

the rotating solid-state object, which is filled with mass. It is an inner solution of Einstein equation of the rotating solid-state object. The inner solution of rotating solid-state object is unknown. If the shape of the rotating solid-state object is a sphere, then inside of it space-time must have characters of Schwarzschild inner space-time and rotating coordinate system. And it must be continuous smoothly with Kerr space-time on the

surface of the object. If we get above solution, then next we will discuss the external space time of the rotating solid-state object, which has valuable rotation. The solid-state object, which has valuable rotation, can generate a gravitational wave. We will be able to get information of energy-momentum conservation by analysis of above gravitational wave.

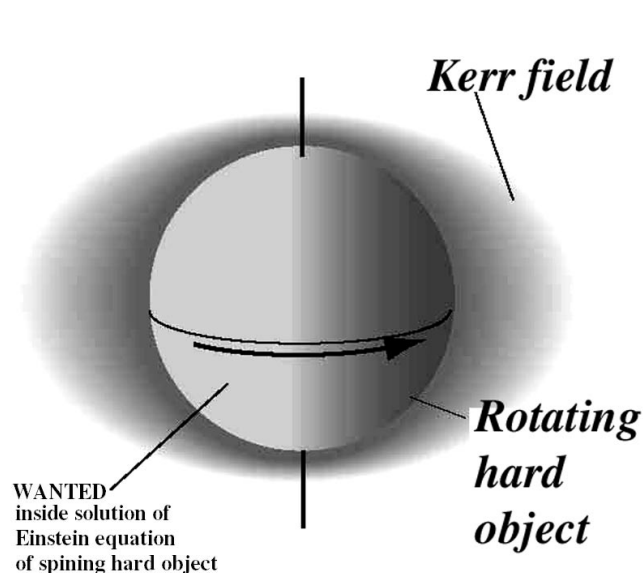


Fig.1 Space-Time propeller.

Rotation of the turntable and the wheels causes a difference of time delay late in the turntable and the wheels. Time delay in the wheels (at point P) depends on  $\sin\phi$ . It means that time delay of P at  $0 < \phi < \pi$  and P at  $0 > \phi > -\pi$  is different.

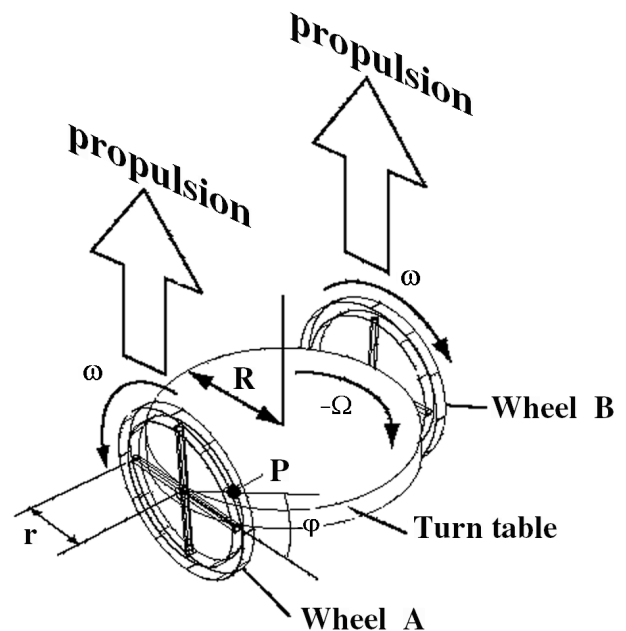


Fig 2. Space-time image of rotating hard object.

Space-time structure of inside field of rotating hard object is unknown. Out side solution should be Kerr field. Both fields should be smoothly continuous. To know the structure of inside field is the first step for the discovery for activity matter of space-time propeller.

## Rythmodynamics of Amplitudeless Fields

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*Theory is a well-reasoned hypothesis!*

*In this article we give an example of hypothetical black holes and effects, which accompany this phenomenon. This example helps us to develop the closest reason of gravitational attraction of the bodies. Also we introduce new ideas of amplitudeless field (gravitational field), amplitudeless quantum (graviton), frequency horizon. It is supposed that the reader has already got acquainted with the main principles of monographs "Rythmodynamics" and "Frequency space".*

## BLACK HOLES

In the XXst century all people know about black holes. "According to the Newton's laws and theory of relativity even the only one quantum of light cannot leave the star. Space in the place, where black hole appeared, becomes distorted and isolated in itself." [14].

In the world of science when we speak about black holes two theories are considered to be principal. These are classic (diffusive) and "neoclassic" (Buracanian) concepts of cosmogonical process. The first one is based on the ideas and constructions by V. Gershel (the end of the XVIII century). V.A. Ambartsumyan proposed another concept in the late 40s of the XX century.

In contrast with the "classics", who consider black holes to be the natural steps of evolution of substance, the «buracans» postulate the hypothetical "prestellar substance" (D-body) as a relic heritage of cosmogonical

singularity. A prestellar substance is believed to be superdense and its state is not subjected to the fundamental laws of modern physics. In this sense the buracans go away from the physical concrete definition of the nature of hypothetical D-bodies that leads to the explanation of unknown through the more unknown.

Though black holes are only theoretical objects, the representatives of the competitive theory seriously recognize a possibility of their presence in the Universe.

Acad. V.L. Ginzburg, the follower of "diffusive cosmogony", points out that black hole can exist in the limits of Common relativity theory (CRT). Acad. V.A. Ambartsumyan also states that the existence of black holes in the Universe is quite possible because it is predicted by the relativist theory of gravitation. Both schools consider black hole to be a relativist object. But there are other points of view. For example, A.A. Logunov, who created his own variant of relativist theory of gravitation, states that there are no black holes [13].

The most interesting is the substance of black hole, which concentrates in the central "extended singularity" having the size of  $\sim 10^{-33}$  cm (Plank's size). It is supposed that our fundamental physics including CRT and quantum mechanics do not work in this field. Here black hole is the object ruled by unknown physical laws. Exactly around the substantial part of black hole the vehement discussion is carried on. But there are common properties:

- superpower gravitational field;
- existence of the horizon (surface of Shvarzshild);
- unobservable matter, which crosses the horizon during the collapse and follows its movement to the central singularity.

All scientific schools recognize these properties. That is why it is considered that communication of collapsed object with the external world is impossible. Any emitted particles of black hole (even photons) will return back to black hole. The Shvarzshild's surface is a horizon. We are not able to see anything outside the boundaries of this horizon. It means that the body falling in black hole becomes invisible after it has crossed the Shvarzshild's surface. Here CRT suggests an original interpretation. Geometry of space changed, it became deformed, isolated in itself [1]. Presence of superpower gravitational field also is interpreted by deformation of space.

To have a full idea we should mention the ether concept, which consider gravitation as a consequence of ether flow to the substance [5,6]. If the speed of flow is higher than the speed of light, then the light cannot break out.

Thus, there is a problem of black hole and few hypotheses, which pretend to its explanation. But is it possible to explain the properties of phenomenon using the limits of scientific logic and operating only with the known physical phenomena? Let's put some questions:

- What happens with the bodies in the interval between the remote observer and surface of black hole?
- Why bodies got out of the Shvarzshild's surface become unobserved?
- Is it possible to explain the superpower gravitation without using the hypotheses like deformation of space?
- Is the Shvarzshild's surface a barrier for electromagnetic waves?

We can try to give a complex explanation to the things happen.

Let's highlight the consequence of consideration of phenomena and effects, which we are going to use:

- gravitational red bias
- wave notion on the microstructure of substance;
- frequency self-synchronization of different oscillation sources ;
- deformation of interference field;
- gravitational drift;
- frequency horizon.

### **Gravitational red bias**

There is bias of frequency properties of the substance in the field of gravitating masses. Gravitational red bias and Moessbauer's effect are the known ones. On the base of experiments, which have the Moessbauer's effect in foundation, it was stated that deceleration of oscillation process occur on the corpuscular level. This deceleration depends on the distance to the gravitating body. The closer to the surface the frequency of oscillations is lower [1,7]. In the Earth conditions, for example, this difference is practically invisible (the order of relative gradient  $10^{-15}$  to 10 meters of height), but it can be detected using the atomic clock. This clock goes slower near the surface than on some height. The other confirmation that the frequency state of real bodies depends on the proximity to the source of gravitation is the bias of spectral lines to the red side in chemical elements situated on the surface of stars. We can evaluate the mass of remote star using the size of bias. The bigger is the bias, the bigger the mass or density of the star. Let's consider the mechanism of bias of frequency characteristics.

### **Frequency pulling in the amplitudeless field**

In the end of the XIX century Ray noticed that two organ tubes with the holes situated near each other can play in harmony with a close tune, i.e. the mutual synchronization of oscillations occurs. Sometimes these tubes can make each other to become silent [4,8]. Here the sources of vibration impose their own frequencies competing with each other. The extent of such "obtrusion" (pulling) depends on the ratio of powers and mutual distance. [2]

According to [1] substance has a wave nature and can be presented by the set of standing waves. There are atoms in the center of these waves (Fig. 1).

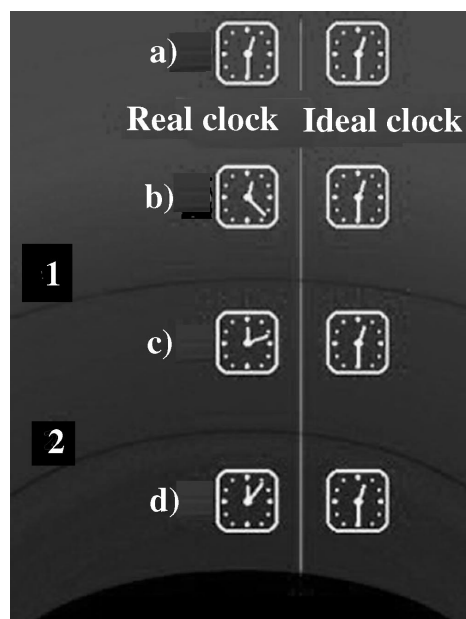


Fig.1

Every element of substance (atom) vibrates. If the minimal distance between the atoms is defined by one wave loop ( $\sim 1-10E$ ) then we can consider the order of frequency of these vibrations ( $\sim 10^{18}Hz$ ). In this sense substance is invisible for us because the range of visual perception is much lower ( $\sim 10^{14}Hz$ ). The only thing to help us is a property of real bodies to reflect or rather to re-emit the wave, which are required for the visual perception of the wave. If substance is in disturbed (plasma) state, then the substance itself begins to emit the set of spectral line and by this process it shows its wave nature.

From the point of view that the world environment has a universal nature, every atom of a chemical element forms its own frequency interval (frequency medium) inside or around itself, in the limits of which it is stable. During the interaction with another chemical element or atom another frequency medium is formed, which is comfortable to the assembly of these elements or for any number of elements. Chemical elements or their assembly can comfortably exist only in frequency mediums formed by them. With any change of elements as well as their set the formation of corresponding medium is a condition of stability. In other words, we cannot consider a substance ignoring its frequency medium. It is evident from the fact that different chemical elements consist of the same elementary particles and their set is very important. This set can be stable only in a certain frequency interval. The influence on the frequency interval leads to the chemical reaction. If the reaction is impossible, then it leads to the change of chemical elements. Taking into consideration all above mentioned we can interpret the sense of periodic table by Mendeleev in another way. Mendeleev discovered periodicity but didn't give any explanation. And what is more, development of physical

and chemical theory of frequency space will open a new epoch in synthesis of environmentally appropriate substances and compounds, which have the given properties and technological parameters. Phase-frequency interpretation of periodical table has a sense because it will allow seeing new patterns of structure of complex compounds and explain many artifacts of behavior of chemical pollutants in environment.

There are interesting characteristics of frequency medium (field), i.e. density and amplitude. The density of field (thickness, saturation) depends on the quantity of oscillating elements of the object and distance to it, i.e. decreases as it moves away. There is a different situation with the amplitude. If the quantity of emitting elements is high, then for any emitted running wave (quantum) an identical antiphase running wave exists. A situation of zeroing (compensation) of the amplitude appears. This situation contains the running waves and there is no any resulting wave. For this situation the calculation and volumetric modeling were made [4]. A principle possibility of the fact that there are "nonradiating" systems of oscillators and wave amplitudeless fields in nature was discovered.

Absence of amplitude makes difficulties for the possibility to register the wave characteristics of the field and creates an illusion that there is nothing in space. In these cases we consider the field as another kind of matter. However, recognition of method of amplitudeless propagation of wave disturbances is founded by modeling. It allows us to speak about the wave nature of fields. Let's dwell on the gravitational field, which is a high frequency wave amplitudeless background according to the rythmodynamic approach, in ideal it consists of amplitudeless (nondeveloped) quanta – gravitons.

Absence of amplitude allows us to speak about high penetrating property of gravitational field. If "there are nothing", then "it" penetrates through all. We can assume it, but bodies can feel the amplitudeless field somehow. In another article about "nondeveloped energy" we have found that transition of energy from the nondeveloped, amplitudeless state to the developed one can occur on the interface of mediums, i.e. during the refraction. If the property of nonlinearity of a material object can shift phases of waves, then the part of energy releases directly in the place of refraction. Rythmodynamics consider this released energy as a reason of appearance of frequency gradient in the bodies. Evidently by the same reason the spectral lines of excited substance shift to the red side in the field of gravitation. Here is an analogy: "If there is a mechanical pendulum clock, then their period of oscillations in vacuum, air and water is different. The higher is the density of medium, the oscillations are more difficult. The clock goes slower in water than in vacuum, but faster than in liquid mercury". In this sense we can speak about gravitational medium, which imposes its own "frequency game" to the bodies got into this medium. But the bodies in their turn make changes in medium and deform the general field.

## Deformation of interference field

When the body is situated in the gravitational field, it results in mismatch of its frequencies. The body is volumetric and discrete, i.e. it consists of separate atoms. That is why parts of the body (atoms) are situated on the different distances from the massive object (the source of the gravity field). This is the reason for the fact that the degree of “frequency pulling” is different for every atom. Let's consider this question more particularly.

Let's consider a substance as a set of standing waves. Atoms are situated in the center of these waves (See Fig.2). Atoms are the sources of waves. Standing waves appears between the closest atoms. Wave crystalline structures appears (sets of standing waves). Atoms are situated in the center of these waves.



Fig.2

Atoms are multidistant from the surface. A distance between the upper and the lower parts of a crystal is calculated by angstrom units, which is sufficient for the appearance of gradient of frequencies. Difference in frequencies leads to the appearance of so called “spider-effect” [4], i.e. to the deformation of general interference field and to the deformation of internal connections. Sense of deformation is in the directed (vectorial) bias of centers of the wave crystalline lattice relatively to atoms. Atoms tend to remain in the centers, that's why they should continuously follow these centers. System begins to move.

Fig. 3. Due to the fact that atoms are multidistant from the source of gravitation, the degree of their “frequency pulling is different”. Dismatch of frequencies takes place in the system.) Gradient of frequency leads to the deformation of interference field and its slipping down from the object. Appearances of the interference pattern looks like a spider (it is the reason for its name): spider-effect, gravitational spider. Such kind of deformation leads to the movement of system.

## Gravitational drift and weight loss

Black hole (any source of gravitation here) imposes a vectorial deformation to the body. Object tries to escape from this deformation with all available methods. One of them is movement following its own interference field.

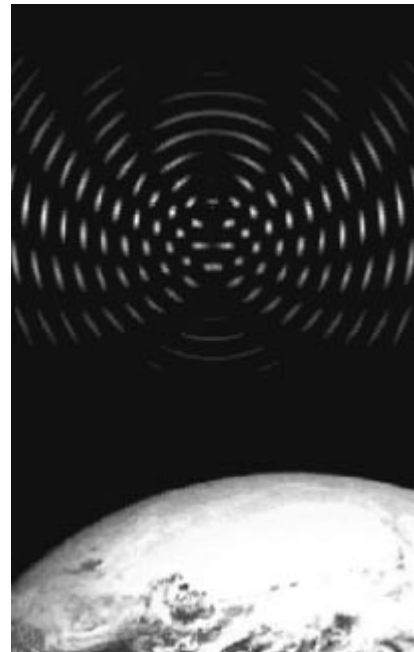


Fig 3

A result is a drift in direction of black hole. We interpret this drift as a free fall.

If the reason of free fall can be explained through dismatch of frequencies, i.e. internal reasons, then we do not need to introduce the curvature of space. It will be logically to speak about distribution of potential characteristics in linear space, which can create an energy discomfort in the bodies.

As regards to the curvature, here we should compare the standards of length. Metrics of these standards is generally determined by the frequency condition of substance. Absence of the source of gravitation guarantees an equality of frequency conditions to the standards, and therefore the equality of their lengths . Presence of gravitating body breaks the frequency equality, standards become unequal, i.e. linear figures cannot be constructed with them that we consider as a curvature . Rythmodynamics speaks about the illusion of curvature.

If the reason of gravitational drift is the dismatch of frequencies, then equalization of frequencies will inevitably lead to the stoppage of the free fall, i.e. to antigravitation [12]. Body will loose its weight (but not mass) and will hover without any support. But it is not a “free” process.

## Frequency horizon

What will happen, when the frequency characteristics will fully shift to the infrared area relatively to the observer? Disappearance of such body from the field of vision of the observer is expected.

Something similar can happen in the surroundings of black hole because as the body approaches to its surface, the frequency characteristics shift to the infrared area.

Let the body to fall from A to D (Fig. 4b). For the observer A spectral lines of the body shift to the infrared side. He sees that the body, which moves away, becomes red at first, then it disappears. Visual disappearance will come in the moment when set of spectral lines fully shift to the infrared area. If another observer falls together with the body, the situation will be symmetrical. Set of spectral lines, which characterize the state A will fully shift to the ultraviolet side. We should note that no one of the observers will notice any frequency changes in his own system.

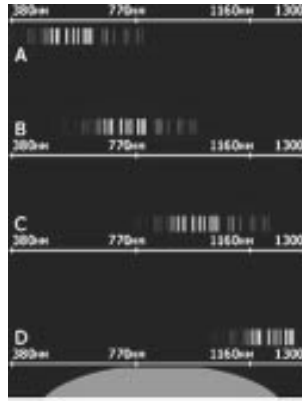


Fig 4

Gravitational red shift of spectral lines (frequencies) in the systems B, C and D regarding the scale of system A.

We can state that A and falling observer “disappeared for each other”, i.e. they were separated by the Shvarzshild's surface. But it will be logical to explain this mutual disappearance by the strong difference in frequency characteristics of the objects. In this sense the Shvarzshild's surface is a *frequency horizon*. Disappeared observers did not disappear anywhere. They are really in space and can observe each other for some time with the help of infrared or ultraviolet vision devices.

But then there are no reasons to forbid the electromagnetic signals to leave black hole, i.e. come outside. The other question is: what happens with the sources of these signals, if we consider the substance of black hole to be them?

If the question is about the red shift only and its dependence from the concentrated mass, so when the mass accumulates, the frequency characteristics of falling body (which did not reach the surface of black hole yet) will appear as a radio-band waves. In this sense black holes will be a radio source. But the frequency state of the body of black hole constantly increases ( $m = kv$ , where  $k = h/c^2$ ).

Let's review the theoretical experiment:

- For the external observer A the objects situated in the gap between the Shvarzshild's sphere and the body of black hole are invisible because all their frequency characteristics are shifted to the infrared area.

- For the observer D situated on the surface of black hole the external observer becomes invisible because all frequency characteristics of the external objects are shifted to the ultraviolet area.
- With the accumulation of mass black hole should degrade to the astrophysical radio band wave source.

### Relativity of the frequency horizon

*The substance of black hole forms a corresponding medium inside and around itself. Any matter object, which falling into black hole or moving away should change. At first it concerns to its frequency interval.*

We compared the frequency horizon with the Shvarzshild's sphere. Radius of this sphere usually is determined by the formula  $R_0 = 2GM/c^2$ , i.e. the bigger is the mass, the bigger is the radius of the sphere. The frequency horizon is a relative notion in rythmodynamics because it has a different physical sense. The formula describing the radius of the horizon to the remote observer looks in a different way too:  $R_v = kgn$ , where  $kg = 2Gh/c^4$ . Change of the general notion of mass ( $M$ ) to its particular state ( $V$ ) in the generally accepted formula allows us to consider the phenomena and processes accompanying black holes in a frequency consideration. Now we can say that the higher the frequency of BH body, the bigger the radius of its frequency horizon is. Unlike the Shvarzshild's sphere, the frequency horizon is a relative notion because it depends on ratio of frequency states in the systems of observer and object.

If for the observer A the frequency horizon is defined by the surface B (Fig. 4), then the object C is invisible for him. The frequency horizon for the observer B is another one and is marked by the surface C. That's why the object C is observable to him. The reason is the different relativity of frequency characteristics of the system “observer-object”.

It is interesting that there are two frequency horizons for the observer C, internal (where the system D hides) and external (where the system A is beyond the visibility). The system C and the observer appear to be isolated from two sides. However, if the objects with similar frequency characteristics will appear in space, they will be visible for the C. In the real world we can see only the things, which do not leave the limits of visible frequency band.

Let's consider a hypothetical example with two black holes similar by their frequencies. There are observers D' and D on the surface of these holes (Fig. 5). D' and D are situated in the equal frequency conditions. That's why the communication between them is possible. But the external objects (for example, A) are invisible to them due to the big difference of their frequency characteristics (violet shift). It is clear that objects D' and D are also invisible to A. Here we can speak about the areas of a common space delimited by their

frequency properties. For every kind of observers the world seems to be real only in its frequency band, which is determined by inborn qualities. Any thing situated out of the limits seems to be the “beyond world” for the observers, i.e. situated on that side of the frequency horizon. In this sense every world limited by its frequency for another one is some kind of a black hole!

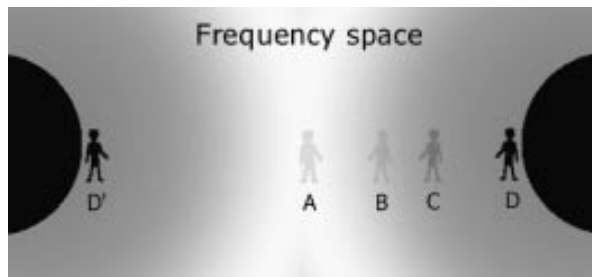


Fig 5

Fig. 5. Illusion of frequency space (pseudofrequency) appears in the surroundings of the massive bodies. For D and D' the real observers A and B are situated on that side of the frequency horizon. That's why we speak about their system as a beyond real world.

#### **Illusion of materialization and dematerialization of objects**

A material object moving from D' to D (or visa versa), flying by A, will behave in an exotic way. At first it will appear from nothing, then moving away it will disappear, dissolve. The reason is that the frequency characteristics of the moving object change and when they are in a zone of visual perception A the object becomes visible. The further shift of the frequency characteristics leads to the visual disappearance of the object. However, as we pointed before, the object can be observed in infrared diapason by means of special devices.

Fig. 6 is an illustration to the question of the frequency horizon. The angle of reflection does not allow the above-water observer to see the underwater objects. Also it does not allow the underwater observer to see the plunger flying to the water. Transition through the real and at the same time imaginary boundary between water and air is accompanied not only by the disappearance of the object in one world and appearance of it in another world, but also by intensive wave disturbances of the boundary of divide. The underwater observer can have an opinion that the spontaneous birth (materialization) of the object, and the above-water observer can have an opinion that he saw a disappearance (dematerialization) of the object. In the given example the boundary between the mediums with different frequencies is obvious, because our senses overlap both diapasons of frequencies.

**From the position of rythmodynamics this object is present, but it cannot be observed**

There is an interesting situation, when the Worlds with different frequencies (mediums) are inserted into each

other in their volume. If the gap of frequency is sufficiently big, i.e. it is not overlapped by our senses, then transition from one frequency band to another one will be accompanied by the effects of disappearance in one world and appearance in another one, wave disturbances of boundaries of divide. These effects can be formalized not only mathematically without any additional regularities, but also can be understood by means of three-dimensional logic.

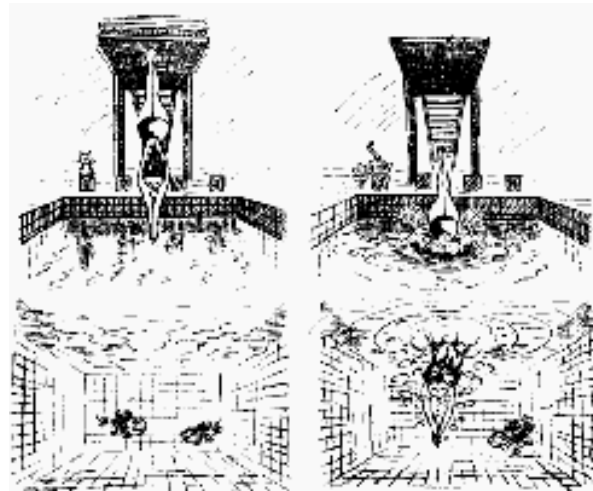


Fig 6

The mechanism of materialization and dematerialization was described in the brochure “Frequency space” [3]. We suggested there to use the notion *time* instead of *frequency* and to change the time coordinate (*t*) to the frequency coordinate (*n*).

Introduction of the frequency coordinate is a natural logical step. If we change the time coordinate axis to the frequency one, we will get a chance to interpret the movement by this axis as a change of frequency characteristics of the object but not as a movement to the past or to the future.

Transition by frequency in free space is different from the analogous transitions in the surroundings of black hole.

In the surroundings of black hole the change of frequency characteristics of objects occurs not directly and always is connected with the movement in metric coordinates. In this sense black hole creates the conditions similar to the frequency space.

Transition by the classic frequency space is different. The object shifting by the frequency axis materializes or dematerializes without any movement. Does it mean that it is absent in the space? From the position of rythmodynamics this object is present, but it cannot be observed.

We came close to the boundary, which we can step over and get to another world, the same as the real world. These worlds can be situated side by side with each other, they are divided by the frequency horizon and

they are “black holes” visually for each other. Interaction of these worlds is weak, that's why it is called perceptible, informational interaction [9], which can be conceived in the intuitive level [10].

### Conclusions

- There is non-linearity of distribution of frequency-amplitude characteristics (potentials, conditions) in the rythmodynamic space, which creates an illusion of curvature.
- “Frequency pulling” is a reason of gravitational red shift, deceleration of rate of the atomic clock, mismatch of frequencies.
- Mismatch of frequencies of the object leads to the vectorial deformation of the interference field. Reaction on the deformation is the movement (free fall).
- A massive body becomes invisible due to the shift of its frequency characteristics to the infrared (black hole) or ultraviolet (white hole) area. In such an interpretation the “collapse” is a quick process of shift of the frequency characteristics of the object.
- A notion of “Shvarzshild's sphere” is changed by the frequency horizon. An object got beyond this horizon becomes invisible.
- Electromagnetic waves pass through the Shvarzshild's sphere free in both directions.

If the uncompromising classical (diffusion) and “neoclassic” (buracanian) hypotheses were in contradiction concerning the question of black holes up to the present time, then with appearance of this article a new point of view (rythmodynamic) came out. This point of view states:

- There are no curvature of space, there are no black holes in a common sense, but there is an illusion

that the bodies become invisible due to the shift of their frequency characteristics to the infrared or ultraviolet area.

- Our Universe is bounded from the both sides by the frequency horizon. That why it is non-observable for the external worlds, i.e. it is a “black hole”!
- As the mass of black hole increase, its frequency increase too and the moment can appear, when the further increasing of frequency will lead to the weakening of gravitational properties at first, then to the leaving of black hole to another frequency interval of space. For the habitant of another frequency scale this process can be observed as a birth of a new star or new elementary particle.

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In memory of Acad. Vladimir Ivanovitch Zubov  
April 14, 1930- October 28, 2000

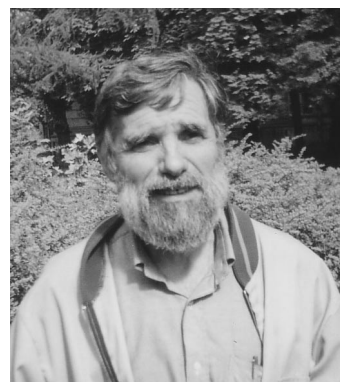
## Hydrogen-Helium Energy on the Base of Laminated Silicates and Tectosilicates

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In October 31, 2000 an opening of Research Institute on Cosmic Energy (RICE) took place in Munich. The opening of a branch Institute in Saint Petersburg is planned to be done in a year. Official materials were published in the magazine “Raum und Zeit” (“Space and Time”) #109 and #110, 2001. Internet address is [www.raum-und-zeit.com](http://www.raum-und-zeit.com). A gravelectrical transformer of cosmic energy was shown on the presentation of the Institute.



Dr. Oleg M. Kalinin

Transformation of energy is a central notion in universal (analitical) electrodynamics by Maxwell-Zubov. Acad. Vladimir I. Zubov studied the unification of electromagnetic and gravitational interactions. Eighler's rotatory mechanics with three Eighler's angles (precession, nutation and proper rotation) is opposed to Newtonian translational mechanics. Proper rotation is usually called as rotation, twisting or torsion.