – vacuum pump; 8 – removable measuring devices, detectors, astronomical instruments for installing in the room 1.

Astrosynchrogravitron’s chamber 1 – the room for mounting the synchrotron (Fig. 49) with detectors of gravitational waves, removable research instruments and devices – is installed inside the spherical room 2 on the gyroscopic hinges 3 for direct at any point of space and for automated tracking space objects (in the sky and through the Earth). In the spherical room can be created vacuum for extinguishing of “explosion” sound, though the synchrotron and detectors are placed in their own hermetic vacuum housings. The astrosynchrogravitron’s main parts are: synchrogravitron, detectors and sources of gravity and antigravity (See below).

An impulse of directed gravitational wave can be created by addition two synchronous impulses: gravity – attracting (by addition of masses) and antigravity – repulsive (by separation of masses) (Fig. 48).

Fig. 48. Scheme of addition of gravitation and antigravitation
Synchrogravitron (Fig. 49) – is built according to the scheme in Fig. 48. Synchronous impulses of gravity and antigravity are created with the help of a torah, which is burst in the chamber of “combustion”, when the pressure of air or helium reaches to 300 atm or more. The high-pressure expanding gas is created in the water-column (5, Fig. 47). (Using individual explosion cameras for connection and disconnection of masses, apparently, is not advisable because of difficulty their synchronization).

![Diagram of Synchrogravitron](image)

**Fig. 49.** 1 – combustion chamber; 2 – torus-detonating fuse; 3 – piston with mass $m_1$; 4 – floating cylinder with mass $m_2$; 5 – unit for returning floating cylinder to its original position; 6 – floating cylinder with mass $m_4$; 7 – fixation block 8 of mass $m_3$; 9 – container with detectors and measuring instruments; 10 – hermetic vacuum housing; 11 – outlet to vacuum pump.

$m_1 = m_2 + m_4$  \hspace{1cm} m_2 = m_3 = m_4$

How synchrogravitron functions when creating impulses of directed gravity wave?

In the housing 10 is created vacuum. The force of expanding gas, after explosion of the torah 2 in the combustion chamber 1, impulsively pushes piston 3 with mass $m_1$, which simultaneously hits mass $m_2$ and removes $m_4$ from $m_3$. Impulsive connection of masses $m_1$ and $m_2$ causes impulse of gravity, and impulsive separation of masses $m_3$ and $m_4$ causes an antigravity impulse, i.e. gravity and antigravity impulses appear simultaneously. Through gravity detector or measuring instrument, placed in the container 9, gravity impulse rushes by, directed from decreasing mass $(m_3 + m_4) - m_4$ to the increasing mass $(m_1 + m_2)$. The percussion force, tearing away $m_4$ from $m_3$, reaches to the tearing place by detained due to elastic deformation of the floating cylinder’s material. Therefore, the piston 3 for compensate time of delay hits cylinder 6 before $m_1$ hits $m_2$. The gravity and antigravity waves are spread at light’s speed, and container’s length is small. Therefore, to achieve synchronicity of connection and disconnection of masses, it is necessary, to take into account passing speed of elastic deformation along the pushing cylinder 6, and accurately calculate length of outstripping jut – $\delta$. Units 5 (for example, air pistons) return the floating cylinder 4 to its original position.

On the synchrogravitron it is possible to create:
- Impulses of synchronous added gravity and antigravity waves (energies);
- Impulses of gravity wave (without masses $m_3$ and $m_4$);
- Impulses of antigravity wave (without masses $m_1$ and $m_2$).
The basic requirements for designing of the synchrogravitron: maximum possible masses and velocity of stroke, minimum distances between centers of masses and synchronizations of strokes, and also, protection from electromagnetic-, light- and radio emissions.

(Anti)gravity detectors are presented in Fig. 50, 51. Fig. 50 shows a detector of interaction effect of gravity waves and electromagnetic field. Manifestation of this effect expected based on the hypothesis that electric charge is the interaction effect of gravity and matter (biser).

![Fig. 50. (Anti)gravity detector. 1 – supersymmetric winding; 2 – sphericl bearing of windings; 3 – hermetic opaque spherical housing (protector from air currents, light and radio emanation); 4 – mirror; 5 – scale-indicator of the beam's movement; 6 – light's source; 7 – display; 8 – float; 9 – water; 10 – frame; 11 – suspender; 12 – rim; 13 – lead sprig.](image)

The (anti)gravity detector is a spherical rotor with supersymmetric winding (3 winding lie on three planes of supersymmetry, formed by connection 12 touch points in dense packed spherical bodies). The detector of not-directed irradiance impulses of gravity reacts to all signals, including on the electromagnetic ones. The Earth’s gravity is greatly influenced. Therefore, during experiments all the preventing signals should be taken into account. The sensitivity of the device is directly proportional to the diameter of the sphere. The large mass increases friction in bearings and inertial moment of the unit’s rotating parts. In the scheme, the vertical load on the bearings removed using a float on the water. The design of the detector should be able to determine influence on the readings of the following parameters: value of electric voltage and frequency of the current in the windings, to be able to supply voltage in each winding separately and to read from them electric voltage during rotation of the windings without giving the voltage. These windings for increasing of the detector’s sensitivity, is necessary, to make two parallel rims 12 stuffed with lead sprigs 13 and rotated in contrary directions (with the help of individual engines). That creates impulses of gravity and antigravity flowing along the windings. These impulses interact with the stream of (anti)gravity waves.
Fig. 51. (Anti)gravity detector. 1 – supersymmetric winding in the hermetic spherical casing; 2 – hermetic chamber (protection from air movements, light and radio emanations); 3 – water; 4 – the light source; 5 – turning mirror; 6 – receiver of the reflected beam; 7 – suspension cable; 8 – outdoor suspender; 9 – display.

(Anti)gravity detector in Fig. 51 – is the version of the detector shown in Fig. 50. Here the winding suspended on a cable, the vertical load on the cable reduced by pushing out force of water.

Gravity source in Fig. 52 is designed for create single nonsynchronous impulses of gravity and antigravity. It can be used in the reinforces of gravity waves, for example, for creating intermediate frequencies of waves.

Fig. 52. Source of nonsynchronous impulses of gravity and antigravity. 1 – hermetic housing; 2 – light source; 3 – swivel mirror; 4 – pendulum spring; 5 – solenoid; 6 – display; 7 – scale-sensor of rotation.

An electric current impulse in the solenoid 4 pulls masses $m_1$ and $m_4$ to the right. The mass $m_1$ hits mass $m_2$ (gravity impulse is created), and mass $m_4$ is come off from the mass $m_3$ creating antigravity impulse. The $m_4$ is come off from the $m_3$ earlier than $m_1$ hits the $m_2$. It is possible, the impulses of waves to alternate by changing the current direction in solenoids. The detectors and sources are placed in the chamber of the astrosynchrogravitron directed to black hole. Gravity impulses from sources are interacted with natural (anti)gravity waves; the impulses are added. The added and not-added waves have different properties (for example, different resonance frequencies), which are fixed by detectors. The oscillogram of the signals is recorded by the light’s ray 2 on the receiver of the ray reflected from mirror 3.

Source of alternating synchronous impulses of gravity and antigravity is shown in Fig. 53.
Fig. 53. Source of synchronous gravity and antigravity impulses. 1 – left solenoid; 2 – right solenoid; 3 – rotor of the engine; 4 – stator; 5 – collector – switcher of current direction; 6 – display; 7 – measuring instruments, sources and detectors of gravity; 8 – exit to vacuum pump.

The engine, consisting of rotor 3 and stator 4, constantly rotates the device, and solenoids 1 and 2 are switched on simultaneously. The electric current, coming to the solenoid 2 through collector-switcher of the current direction, divides masses \( m_3 \) and \( m_4 \), and solenoid 1 connects \( m_1 \) and \( m_2 \). After half-turn the left device is found on the place of the right device and the masses are separated, and the right once, be found in the place of the left device, connects the masses. The impulses’ frequency is equal to the rotation frequency of the engine. The frictions in bearings in this source can influence to the readings of the device, to change direction of the waves. For eliminating of the influence, the measurements should be carried out at rotation in both directions.

(Anti)gravity waves are added as radio (electromagnetic) waves. Therefore, it is possible to reinforce of the (anti)gravity waves as the radio waves, for example, by creating intermediate frequencies of waves. Such reinforcer can be created by combined using the known sources and detectors of gravity and antigravity.

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It is possible to supplement the existing 3D model of the Earth by seismic-gravitational tectonic elements. For this, it is necessary to create synchronous impulses of gravity and seismic waves using collision of large masses. For example, on the surface of the Earth to install a heavy plate-anvil (can be used a rock), to install a hammer-gun with the vertical gun-tube of diameter 10-20 m, and shoot the shell (metallic cylinder filled with blocks of rocks and concrete) with the help of air-gunpowder charge to the direction of Earth’s center. It is necassory, the seismic and gravity signals to write down on the single display. In addition, in the creation of such model is necessary use the research results of passing signals of (anti)gravity and hydrogen flow from the Black Hole through the Earth, and seismograms of earthquakes.

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The proof of exclusiveness of the evolution cycle (energy-mass circulation) of Galaxy can confirm validity of the conclusions of our work: only such hydrogen atom’s geometric quantum-mechanical model, built out of elementary particles of matter – bisers, that can exist and function in the gravitons’ environment (in the gravity field), – can be pressed collapsy in the Black Hole, is liberated from the Black Hole’s gravity, to be building material and energy source of all the material world of the Universe. In the above-stated evolutionary cycle of the Galaxy, the existence dark galaxies (with the black celestial
bodies) remains not proved, that exist, in our opinion, during galaxies’ contraction period
because of stopping to receipt hydrogen and antigravity energy, and burning down their
internal fuel. We expecting the astronomers’ conclusion that the dark galaxies exist. Also,
expects it Stephen Hawking [3], who had written: «the number of extinct stars can exceed
the number of visible stars». The prompts for searching of dark galaxies: black celestial
bodies emit infrared rays; in the accumulation process of Stellar black holes, they also can
emit all electromagnetic spectrum; in the dark galaxies, closer to their center, is greater
probability of the Star Supernovas’ occurrence.

In the work maybe inaccuracies in the qualitative indices of physical values and
phenomena, that are not of fundamental importance for a new approach to explanation of
physical phenomena of nature using geometric-quantum-mechnical model of the Universe.

We expect, in the future maybe refinements, corrections and additions to our work.
We hope, together we will, at last, find the real reasons of the existence of matter in the
Universe, construction and evolution of the Universe, and we could say: the Universe has
not any secrets, and lows of nature’s evolution can be used for more rational and
harmonious development of the humanity.

8. Conclusions

- Matter consists of Gravity (substance – gravina), exists by gravity energy and
  functions according to the laws of gravity.
- Mass and energy – are the two states of matter. There is no mass without energy,
  there is no energy without mass. Matter – is energy-mass. Matter is manifested by
  impulsive transition these two states to each other. Elementary particle of matter – biser –
  is the particle, this transition of which occurs by frequency equal to ½ Planck’s frequency.
  In the elementary area of the Universe – in Galaxy – the alternating transition (circulation)
  of energy-mass occurs for 10-12 milliards years.
- All motions, forces and masses in the Universe are impulse-quantum. Transmission
  of energy is impulsively resonant. Time is absolute.
- Quantization of the gravity field – is conversion it by impulsive field’s energy to
  material particles. Physical actions of quantization of the gravity field and interaction of the
  quanted particles are carried out by the joint using the quantum and classical mechanics.
  Quant of mechanical force, compressing a clot of energy at the Planck’s acceleration,
  creates quant of mass – the particle, having Planck’s constant – graviton. (The clot of
  energy – is graviton’s impulsive extended (vaquum) state).
- Gravity field fills evenly whole Universe, therefore the quantized gravity field is the
  space of the Universe, filled by gravitons, – is the space having supersymmetric
  tetrahedronal crystal structure, pulsating by Planck’s frequency – 1,8549·10⁻⁴³ s⁻¹.
- Graviton – elementary particle of the gravity – has spherical form of diameter equal
to the Plank’s length  \( \nabla =1,6162·10^{-35} \) m. (Sphere is the only natural rational shape of
  material bodies). Graviton has superhardness (in compressed state \( D_g=1,8878·10'^{64} \) kg·s⁻²)
  and superfluidity (in the extended state \( D_g=0\) alternating by Plank’s frequency.
- Potential energy of gravity field – is gravitons’ stress state in the spatial
  supersymmetric structure. (\( E_{gr}=1,1592·10^{-42} \) N·s². Specific potential energy of the gravity
  space \( E_p=4,799·10^{60} J·s·m^{-3}\)).
- Geometric spatial supersymmetry – energy of the Universe – is the geometric
  formation in the limited spherical space, consisting of densely packed spheres of equal
diameter and properties, where each sphere is contacted with 12 neighboring spheres. The
contact points lie on 3 planes of supersymmetry: 6 points on each plane, 2 of which are common. 3 lines of mutual intersection of the planes form between themselves an spatial angle of 120° and are intersected at one point – in the center of the sphere, i.e. three planes are intersected at one point. Besides, the packed spheres form 2 more planes in the form of repited parallel sandwiches. The planes’ total sail is constant – is not changed in looking at the sphere from any direction. Geometric parameters of all the planes are symmetric and the same. The geometric spatial supersymmetry is the main tool for basing structure of the Universe and the reasons of matter’s existence in it.

- Gravitons perceive stretching and pushing forces in the supersymmetric spatial structure. (Necklace – beads on a string – have this property. Therefore, it is appropriate to call: gravitons on a imaginary string – necklace, the space of the Universe – Newtonia).

- The Infinity of the space – is condition of existence of the gravity field; gravity field can exist only in the infinity space. Space and essence of the Universe – is the Infinity-Gravity (one notion) – is Newtonia.

- Gravity between two masses – is impulsive pulling these masses to each other by necklaces. In each impulse of graviton’s compression, the necklace is reduced to the value of compression. The wave of successive reductions of gravitons – the masses’ pulling impulses – are spreaded between the masses at the speed of light. The elementary force of gravity is equal to the impulsive attraction force between two gravitons (g =9.6603·10⁻⁴⁴ N·s² or the attraction force in a second  Fg=1,79189·10 N·s).

- Elementary particle of matter - biser, has graviton’s double mass. Biser was formed (is forming) at the beginning of every next evolutionary cycle of energy-mass (matter) circulation of the Universe. Biser has superhardness (in compressed state) and superfluidity (in extended state) alternating by frequency 9.2745·10⁴² s⁻¹ (2 times less than the graviton’s frequency). Biser’s diameter is equal to 1.26 graviton’s diameter. Biser exists by gravity energy, obtaining with the help of gravitons, but functions independently from them. The biser’s time of superfluid state in 2 times more than the graviton’s time of superhard state. Therefore, bisers, i.e. all material bodies, are moving in the environment of gravitons (in the space of the Universe) at the speed, reaching the light’s speed, without any resistance. The motion of material bodies occurs in the impulsive superfluid (vacuum) state of the material bodies themselves and in superfluid and superhard states of gravitons (the environment of matter’s existence).

- Electric charge – is the effect of interaction of the biser and energy of the (energetic) gravity field. Electromagnetic field – is the pulling effect of charged masses with the help of necklaces. Charge and electromagnetic field are occured and saved only in the rotating atom.

- Hydrogen atom – self-organizing, self-regulating particle of matter, that converts gravity energy into motion. Atom consists of proton, neutron and electron. Proton and neutron have hollow spherical shape with the single-layer shell of 28000 bisers; electron is the spherical conglomerate of 28000 tightly packed bisers. Nucleons are connected by siamese contact. Nucleus and electron are rotated as the single whole system and synchronously. They are bound by gravity, electromagnetic and centrifugal forces. Hydrogen atom represents a disk rotating by frequency n_H=5,1525·10⁴¹ s⁻¹, consisting of concentric rings of electromagnetic fields. The outer ring – is the electromagnetic field of the rotating electron’s charge (-), the inner ring – is the field of the proton’s charge (+). Neutron rotates round its center. The masses of the proton, neutron and electron are the same (more exactly – neutron is heavier to 0,002·10⁻²⁷ kg). Proton and neutron in the intrails of Black Hole (BH) are compressed to the size of electron. Electron has constant diameter. It remains in the compressed and free atom. Quarks of the proton and neutron – carriers (gravity) energy – regulate functioning of the atom. Electron rotates on its orbit wavy.
Hydrogen atom is possessed by unique properties: can be in three states: in compressed (in the intrails of BH), in free (in the void) and united in the chemical elements. It has 6 degrees of freedom, has ability to selectively connect with other atoms: by the end, by lateral surfaces with 6 connects, to contact, at the same time, with other protons and neutrons also by those contacts, to change roles of proton and neutron, depending on their location in the newly-formed atoms of chemical elements. Hydrogen atom has unique diffusion-penetrating ability.

- Atoms of all the chemical elements were built and are built by combination of hydrogen atoms’ compounds. The number of hydrogen atoms in a chemical element is equal to its ordinal number in the Periodic system.

- The maximum density of matter – \( \rho_m = 7.5 \times 10^{75} \text{ kg}\cdot\text{m}^{-3} \) – is the compressed collapsely substance of BH, consists of neutrons of diameter 32B (electron’s outer diameter), forming flaky sandwich of the distance between layers 26B. (B=2.0364 \times 10^{-35} \text{ m} – biser’s diameter).

- Impulses of electron’s oscillations on the orbit - is the expression of temperature. Elementary physical unit of temperature – 1K=2.08 \times 10^{-32} \text{ Js/K}.

- Galaxy – elementary area of the Universe (Infinity-Gravity), where repeating cycles of energy-mass (matter) circulation occur. Black Hole and Galaxy are the phases of the evolution cycle of the Galaxy. The circulation cycle of matter consists of periods of contraction and expansion. During contraction period all celestial bodies accumulate in the center of the Galaxy and form a massive body – Black Hole. During expansion period, as a result of “explosion” of the BH by releasing antigravity energy and “evaporationing” of hydrogen (building material), in the Galaxy are formed celestial bodies: stars, planets, on planets – organic life, supporting by antigravity energy. The expansion ends when the last wave of antigravity energy and the current of hydrogen from BH, in milliards of years reaches to the borders of the Galaxy. Then the contraction period of the Galaxy begins.

- There are two types of Supernova: 1. The central Supernova – is “explosion” of the Black Hole with the mass of milliards of solar masses, located in the center of the future Galaxy; 2. The Star Supernova – is “explosion” of a Stellar black hole with the mass of thousands of solar mass, located in the expanding and contracting Galaxy.

- The Universe – is infinite space filled by galactic systems of multilevel order: Galaxies of the first order GI (including our Galaxy, the Milky Way) – is the star system consisting of milliards of stars; revolve round their centers, round their BH. Galactic system GII consisting of millions (?) galaxies GI, revolves round the Central gravity field (CGFII) with the potential energy, equivalent to the total mass of the system GII. Supergalactic system GIII – consisting of millions (?) galactic systems GII – revolves round the CGFIII with the potential energy, equivalent to the total mass of the super system GIII... The last Supergalactic system of higher order Gc consists of CGF having radius \( R<\infty \), and the outer layer, filled by galactic systems of all orders. Diameter of the Universe is \( \infty+\nabla \). In the Universe eternally repeated cycles of energy-mass (matter) circulation occur. The so-called “Big Bang” was not. The known date “13.7 milliards years after ‘Big Bang’ “ – is the date from the beginning of recurrent expanding cicle in the Supergalaxy GII.

- Possibly, carbon has another modification – Graphencord. It consists of 6 threads of one atom thick, has the hexagonal tubular section of diameter 11.5R=4.122 \times 10^{-32} \text{ m} (The parallel layers of the graphene connected by lateral surfaces turned on 60° round the center of the thread's tubular section). Graphencord is a high-temperature superconductor, ultra-strong on break. These properties are saved to the temperature not less than 500°C. As a material for manufacturing of the Graphencord can be used molten diamond; can be made by stretching the threads through a crystal dies under great pressure during manufacturing synthetic diamond out of graphite; it is necessary to twist the melted graphite during its pressing and extension.
- The so-called “dark matter”, “dark energy” likely do not exist. The anomalistic high rotational speed of outer regions of the Galaxy, which is accepted to justify the existence of these “dark” phenomena, is explained by the well-known laws of gravity, but not by the so-called “hidden mass”. For evidence of these phenomena, it is necessary to consider the dynamics of changes of the centripetal and centrifugal forces, as well as masses of celestial bodies in the expanding and contracting Galaxy. The Black Hole’s mass is reduced from maximum (equal to the total mass of the Galaxy) to zero (because of its “evaporation” – exhalation of the hydrogen); the celestial bodies’ masses increase proportionally to decreasing the BH’s mass by the low of conservation of mass (because of precipitation these “evaporations” – chemical elements – on the celestial bodies); the masses of luminous celestial bodies decrease due to spending its internal “fuel” to radiation; in the center of the Galaxy operates the field of potential energy, varying inversely proportional to the kinetic energy of the rotating masses on orbits. As a result, contracting of the outer region of the Galaxy – rotating acceleration – begins prior to the full evaporation of the BH. In the contracting (dark) Galaxy, accelerated rotation of celestial bodies continues to their full accumulation into one BH.

- The Universe pulsates: is contracted and expanded. However, it can’t be contracted or expanded to one direction eternally. The seeming changing of distances between celestial bodies by variable speed can be observed in the space of the Universe, where these bodies are on different rotating galactic systems. A simplified example: You, sitting on one of two roundabouts rotating side by side, look after your child, sitting on other roundabout. The distance between you and your child will change periodically – by increasing and decrasing speed, and remains without changing during definite time.

- An impulse of directed gravity energy is possible to create experimentally by addition of two synchronous impulses: gravity – attracting (by addition of the masses) and antigravity – repulsive (by separation of the mass).

- **Vacuum** – the void state of Universe’s space – is the result of addition (of resonance) of void state of gravition’s medium (gravity field – supersymmetric crystalline space), pulsating by Planck’s frequency, and of biser (matter), pulsating by \(\frac{1}{2}\) Planck’s frequency, – **not pulsates**. Space of the Universe for material bodies always is in vacuum state.

- Radioactivity – is reaction of rejection of hydrogen and helium atoms by large atoms, incoming by energy-mass stream from BH. Radioactivity exists only in the expansion period of the Galaxy.

9. Hypothesis

- The Sun, stars, planets, the Earth, Moon and all other celestial bodies were formed out of fragments of “terrestrial rocks,” accumulated on the upper layer of the BH during contraction of Galaxy in the next cycle of the energy-mass circulation. At the beginning of explosion this crust is destroyed and the splinters fly away into outer space.

- Thermonuclear “reactors” of stars (of the Sun) “work” on the hydrogen from BH. Stars shine only in expanding galaxies, in contracting – they die out, become dim.

- All cosmic bodies of the Universe have the same chemical composition.

- The Earth and all cosmic bodies during the Galaxy’s expansion are increased in size from the inside due to the continuous formation chemical elements out of hydrogen, and from the outside, due to the “space dust”, formed in interstellar space also out of hydrogen, (during its movement from the evaporating BH for 35000(?) years), and the falling celestial bodies of small sizes. For the same reason, on the Earth quantity of water and air is increased. (For example, the dust precipitations by thickness of 0,1mm for a year, for “only” 1 million years enlarhes the Earth crust to 100m. The Earth’s age is 4,5 milliards years !).
- As the result of increasing the Earth’s weight (size), are observed pulling apart of
continents, earthquakes, volcanic phenomena, changing climate, “deepening” of bedding of
coal and other layers formed once on the surface of the Earth. Hydrocarbon fossils (the
natural gas, methane) are constantly formed in the entrails of the Earth, and accumulate in
domelike risings of the impermeable beds (gas has inorganic origin, oil – organic). Gas is
not accumulated in superficial porous stratum – is exuded constantly into atmosphere.
That can be observed in the coastal sea zones). The coal is not renewed; however, in the
coal strata is accumulated constantly methane.
- The life is conceived on planets and not transferred from one planet to another.
- The gigant animals and plants had disappeared from the face of the growing Earth
due to the rapid growth of the Earth’s gravity. Probably, at that time on the Earth there has
been heavy frequent fall of large meteor showers, the flow of the energy from BH (and,
therefore, from the Sun) was more powerful and the climate was warmer. Adaptation of
animate organisms to the changing environmental conditions of existence happens
hereditably – more slowly than this environment is changed. The man of not superfluous
weight feels more comfortable than the heavy one. (The superfluous weight is the only
cause of all diseases). Humanity becomes small – adapts to the increasing attracting of the
Earth.
- The cosmic “wanderers” – the small celestial bodies of different sizes (from
millimetric to kilometric) rotating round the Earth – are the Earth’s satellites, captured by
it from the stream of fragments of the exploded black hole 4.5 milliard years ago. The age
of the celestial bodies, rotating in the Galaxy on equal distance from the BH (the Sun,
planets, stars and star systems), is equally (4.5 milliard years).
- All the rotating celestial bodies have flat geometric form.

10. Conclusion (in conversion to divine interpretation)

The Divine Principle is the basis of all the natural laws. God had created the Eternal
Infinity-Gravity – the Great indivisible basis of the Universe, capable to create
self-organizing, self-regulating and self-perfecting material systems in the
Universe. The Wisdom of action of the Divine (Natural) Laws is that, as the basis of the
existence and harmonious development of matter and material systems, had been
assumed the principle of self-survive and self-development of the systems. The first
natural material system – Atom – exists due to gravity energy, which the atom extracts
itself. Interaction of the atoms and building of new combinations of matter accomplished by
atoms using gravity energy, which atoms extract only themselves. Violation of this Law –
using by atoms of energy of each other for their existence and development – will lead to
completely destruction of the material world. The main Divine Law of the social system – of
Man and Human society – says: “To live only by one’s own labour”. This Law in the Holy
Books (in Bible, Koran and other) is written: “Thou shalt not steal”. Violation of this Divine
Law leads to conflicts between people, human societies, to wars – to global catastrophe.
Every Person (each of his cell) is the center of the Infinity-Gravity – the Center of God’s
attention. All these Centers are attracted to ich other. Everything in the World – all material
bodies and the Lows of their existence – were created by God. Every Man – is the God’s
creature – is in eternal indebted to God. He is indebted and is grateful for that, he was born
in this beautiful World, for that, it was presented to him possibility to carry out His divine
duty – by His own labour to grow up and to bring up His Continuation, capable to
grow up by his own labor his Continuation.

Literature