Conception of Kozyrev's space flow and modern concepts of instant and spiral

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The conception of space flow suggested by astrophysicist Kozyrev is compared with the modern correlations of theoretical physics and elementary particle physics. The experiments of space flow registration realized by Kozyrev and the other scientists, using the similar interpretations, are considered. The observation possibility of instant images of cosmic objects in the present time region presents the certain interest. The physical concepts possessing new views about the nature of time are discussed.

Contest

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Introduction

At the end of the 50th of XX century astrophysicist, astronomer Nikolay Alexandrovich Kozyrev had suggested the space flow conception, or by his terminology – flow of time [1]. As astronomer Kozyrev was known by his works on the lunar volcano discovering and he was graduated by the international astronomy society. His scientific work was connected with experimental observing researches, nevertheless his doctor dissertation deals with the theoretical investigation of an internal structure of stars.

In our time ideas, works made by Kozyrev can be useful for modern physics and astrophysics, therefore it is necessary to take a connection with modern scientific concepts and to write his thoughts on an accessible language. The main idea of Kozyrev was the introduction of a new concept – space flow, which can be associated with a spiral (chiral) field due to modern physical views. Following to the opinion of the scientist, this flow can realize a far interaction in the scale of the Universe instantly simultaneously, without of a time delay. Unfortunately, in his works Kozyrev didn't use the concepts connected with a field characteristics of space flow and the equations of modern elementary particle physics and cosmology. At the same time, he supposed the existence of spiral properties in all the space of the Universe, and rose to give the mathematical expression to this idea.

For the proof of the existence of space flow Kozyrev had realized the set of astronomical and laboratory experiments. The experiments of the registration of instant images of stars and ether the nearest galaxy were the most interesting. What is their novelty and originality in view of the tendencies of modern elementary particle physics and cosmology? Kozyrev didn't choose this spiral field in microcosm, or didn't suppose to realize experiments on accelerators, where fundamental experiments are doing in the present. The experiences of Kozyrev were carried out at the laboratory devises with the use of macro characteristics of this physical phenomenon. This means that the concept of space flow must include the interlevel connection, and this field can act as at the macro level (laboratory and astronomical), as at micro level. This supposition is sufficiently seriously by the point of view of modern physics. The tendency of the development of elementary particle physics and cosmology is the unification of all the interactions in the moment of

the Big Bang of the Universe. But this doesn't mean an introduction of a new interaction, and the known four interactions are used.

Consider the main positive moments, connected with studying of Kozyrev's works, his conception, the experiments, and also the works near a contest. The existence of spiral (chiral) field in astrophysical and laboratory experiments is suggested. The problem of instant simultaneity is discussed, that following to Kozyrev the concept of space flow includes. It is implied the possibility of the interlevel connection constructing between macrocosm and microcosm, that is connected with a new hypothetic interaction. Undoubtedly, all these suppositions can be confirmed by new experiments, realized in different laboratories and astrophysical observatories.

1. Idea of space flow

Due to their profession astronomers and astrophysicists have dealings with gigantic distances in comparing with the Earth scales. This is units, hundreds, and thousands and millions light years – the distances, which in the laboratory conditions an ordinary scientist, a physicist doesn't think. So that, it is conformity enough, that new thoughts of the cosmos constructing was born just, in the first, in this scientific medium.

The hypothesis of space flow (the course of time) was formulated by Kozyrev in his original terminology [1-10]. Therefore in this work the description of his works will be approached maximally to the language of modern physics.

One of the most important Kozyrev's suppositions is the idea of instant time: "… all the Universe can be presented by a point …". What is the expression, the bearer of this idea: the material bearer, or this is a principal of instant. Remark that absolute time of Newton implied, that each moment of time appears simultaneously in all space. Why is comparable the end of XVII century and XX century with the known fact of the expanding of the Universe, a model of the Big Bang, the rapid developing of elementary particles physics and other physical directions, and above all, with the fundamentally making general theory of relativity.

In other size, these reasonings about space flow imply, although weren't told by Kozyrev directly, the presence of more rapid signals, relatively the light velocity. What does Kozyrev do in this attitude?

In the course of time, in its characteristics the representations are laid of the difference of a rotation in the hour-hand and in the opposite hour-hand directions. If this fact one can

formulate more exactly, then these are the concepts of spiral (chiral), existing on a fundamental level, in the first, in elementary particles physics. Macro objects are shown more difficult by these spiral characteristics. Although an interesting fact of a previous rotation to the opposite hour-hand direction of almost all the planets of the Solar system exists. Kozyrev as astronomer supposed that a rotation is as a more typical characteristic motion in all the Universe, that difficult to think anything important object, which don't possess it. Thus the right and the left rotation or the spirals of all bodies must differ. A full symmetry mustn't be. Kozyrev show just spiral properties to time, or this characteristic is connected with the axis of time. Although the other possibility is an introduction of a spiral concept through the spatial coordinates. In the result the formula of motion velocity along the time axis or velocity of the course of time is suggested. Following to Kozyrev, this value has spiral characteristics corresponded to all the space.

Unfortunately, the Kozyrev's works have little pictures and figures with images of his concepts, therefore we will try to present all spoken.

The word "a flow" and the corresponding concept of "space flow" imply a motion, a stream, a changing. This is a dynamic characteristic of a phenomenon in its foundation. Think that the observed Universe has the form of a gigantic sphere with the dimension near $R_B \sim 10^{28}$ cm. Why can the space flow be understood materially, physically? Suppose that some field pierces all the Universe, or if streams through it (Fig.1). But this field must act very rapidly, and in the limit show the instant images of all the Universe in the certain moments of time (Fig.2).

Ask the following question: does space flow run as an ordinary flow through a space from one point to another, or from one astronomical object to another, or it also streams through a time in the positive and in the negative directions?

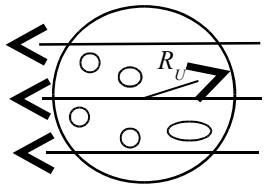


Fig.1

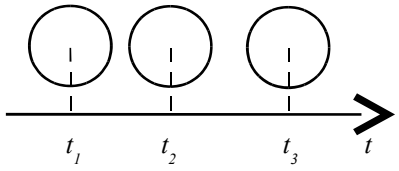


Fig.2

In the considered representation we can interpret the idea of instant as the existence possibility of instant images of different astronomical objects in all the Universe. At this the scientific possibility of the registration of distant astronomical objects from the Earth at the limit great distance (to $R_U \sim 10^{28}$ cm) must exist in the present time region or practically

instantly. If this is possible, then the Kozyrev's conception will have the trustworthiness. Therefore in 70-80th years of XX century Kozyrev had realized the experiments of the registration of these signals from nearest stars ($l \le 10$ light years) and even from the nearest galaxy (Nebulae of Andromeda, M31, $l \approx 2{,}25 \cdot 10^6$ light years) [6,7].

Why did ones treat, and, probably, why do the modern scientific association treat to the similar declarations? Can these signals be observed in the modern astrophysical observatories? Without doubt, these experiments need be confirmed. What is the Kozyrev's ideology? Is it physical theory, and what does it has the connection with modern scientific conceptions?

In this work the author will try to answer on these questions.

2. Conception of Kozyrev

2.1. Elemental objects. Cause and effect

A particle is a well-known physical terminology of an elementary object in the case, when a physical object is elementary, as for example an electron following to the modern presentations. Or we suppose the presence of an internal structure, as for a proton. On the other size, the concept of a material point traditionally is connected with a macro object, when one needs to neglect by lengths in comparison with considered distances. As it is known, a material point can present planets, stars and et. al.

The concept of event, point event is used in physical theories, but it has a more power of abstract, as a rule it implies a physical process, as for example, radiation or absorption of photon in atomic physics, but no a material object itself.

What does Kozyrev introduce as a material object? A physical space is considered, in which cause and effect are elemental objects [1,2]. These objects aren't shown by something physical characteristics, as energy, mass, spin and et. al. On its nature cause and effect are near point events, and Kozyrev think that cause must be always in the past relatively of effect, and effect accordingly is in the future.

Unfortunately, Kozyrev didn't use any geometry except Euclidean, think that it is sufficiently for his purposes. In the one work Kozyrev tried to connect his presentations with Minkowski's space [8]. Image schematically these concepts: cause and effect, think that a space is three-dimensional and Euclidean, and we think that the time axis is independent from the other axes, as in classical mechanics (Fig.3). Cause and effect are incompatible concepts and aren't placed in the one point of a space.

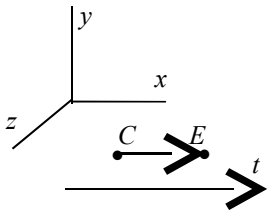


Fig. 3

2.2. Formula of velocity of time

Kozyrev connected his representations with macro bodies, and no elementary particles. So in each this transition from cause to effect the presence of a physical body is implied. Kozyrev suppose that the spatial and time difference always exist between cause and effect, or always $\delta x \neq 0$ and $\delta t \neq 0$ exist, so that cause and effect don't coincide in a space. For the correlation between these increases the formula is introduced [1]:

$$C_2 = \frac{\delta x}{\delta t} \qquad (1)$$

The marks in this formula meant that this velocity is a new constant respectively to the light velocity c. The increase δx is connected, probably, with a certain axis, but no vector. Following to Kozyrev velocity C_2 characterize speed of transition from cause to effect and is the course of time. This velocity must have pseudo scalar properties. On the whole a value of speed is introduced from dimensional reasonings in the view:

$$C_2 = \frac{e^2}{\hbar} = \alpha c = 2189{,}78 \ \ km/s \qquad (2)$$

$$\alpha = \frac{e^2}{\hbar c}$$

In the most works Kozyrev supposed that the velocity C_2 connects with the right rotation, although some reasonings about the left rotation exist, so that the full certainty didn't presence in the works. The transition to classical physics, following to Kozyrev, must appear in the limit $C_2 \to \infty$ and must show a determinism of phenomena, and the case $C_2 \to 0$ corresponds to the transition to quantum mechanics, so to an indeterminism of phenomena.

Why is the Kozyrev's opinion understood on a physical viewpoint? If dynamic field characteristics of space flow exist in a space of the Universe (Fig.1), and instant is introduced as a possible principle, then the velocity of this flow is confirmed quite, or a speed of motion in a space. This space appears as a no static image, and as a dynamic phenomenon, which has a permanent change of images, cadres, a continuous changing with the defined velocity.

If the light velocity is a concrete measured value, or the velocity of electromagnetic wave propagation, then what things the velocity C_2 is corresponded and what experiments is it registrant?

We represent spiral characteristics of velocity C_2 (Fig.4). If consider the vectors in formula (1), then $\delta\vec{x}$ will be a true vector, and $\delta\vec{t}$ - an axial vector, which has spiral properties, as for example the vector of magnetic induction $\vec{B}$. In a lot of works Kozyrev suggested the right spiral. The course of time C_2 will be a pseudo scalar and must connect these two vectors:

$$\delta\vec{x} = C_2\delta\vec{t} \qquad (3)$$

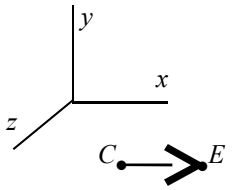


Fig.4

$\delta\vec{x}$

$\delta\vec{t}$

What are new things suggested by Kozyrev for an understanding of time? The count of time always exists, so clocks continuously go. Following to theory of relativity moments of time can depend from a motion velocity of a reference system, or from an influence of gravitation fields. Dynamics, velocity of this count of time implies, but early it wasn't introduced specially. If this value of motion velocity in time has been introduced, then it needs to present, which advantages it will show.

2.3. Momentum of pulse. Spin. Spiral

The Kozyrev's assumption about rotation, as a characteristic motion in the Universe means, that the introduced values and the formulas can have the connection with the similar values existing in physics. Consider, probably, the well-known formulas on the

viewpoint of a spiral. When a classical object is discussed (Fig.5), momentum of pulse is expressed in the form:

$$\vec{M} = I\vec{\omega} \qquad (4)$$

Where I – momentum of inertia of a body, a $\vec{\omega}$ - vector of angular velocity, having traditionally the right spiral.

Fig.5

The both vectors $\vec{\omega}$ и $\vec{M}$ are axial (pseudo vectors) and have the right spiral.

In quantum mechanics operator of pulse momentum of spin of an elementary particle, for example, electron, as it is known has the expression:

$$\hat{S} = \frac{\hbar}{2}\hat{\sigma} \qquad (5)$$

$\hat{\sigma}$ - operator of spin

Magnetic momentum of electron is equal:

$$\hat{\mu} = \mu_0\hat{\sigma} \qquad (6)$$

$$\mu_0 = \frac{e\hbar}{2mc}(1 + \frac{1}{2\pi}\frac{e^2}{\hbar c}) \qquad (7)$$

The operator of spin interaction, for example, with magnetic field has the expression:

$$\hat{U} = \hat{\mu}H \qquad (8)$$

Why to connect the given characteristics of rotation of a macro object and the characteristics of spin of an elementary particle? This question is important in the point of view of modern physics, and undoubtedly, it isn't solved without elementary particle physics.

Spiral, as a physical magnitude, is defined in the view of multiplying of the operators of pulse and spin:

$$\hat{\sigma} = \hat{p}\hat{S} \qquad (9)$$

a) b)

Fig.6

In the result spiral shows the orientation of spin relatively of the direction of a particle motion (Fig.6). The most interest the right and the left spirals of a particle are represented, more much, that the axis, as a rule, is defined along the direction of the particle motion, and in accelerators this is speed near the light velocity.

The existence of neutrino only with the left spiral, and antineutrino – only with the right spiral is an incredible fact in elementary particle physics. As a rule, particles can have as the right, as the left spiral. At the constructing of the standard model of elementary particles of Glashow-Weinberg-Salam the combinations of particles (quarks, electron and positron) having the certain spiral: the right or the left are used (marks R и L accordingly) [12-15]:

$$\begin{pmatrix} u_R \\ e_R^- \end{pmatrix} \qquad \begin{pmatrix} d_L \\ e_L^+ \end{pmatrix}$$

The considered facts, probably, are well-known, but they show the presence of the characteristics no only a rotation of a material point, but the other characteristic connected with spiral (chiral) the right or the left. Does the value C_2 introduced by Kozyrev and characterizing spiral in all the space of the Universe without of the connection with the equations of elementary particles physics including characteristics of a chiral, undoubtedly, one hardly talks and similar reasonings aren't included by Kozyrev.

2.4. Force characteristic of space flow

In the works the supposition was done that an interaction of space flow and a rotating body depends from the sum of the velocities [1,2]:

$$C_2 + u \qquad (10)$$

u – linear velocity of a rotation body

Probably, it is supposed that these values are summed as scalars. For a summing these vectors in a space, it is necessary to define that to understand as the direction of velocity C_2. The angular velocity of a body $\vec{\omega}$ is used more logically, and signs "+" and "-" to use, when vectors $\vec{C}_2$ and $\vec{\omega}$ coincide, or they have opposite directions (Fig.7a). Along the direction of vector $\vec{C}_2$ the single vector $\vec{i}$ is chosen (Fig.7b). Further the pseudo vector $\vec{j}u$ is introduced by Kozyrev, which is constructed as the product of the single pseudo vector

$\vec{j}$ directed along the axis of rotation and the velocity module u, and the reasonings about an angle between $\vec{C}_2$ and $\vec{j}u$ also are shown.

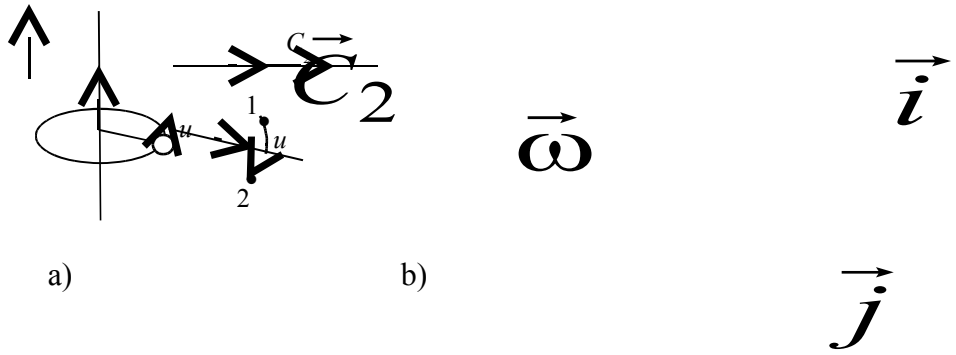


Fig.7 a) b)

A natural question arises: why a rotating body has, for example, the right spiral, and no the left spiral? The Kozyrev's proposals by this case will be presented in the next point (item 2.5).

Consider, following to Kozyrev, a process of an appearance of forces acting to a body from space flow (Fig.7b). It is supposed that two points 1 and 2 exist ($\delta x \neq 0, \delta t \neq 0$), and the force action arises between these points. So the pulse $\delta p_2 \neq 0$ acts to the point 2.

For the determination of the acting force the next formula is introduced:

$$\vec{\Phi}_0 = \vec{i}\, C_2 \left| \frac{\delta p_2}{\delta x} \right| \qquad (11)$$

At the presence of rotation motion in the system with the velocity u, the complete term is placed in the formula (11):

$$\vec{\Phi} = (\vec{i}\, C_2 + \vec{j}u) \left| \frac{\delta p}{\delta x} \right| \qquad (12)$$

The pseudo vector $\vec{j}$ is directed along the axis of rotation in this system. For the much clearness this formula is rewritten in the view:

$$\vec{\Phi} = \vec{\Phi}_0 + \vec{j} \frac{u}{C_2} \left| \vec{\Phi}_0 \right| \qquad (13)$$

In the result force $\vec{\Phi}$ must act along vectors $\vec{C}_2$, $\vec{j}u$, or along their sum. In the limit of classical physics this force vanishes in view of the limit $C_2 \to \infty$, which corresponds to the transition to classical mechanics in the Kozyrev's works.

Following to Kozyrev, during an action of space flow to a body its pulse stays continuous, and complete forces arise in the system, which also change potential energy of this body.

2.5. Asymmetry of form of a body

As astrophysicists Kozyrev in his reasonings paid attention to the form of a sphere, which has the most prevalence in the Universe. During rotation the form of spherical bodies, as a rule, transforms to an ellipsoid of rotation. Kozyrev supposed the existence of a more specific effect of astronomical spherical bodies possessing much less parameters, than the poles pressing due to the rotation. This supposition was reduced to a possible interaction of space flow and macro bodies, which could cause to the appearance of asymmetry. For the proof of this hypothesis Kozyrev was realized the astronomical observations of the planets of the Solar system.

We try to think these reasonings by the following image. An ideal symmetric system is a ball (a sphere), possessing by an infinite much quantity of symmetry axes. If we choose the one concrete axis of a solid sphere and rotate it, then the sphere will have yet an axial symmetry (Fig.8a). But one doesn't speak, what is the spiral of the sphere: the right or the left? For this any difference between the hemispheres or between the characteristics of these hemispheres must be, so in the system the chosen direction must exist. As this asymmetry of the Earth Kozyrev supposed the presence of a small swelling of the Earth sphere surface of the North pole and a similar pit of the South pole (h~100 m) (Fig.8b). The appearance of these effects will shown the distinguish direction, and so the existence just of the right spiral of the Earth (Fig.8b).

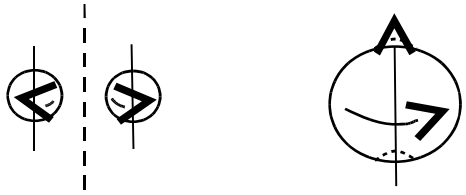


Fig.8 a) b)

As it is known, there are the two swellings of the oceanic surface of the Earth (regions near of the sea cost of Africa in Guinea bay and to the North-East of New Guinea), and the two

small pits (in the Caribbean sea and near Ceylon island), reaching the value by order 100 m, which were found only with the help of satellites. But all this four regions are placed near the equator. Do the regions suggested by Kozyrev and the registered deflections of the Earth form have the connection?

In the works the coefficient of an asymmetry was introduced in the view [2]:

$$\eta = \frac{b_S - b_N}{2a} \qquad (14)$$

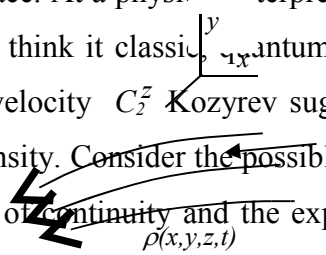
Where b_S и b_N - distances from the South pole and the North pole to the equator plane, a – big half axis. At the using expressions for the forces acting from space flow, the next dependence for the asymmetry coefficient was deduced:

$$\eta = \beta \frac{u}{C_2} \qquad (15)$$

Where u – equator velocity of a rotation of a planet and β - dimensionless coefficient depending from a planet structure are. In the result an asymmetric form of a body is defined by the ratio of speeds $\frac{u}{C_2}$ and must increase at the approach of velocity u to C_2. In the Kozyrev's works the calculations, connected with the possible interaction of space flow with the Jupiter and the other planets of the Solar system, and with the appearance of asymmetry of their form also were shown. From these reasonings the supposition follows, that an asymmetry doesn't display much obviously, as in the given example of the Earth form (Fig. 8b) and its character, probably, is more difficult.

2.6. Hydrodynamic analogy. Density of space flow. Momentum

A flow, a motion can be compared with the transference of some ideal liquid flowing through a space. At a physical interpretation it needs to define the properties of this liquid, its nature, to think it classical, quantum or another. After the introduction of the course of time or the velocity C_2^z Kozyrev suggested to consider the other characteristic of space flow – its density. Consider the possible interpretation of this value (Fig.9). As it is known, the equation of continuity and the expression for flow density in classical hydrodynamic have the following view:



$$\frac{\partial \rho}{\partial t} + div \rho \vec{v} + 0 \qquad (16)$$

$$\vec{j} = \rho \vec{v} \qquad (17)$$

$\vec{C}_2$

Fig.9

The expression of flow density traditionally contents the density of medium ρ and its velocity *v*. Following to Kozyrev, velocity C_2 is shown by pseudo scalar characteristics (formula (1)) and has the connection with rotation properties at the consideration of motion in a space. Then following these equations ((17) and (16)) we may suppose the connection of flow density and its velocity C_2. Kozyrev didn't show these reasonings and the formulas in his works, and also didn't introduce the marks of flow density.

At the same time, may suppose that space flow is interpreted by a quantum fluid. In quantum mechanics the nest equations are the analogy of the hydrodynamics equations:

$$j = \frac{\hbar}{2m}(\psi^* \nabla\psi - \psi \nabla\psi^*) \qquad (18)$$

$$\rho = |\psi|^2 \qquad (19)$$

$$\frac{\partial \rho}{\partial t} + div\ \rho\vec{v} + 0 \qquad (20)$$

Where density ρ is corresponded square of wave function ψ, and the density includes in the equation of continuity (20). Following to the formula (18) the connection between flow density j and the wave function is presented more difficult and doesn't include directly a velocity. The dependence from velocity (pulse) may appear at a choice, for example, wave function in the view of a plane wave. In spite of the given features, space flow more is associated with a quantum field medium, than with classical fluid, as naturally more visual.

Side by side with flow density, Kozyrev introduced the representations about rotation characteristics of space flow. It was supposed, if the flow has, for example, the right spiral, then the interaction with bodies and the transference of pulse momentum from space flow to a concrete body may appear (Fig.10). Unfortunately, the mechanism of this interaction wasn't introduced in the works.

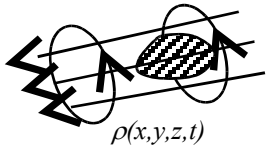


Fig.10

$\vec{M}$

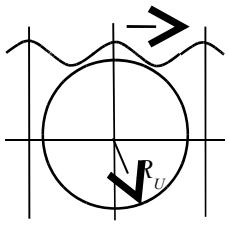
$\vec{C}_2$

2.7. Wave analogy

In view of the fact, that early space flow was considered as liquid, we may suppose the existence of a certain wave process possessed by space flow. Kozyrev assumed that an interaction transformed by space flow, can act at distances comparable with the dimension of the University. In each moment of time a some material substance can go out, pierce all the Universe. Think that a gigantic plane wave with a front dimension and a wave length compared with the size of the observed Universe R_U (Fig.11) is implied. In order that to suggest the similar assumptions, undoubtedly, the proofs of the existence of these waves must be and its nature must be known. In the present in the literature the hypothesizes of the existence of similar macro waves are suggested. These assumptions are founded at the appearance of the certain length scale for astronomical objects in the view: 10^5, 10^{10}, 10^{15} et. al. [16]. At the first, it is discussed an appearance of the conformity to natural laws for lengths of macro bodies without the concrete material nature.

$\vec{C}_2$

Fig.11



At the same time, the thoughts on the possibility of an appearance of scale properties in the cosmos are presented. In this case the appearance of scale and wave properties of bodies at level of equations aren't supposed, but only the given approximation is discussed. Side by side, wave effects connected with a spatial-time structure of a space are presented in theories, as gravitational waves in general theory of relativity.

2.8. Particle interpretation

Side by side with the assumption of space flow, having the properties of a continuous medium, also we may suppose that the properties similar with motion of very rapid and weak particles exist. The reasonings about material substation properties of space flow are spoken by A.P.Levich [17-20]. It is supposed that particles of a substation stream flow into the Universe, and also drain places exist. In this case the particles weren't shown by any certain properties. At the same time, the hypothesis of I.M.Dmitrievski was supposed to connect space flow with a motion of relict neutrinos, filling all the Universe [21]. At this it needs take into a consideration the parameters of the concrete particles: their energy, mass, spin and et. al.

In view of the gigantic dimensions of the Universe, for the concretization of space flow we also can suppose the presence of a flow of very fast particles. Similar hypothetic particles – tachyons are used in the modern physical theories and have usually complex mass and super luminal velocity $v>c$. In the one work of R.Tomashitz [22] for a description of tachyon motion the Klein-Gordon equation is used in the view:

$$(\nabla^2 + m_t^2) A_\mu = -c^{-1} j_\mu \qquad (21)$$

$\nabla^2 = \eta^{\mu\nu}\partial_\mu\partial_\nu$ - Dalamber's operator

A_μ - vector potential

j_μ - tachyon current, m_t - mass of tachyon

So the interpretation of space flow connected with motion of elementary particles deals with a choice of a type of particles and describing equations, and allows showing visible and material properties to the sufficiently abstract concept of space flow.

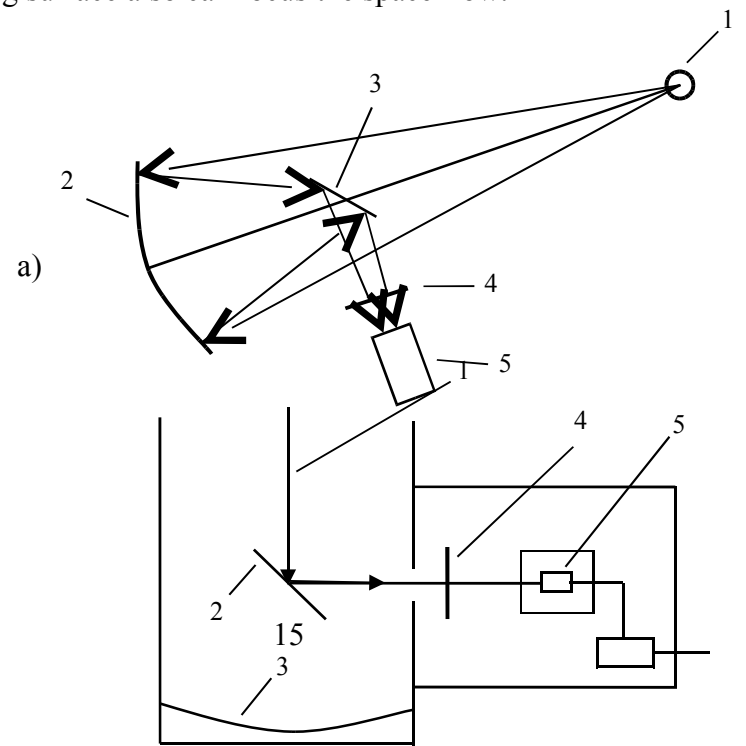
3. Kozyrev's experiments of space flow registration

3.1. Astronomical experiments

3.1.1. Instant image of star

Consider the results of the most important astronomical experiments and its interpretations had been shown by Kozyrev [6,7]. The experiments were realized at the telescopes-reflectors of the Crimean Astrophysical Observatory.

An optical image of a star is registered by usual methods in telescopes. Kozyrev supposed that the three others images can be placed, which space flow forms near the optical image (Fig.12). For this fact it needs to assume, that usual mirrors made by glass and an aluminum reflecting surface also can focus the space flow.



b)

Fig.12

The telescopes, which Kozyrev used to have the schemes: “cude” (Fig.12a) and Cassegren [6] (Fig.12b). The new detector (5) was used principally for the registration of images of space flow (Fig.12a) and (5) (Fig.12b), founded at a measurement of electrical conductivity of a sensitive element in the place of the focused flow [6]. Its scheme will be considered father (item 3.2.2). The optical radiation was shouted with the help of plane (4) (Fig.12a) and (4) (Fig.12b). In Fig.12a the path of usual optical rays from the astronomical object (1) was shown, at the reflecting from mirror (2) and from rotation mirror (3). In Fig.12b beam (1) is shown, reflected from flat mirror (2) in the scheme of Cassegren, and the rays reflected from mirror (3) aren’t imaged.

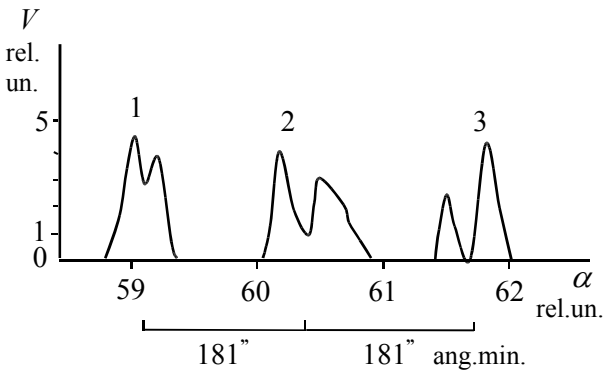


Fig.13

In the works the detector values at the scanning along the three images of the star were shown [7] (Fig.13). All the three images, on the Kozyrev’s opinion, were formed by space flow. The first image (1) is similar to an optical image registered by an usual detector sensitive to light, and the signal coming from the star with the time delay is $\Delta t = \frac{l}{c}$ (l– distance to the star, c– the light velocity) is. The second image (2) was interpreted by Kozyrev as instant or the true image, formed by a mirror of a telescope without the time delay, and then was registered by the detector. The third image (3) is a hypothetic star image, placed in the future relatively these two images symmetrically relatively moment t=0, and is shifted at interval $\Delta t = \frac{l}{c}$.

For an explanation of a signal path Kozyrev in some his work used Minkowski's space [8] (Fig.14). Due to Kozyrev, in the some time moment t=0 the three signals have come to the detector from the astronomical object: 1) a signal with velocity c (transferred by space flow), 2) an instant signal coming without a time delay, 3) a signal with velocity c, only from the future (transferred by cosmic flow). All the three signals go the distance l from a star to a detector.

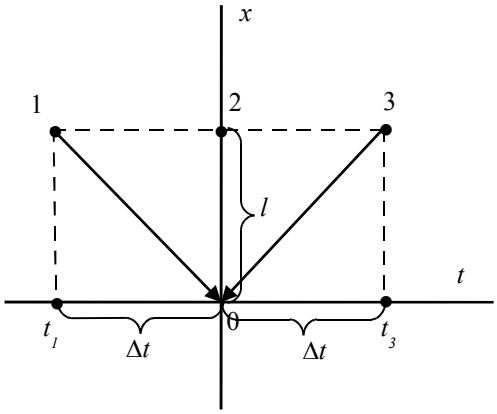


Fig.14

Try to explain a signal path represented in Fig.14. Hardly to understand the instant signal not possessing a time delay. Suppose that signals velocity is presented by the next formula (c – the light velocity):

$$v_n = c\, e^{an} \qquad (23)$$

a>0

n = 0, 1, 2…

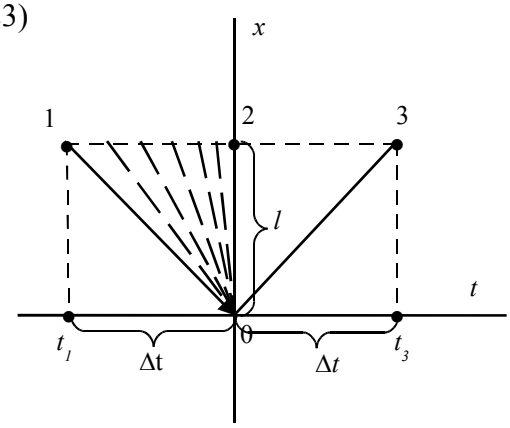


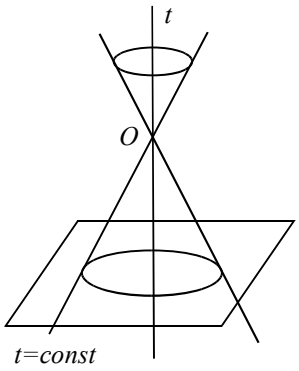
Fig.15

Then no one image 1 will be, but an infinite series of images (Fig.15), having the image 2 as the limit. In this case instant signal is understood no abstract, but as a some limit, pressing images of very rapid signals coming from the star.

The famous physicist Rodger Penrose told his opinion about instant [23]. In fig.16 the light cones is imaged, presented in special theory of relativity. The light signals permitted by the theory, as it is known, are placed on the surface of this cone. For an introduction of a quality presentation of instant Penrose conduct a plane t=*const* perpendicular to the

time axis (the cone axis). On this plane, by his opinion, instant simultaneous events must be placed.

Fig.16



3.1.2. Registration of space flow density

As value characterizing scalar properties of space flow, Kozyrev suggested space flow density. The vibration balance was one of devises of the Kozyrev's systematic researches of space flow density [1,2,5]. The scheme of this devise isn't presented in the works, but the construction is described (item 3.2.4). The principle of a devise registration was based at a variation of a body weight, placed on a precise analytic balance at the vibration of the hang up point with frequency in the region 10-50 Hz. The changes of balance values Kozyrev connected with the change of space flow density. As supposed sources of space flow the some laboratory processes were, and also a density change was registered in view of the action of the Sun, the Moon, and the planets of the Solar system, or background measurements took place. One of the most important dependences [2] is imaged in Fig.17, which was interpreted by Kozyrev as the background action of space flow in a space. This dependence, on his opinion, showed the discrete quantum character of weight change on the vibration balance, and accordingly gave a discrete change of flow density. Due to this effect, Kozyrev took the analogy with quantum mechanics, where the similar effects are presented for a lot of measured magnitudes.

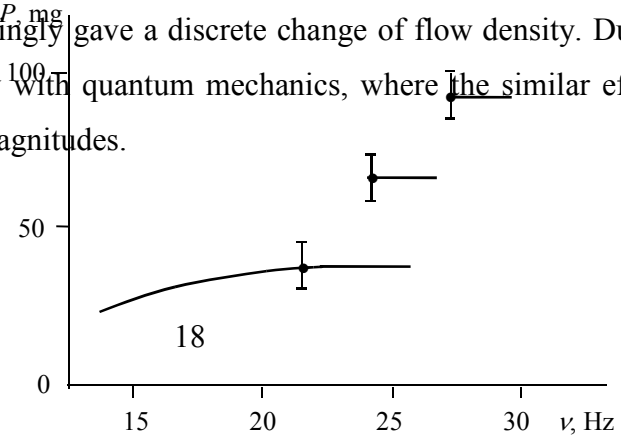


Fig.17

During these researches the attempts of the space flow density registration in a dependence from a geographic latitude were undertaken, at which the measurement system were placed.

3.2. Laboratory experiments. The main types of detectors

3.2.1. Radiation and absorption of space flow. Unequilibrium processes

For the description of space flow, on the Kozyrev's opinion, it needs to introduce concepts of radiation and absorption of space flow, or concepts used in electromagnetism. In view of this fact, one could introduce natural phenomena, at which these processes of space flow can arise. The scientist spoke the supposition that the widest category is the concept of an unequilibrium process, or the system state placed far from the equilibrium state. This consideration connected with thermodynamics values describing a system. For a simplification of the Kozyrev's approach and a convergence of the description to the form of modern works, it is expediently to suppose the presence of field characteristics of these phenomena, or a radiation and an absorption of space flow.

Kozyrev supposed that stars and accordingly the Sun are the strongest sources of space flow. To connect the Sun with the concept of a unequilibrium system, on the point of view of the modern science, it is a very difficult moment. The electromagnetic radiation of the Sun's photosphere, as it is known, near to the equilibrium Plank's spectrum, and the internal Sun's structure connected with a set of very difficult nuclear, radiation and convective processes. To connect all the Sun (the star) living with any more common category, probably, a sufficiently difficult problem is. In view of this fact, it is expedient to think, that the processes of radiation (absorption) of a field substance, which Kozyrev connected with the concept of space flow, take place in the Sun.

In view of a difficultness of the Sun processes, it was needed to find more simpler laboratory processes. Represent in the beginning phenomena, resulting to a radiation of space flow. Kozyrev supposed that an intensive evaporation of liquids (acetone, water, et al.) is useful process. Probably, a very intensive lost of particles by the Sun surface is the very far analogy. This process also is characterized by an increase of system entropy. A more weak process, on this point of view, an increase of a liquid temperature is. The reasonings about changing of a substance structure (as a new concept) have the certain interest. At the same time, Kozyrev didn't introduce quantity characteristics of a process. For example, at a crystal mater dissolving in water a substance structure (as a new concept) increases, that can show a radiation of space flow. Transiting to a more common category, Kozyrev supposed, that the one part of phase transitions can give radiation of space flow, and the other – absorption. Remark that these processes of space flow are correlated with electromagnetic phenomena, which in more cases will have the more significance.

As a laboratory model processes connected with absorption of space flow we can consider, for example, a vapor condensation, cooling water, a mater crystallization from solution and et. al.

Undoubtedly, these laboratory processes are simpler, than the living stars researches. In view of this fact, with the help of these model processes it is expedient to registrant the radiation (absorption) of space flow, or field characteristics of this phenomenon, and probably to connect the correlations between the introduced characteristics of space flow and the values characterizing of the researched process: velocity of an evaporate matter, a temperature changing and et. al.

3.2.2. Resistant scheme

This detector was used, in the first, at the astronomical experiments connected with the registration of the star images written early [4,6,7,9]. Also the detector was used during the laboratory measurements of processes of radiation and absorption of space flow.

For measurements Kozyrev had chose the most sensitive scheme – the bridge of Winston (Fig.19) [6].

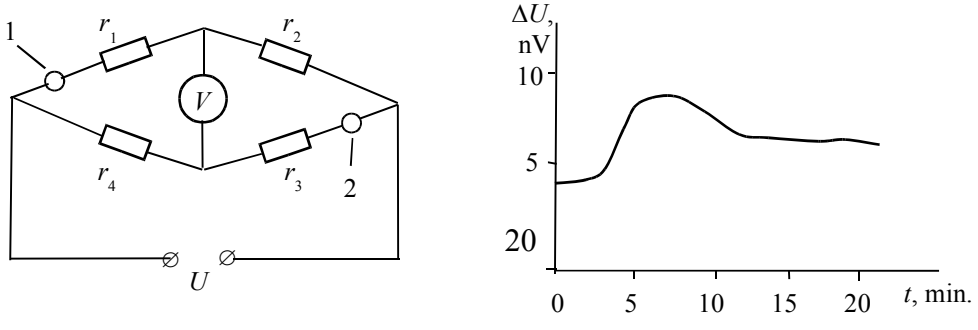


Fig.19 Fig.20

All the conductors r_1 - r_4 had the same values in the region r~5-6 kOm. In the both sizes of the bridge the small aluminum pierces were placed (1) and (2), which due to Kozyrev increased a scheme sensitivity. The registration was realized with the help of voltmeter with the parameters: the measurement sensitivity ΔU=1 nV, internal conductivity r~5-6 kOm. The scheme was switched to the feeding devise with voltage U=40-60 V. All the parameters and the types of a devise are in the work, but are relatively old. The one of the conductors, for example r_2, is carried out from the scheme at the lengthening wires and is used for the measurements. The scheme was closed by dielectric and metallic screens for temperature vibrations and electrostatic negative signals removal. The chosen parameters of the conductors show a sufficiently difficult region for measurements (U~0-20 nV).

The characteristic dependence of the resistive bridge values during time is represented in Fig.20. For the dependence a slow reaction at a process of radiation (space flow) is typical, and then a more slowly restoring to initial parameters, or an original effect of after an action. The scheme inertia, probably, also was defined by the measurement devises, and in the Kozyrev's experiments showed approximately Δt=0,5 min.

3.2.3. Rotating balance

Due to a very big sensitivity the rotating balance was used in the series of the very well-known experiments: the Coulomb's experiments with electricity, the Cavendish's gravitational experiments and the Eotvos's experiments. The question about a subject of registration, about an influence character, about acting field and et. al. are sufficiently principal. Also it is necessary to know, that the sensitive element is in this construction.

The measurements results carried out by the rotating balance are shown in the Kozyrev's works [4]. Unfortunately, the scheme of the devise is absent, therefore in Fig.21 is imaged the construction due to the description given in the work. The cross-beam (1) was made from wood with diameter 1-3 mm. As the counterweight the lead sphere (2) (diameter 1-2 mm) was used. The balance was hanged up at the quartz (kapron) thread (3) with diameter d=1-10 μm and length 10-30 cm. Then the balance was placed in glass or metallic screens (4) for the protection from the influence of air flows and electrostatic

fields. What is a sensitive element in this construction: a lead sphere, a wood cross-beam and et. al.?

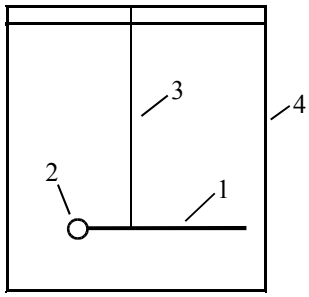


Fig.21

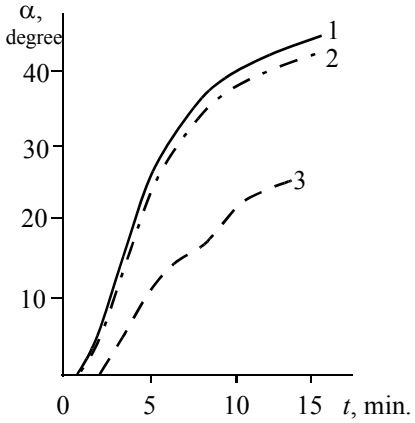


Fig.22

The dependence of a turn angle of the rotating balance at the processes connected with a radiation of space flow, for example, at an acetone evaporation is represented in Fig.22. In this experiment the action of different screens (thin cardboard (1), glass plane (2), plane with raised dust on it aluminum (3)) to the experimental results was researched. The screens were placed between the radiation source and the rotating balance. The dependence of a distance between the radiation source and the devise are absent in the works.

3.2.4. Vibrating balance

Kozyrev used to work this devise in the experiments of the space flow measurements. Consider the scheme (Fig.23) from the works [2,4,5]. The sufficiently precise balance Δm=1-10 mg was used, the vibration mechanism (5) showing frequencies in the region 10-50 Hz was placed near the measuring prism. The electromagnet was used as a vibrator, which has power from a sonic generator or an electrical motor having an axis with a drifted

weight center. At the one part of the balance the standard mass was placed (1) at the elastic hanging (2), and at the other – counterweight (3) at the hard hanging (4). The weight of the mass was in the region of 700 g. The action principle of this devise, following to Kozyrev, is realized by an interaction of the sensitive element (1) and the space flow at the presence of vibrations in the devise.

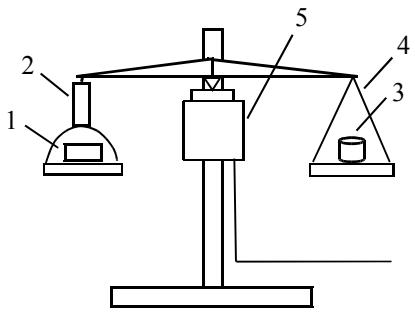


Fig.23

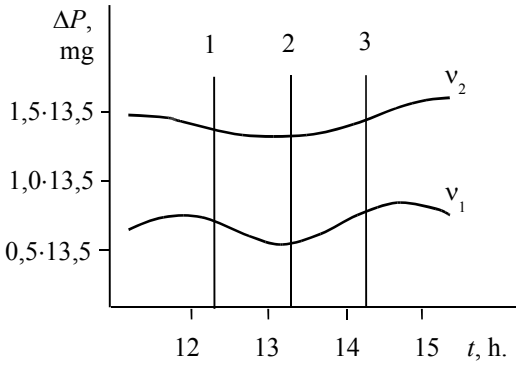


Fig.24

The one from the interest dependences, obtained due to this devise, is imaged in Fig.24. During these measurements the change of an element weight at the full Solar darkening by two different frequencies was registered [4]. The time moment (1) in this picture is corresponded to the beginning of the Solar darkening, the moment (2) – to the full darkening and the moment (3) – to the end of the darkening.

3.2.5. Gyroscopes

Kozyrev spoke the quality reasonings about an interaction of a body and space flow due to spiral properties of space flow during a gyroscope rotation, and also realized the series of experiment with gyroscopes [2,3]. The appearance of a force was connected with the possible sum of the velocities: the course of time C_2 and the velocity of a rotating body v:

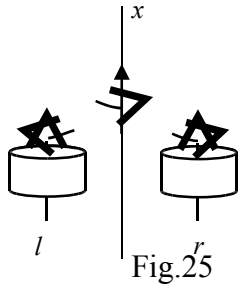
$$C_2 + v \qquad (24)$$

For the interaction description the force (formula (12)) [1,2] was used:

$$\vec{\Phi} = (\vec{i}\, C_2 + \vec{j} u)\left|\frac{\delta p}{\delta x}\right| \qquad (25)$$

The main principle scheme of interaction of space flow and a rotation body seemed by the next view (Fig.25).

Let the vector C_2 has the right spiral and is directed in a space as it is shown in Fig.25. Then the two gyroscopes possessing the right spiral and the left spiral can different interact with the space flow, or the axis force can appear (along the axis x), having different values in the dependence from a gyroscope spiral. Kozyrev suggested to place gyroscopes on precise balances and to realize measurements with different rotation directions.



$\vec{C}_2$

Fig.25

The sufficiently precise measurements were obtained in the work [24]. On the one part of balance the gyroscope and the electric motor were placed (rotation frequency n=3000-10000 rot./min), and on the other – the counterweight. The bringing up conductors to the motor was made sufficiently qualitative and didn't influence at the experimental results. The measurement precise was Δm=±0,1 mg. At rotation in the hour-hand and in the opposite hour-hand direction the difference of the measurements in the region Δm=8-10 mg was obtained.

4. Works supposing interpretations near Kozyrev's space flow conception

New experiments, as a rule, are hardly realized, so in the articles one doesn't mark nuances, which only the scientist working in this direction can think. In the case of the Kozyrev's work it needs to understand his ideology non typical to the physical concepts (field, force lines, potential and et. al.). The scientists, which saw his experiences by sight and imagined space flow (flow of time), tried to make the similar experiments, or began to realize own experiments in the near interpretation. In all these works the question about an interaction and its influence from a distance arose. Which a spiral (chiral) field is the

detector influenced: a field of the Sun, stars, a field of the Moon, nearest planets and et al.? Which does an influence dominate in experiments?

In view of this fact, the Kozyrev's conception was needed by the future development and the approach to the modern physical representations. The Kozyrev's works and near the contest works were discussed at the seminar "The research of the time phenomenon", carried out by A.P.Levich during 20 years in MSU [20]. The scientists presented in the Kozyrev's laboratory during his experiments I.A.Eganova and S.M.Korotaev are. Therefore we consider their main works.

4.1. Experiments of I.A.Eganova. Instant image of the Sun

The scheme near to the Kozyrev's experience was taken for the astronomical experiments (Fig.12). Eganova realized the experiments of the space flow registration from stars and from the Sun due to the small telescope using [26,27]. The resistive detector was usually used in the experiences. The characteristic dependence of signals of the resistive detector in the experiments of the space flow registration from the Sun is represented in Fig.26.

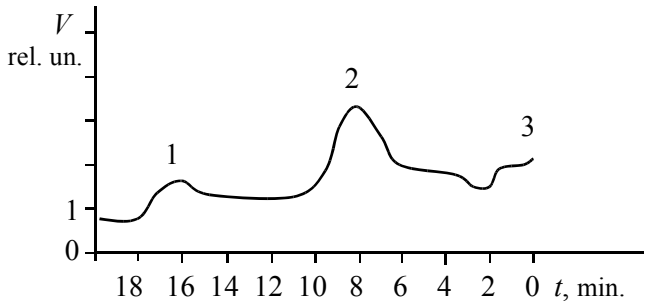


Fig.26

In this work all the three signals are the signals of space flow, which are focused in the three different spatial points near of the usual optical image, obtained with the help of the telescope-reflector. On the axis x the angular units are transformed to the time units, in view of the known time of the distance of light coming from the Sun to the Earth ($\Delta t \approx 8$ min.). Remember that Kozyrev supposed, that the signals 1 and 3 move with the light velocity. The most important signal 2 is the instant signal, observed in his registration region without a time delay.

For the physical interpretation of her experiments Eganova use the presentations about a rule of unequilibrium processes and the appearance of a meta interaction.

4.2. Experiments of S.M.Korotaev. Signals of non electromagnetic nature from the Sun. Registration of dark currents. Electrolytic detector

As an interpretation of the space flow conception Korotaev began to develop the approach connected with a quantum non locality, which is sufficiently known for electromagnetic phenomena [29-32]. The main Korotaev's detectors were the photo electronic devices (a dark current was registered) and the electrolytic detector.

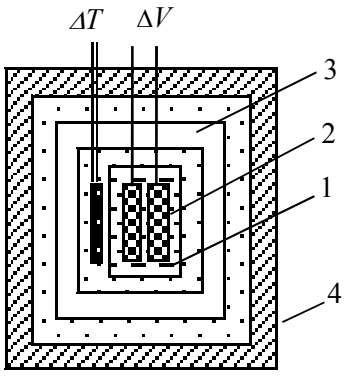


Fig.27

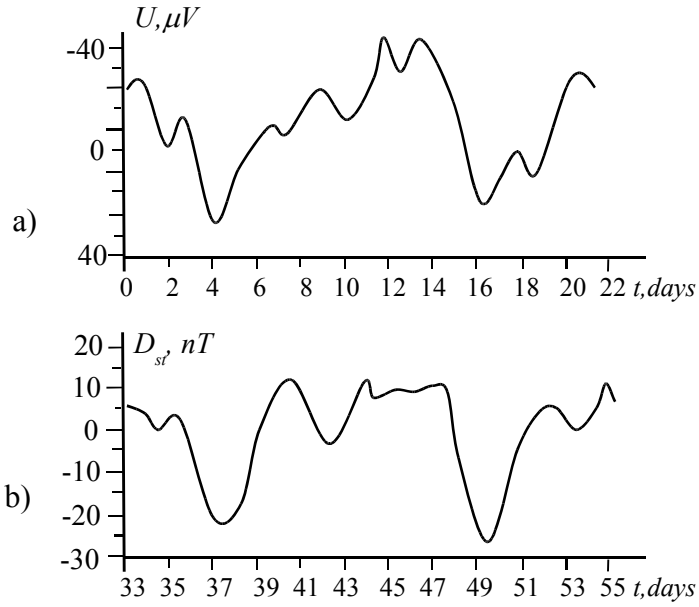


Fig.28

In the electrolytic detector (Fig.27) the *NaCl* solution (1) is used, in which the two graphite-manganese electrodes are placed (2). The detector is located in the Dewar's vessel (3) and also is thermo stabilized with the help of the plastic screens (4). The exactness of a thermo stabilization is $\Delta T \approx 10^{-3}$K. In the experiments voltage at electrodes is registered with the exactness to $\Delta U \approx 0{,}5 \cdot 10^{-6}$ V. The author supposes the formula connecting values of this detector with entropy changing in the investigated system: $\Delta U \sim \Delta S$.

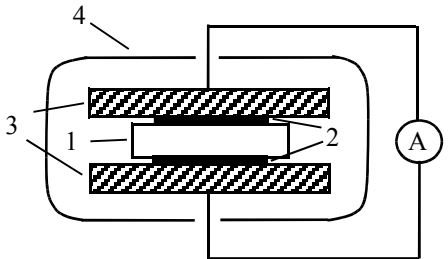
The most detailed experiments of the scientist were connected with the research of signals from the Sun. Unfortunately, in comparison with the Kozyrev's experiments (Fig.12) the telescopes as focusing systems were not used. Therefore it is difficult to define

the corporal angle, from which is been coming the signal. The following method was used: as the initial signal the influence of the solar activity were registered with the help of usual detector. So, for example, the signals were obtained due to the electrolytic detector (Fig.28a), and due to the detector of magnetic field were shown (Fig.28b). Then the correlation between these signals was investigated, and the similar things of these dependences were defined. Korotaev shows that the correlation degree for the two types of signals is sufficiently high, and it is wonderful, at the drift of the one signal in time. In this picture, for example, the signal of the electrolytic detector forestalls the signal of the usual detector at $\Delta t \approx 33$ days. On the Korotaev's opinion, this fact shows the correlation of the solar activity appearance and the space flow radiation interpreted by author as the concept of a non locality. It was shown that the measured signals aren't electromagnetic waves, which as it is known the Sun radiates in a wide region.

For the theoretical interpretation of the obtained dependences Korotaev suggests the formulas, describing an entropy changing of a researched system. By the entropy changing in the system we can know about density of space flow proposed by Kozyrev. For the dependence from a distance of this non local interaction Korotaev thinks to the inverse proportional dependence from the square distance ($\sim \frac{1}{r^2}$). In the conception of a non local interaction quanta aren't introduced, and an interaction needs founding correlations between the wave functions describing these systems.

4.3. Experiments of V.E.Zviblis. Colzar type system

Remark that Zviblis was the first, who paid the attention to the time changing of a dark current of photo electron devises (shift of zero point), had realized the long observations of this effect and tried to connect it with astrophysical processes [33]. The other Zviblis's work was the research of circle systems – the colzars using liquids for its work. Later Zviblis suggested the electronic type of the colzar [34]. The colzar construction supposes that the sensitive element (1) is in view of the plates of phosphate gallium or indium with raising dust of the thin layers of aluminum, silver or beryllium (2) (Fig.29). This element was placed between cupper plates (3) and was in the glass box (4). Then the plates of this devise were connected with sensitive voltmeter (range 10^{-7}- 10^{-12} A). The registered current was usually in the region 10^{-9}-10^{-10} A.



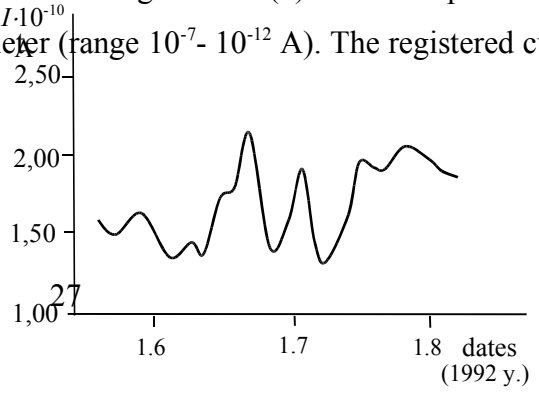


Fig.29 Fig.30

Due to the long observations of the colzar current Zviblis done the conclusion about the correlation of the measured dependences with the appearance of the solar activity and the geomagnetic activity. The one of the obtained dependences of current fluctuations of the colzar current was shown in Fig.30. In this dependence the characteristic rhythm took place with period $\Delta t \approx 33$ days, which near to the one from the periods of the solar activity changing ($\Delta t_s \approx 32$ days).Unfortunately, these experiments with the colzar don't allows obtaining the spatial direction of the space flow radiation receiving or in the author's terminology – the cosmic physical factor.

4.4. Experiments of S.E.Shnol. Macroscopic fluctuations

The observations of the cosmic factor influence at the view of histograms of some physical and chemical processes were realized by S.E.Shnol [35]. For example, for radioactivity disintegration the dependences of histograms from a geographic width and a longitude of experiments were obtained. Unfortunately, the scientist doesn't connect his measurements with the possible changing, for example, such value, as the space flow density in the places of these experiments. The conformities to natural laws appearing during days, weeks and months are obtained. It is shown that these laws aren't explained by a negative influence such simple factors, as warm effects, magnetic field of the Earth and et. al.

4.5. Experiments of A.I.Veinik. Space flows of particles. Chronons

In the works of Veinik the original conception of thermodynamic processes and the appearance of cosmic influence is shown [36]. Following to the scientist's opinion, in the cosmic space the streams of light elementary particles – chronons can exist

(m_{ch}<m_e=9,1·10^{-28} g). This particle connected with the quantum of time and can define its properties. In a traditional understanding a time is a common concept, a physical value, but doesn't have material properties. Due to chronons or some time particles, the attempt to materialize the influence of time is tried, one supposes that from a motion, a flow, a concentration of these particles can be depended, for example, the course of time. This point of view, probably, is discussion.

Consider the most interesting experiments of Veinik, connected with the space flow influence of chronons. The one from the scientist's devices is the plane system (Fig.31). In the devise all planes (1) are placed at the ring tangent (construction diameter 74 cm, plane quantity 70, material is aluminum), on which the thin metallic circle with external diameter 7 cm (2) was placed. For the registration the ring was hanged up at thin wolfram wire with length 2,7 m and diameter 0,05 mm. In the devise a rotation of ring in the direction of the plane location, or in this case to the hour-hand is observed. This fact shows the appearance of a turn momentum or a force in the system.

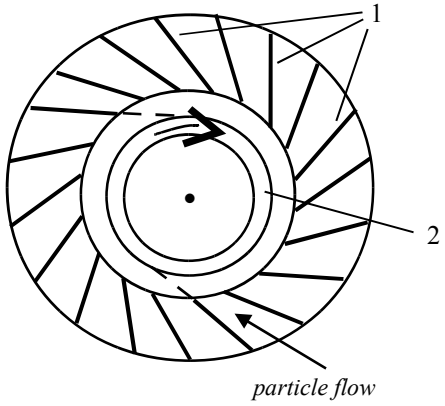


Fig.31

In the other Veinik's experiments in the center of this plane system the different electronic devises: electronic clocks, micro calculator and et. al. are placed. The differences of values in the devise center and outside this system were registered.

These experiments were continued by B.P.Dodonov with the help of different materials of plates and rings including diamagnetic, and also the control experiences by rings placed in vacuum were realized [37]. The diameter of the plane system was 22,5 cm, and the external diameter of measuring ring 7,6 cm, a ring mass was in the region 1-86 g. The dependence of a turn angle from plate material of a system, using in this construction is the most interesting. The turn momentum of the steel ring is near M~10^{-9} N·m.

The theoretical explanations of the effect presence in this devise suggested by Veinik and Dodonov are near. The flows of hypothetical particles in the cosmic space are

introduced. The directions of the plates force these particles to move mainly to the devise center, and they begin to interact with the ring material rotating it.

5. Physical theories including new presentations of the nature of time

5.1. Positron. Feynman. Wheeler

Probably, the most important suppositions about time began to arise after the discovery of new elementary particle – positron. As it is known, in elementary particles physics the CPT-theorem connects spatial inversion, sign charge changing of particle and inversion in time. In the result, electron moving in the positive direction of time axis, if the inversion in time is happened, following to the opinion, spoken by Feynman, can be interpreted as positron, moving back in time (Fig.32). Initially Wheeler supposed that the similar property electron also may possess [38].

The fact of positron motion in the negative time direction is represented traditionally in many interactions, which positron takes part. So, for example, this can be at electromagnetic interaction of positron with electron or at electron-positron pair born. This representation is discussed in a different literature on elementary particle physics in view of the concept of causality [14,38]. As a rule, a question is the following: does a real elementary particle inverse its motion in time and move in the opposite direction, or from the future to the past? It is known that positrons before interaction with other particles can be during long time in the accumulating rings and can move there as usual elementary particles, so in the positive direction of the time axis and along ordinary spatial trajectories. The similar effects of time inversion aren't supposed for macro bodies in this case.

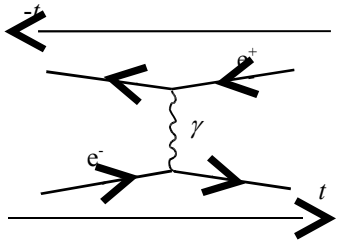


Fig.32

In view of this fact, if the most fundamental laws are display just at micro level, then this motion in time can be supposed hypothetically for elementary particles.

5.2. Forestalling interaction. Fokker

Following to the presentations of classical electrodynamics, electromagnetic interaction is expressed by means of the being late potentials of Lenard-Vichert and has the time delay in view of infinity of the light velocity, so includes the time $t-\frac{l}{c}$, where l – distance between particles. In the theory of Fokker's electromagnetic interaction the action was constructed, in which the two moments of time include: $t_1 = t - \frac{l}{c}$ and $t_2 = t + \frac{l}{c}$ [39]. The second time t_2 is the future moment, to the particle position in the present at t=0 (Fig.33).

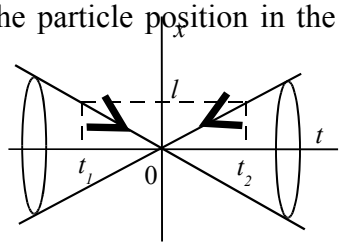


Fig.33

These electromagnetic interactions are interpreted as the being late and the forestalling. In the result of this representation the interaction constructed by Fokker becomes symmetric in time.

Conclusion

In his works Kozyrev supposed new views on time and transference of signals in the Universe due to the new concept introduction – space flow. This concept can be compared with a field of a spiral (chiral) type, which is introduced in the modern physical works. One implies the field action at cosmic distances compared with the size of the Universe. On the other hand this field can take part and in microcosm. Kozyrev supposed the appearance of spiral properties of macro objects and undertook the different attempts to registrant these properties in astrophysical and laboratory experiments. So, in the present a chiral, as tendency, takes place in elementary particle physics on micro level, and is a fundamentally establish fact.

Kozyrev expressed the opinion about the possible instant of space flow and about the existence of instant images of astronomical objects. These images, following to Kozyrev, can be registered in astrophysical experiments. The similar experiments were reproduced

by the some scientists with using other interpretations of space flow. In view of this fact, one presents expedient the realization of experiments near to the written experiments.

One of the main Kozyrev's thoughts was to show the new properties to time and the axis of time. The approach of scientists connected with the introduction of the motion velocity in time or the course of time, undoubtedly, is unusual, but deserts the attention. During XX century views about new properties of time were expressed by well-known scientists. On this point of view, the works of Kozyrev come into contact with this scientific tendency and aren't isolated.

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