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COSMIC ENVIRONMENT AS ENERGY SOURCE OF UNIVERSE EVOLUTION

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A B S T R A C T

The paper presents an unconventional view of physics within non-equilibrium systems, of irreversible, nonintegrable processes the matter birth. The evolutionary development an expansion of the Universe is due to an input of energy "from the outside" (on the part of the cosmic environment) an, Because of this energy, the Clausius statement on a "heat death of the Universe" is groundless. The five-dimensional Kepler-Newton-Eddington world is presented as a world of three-dimensional space and two-dimensional time. Invariant, symmetric equations of the Einstein's general theory of relativity are not able to describe the irreversible, nonintegrable processes of matter generation and universe evolution. The theory of global resonance as a mechanism to transfer energy of LPS (Large Poincare Systems) has been also reviewed. It is such LPS dynamic systems, to which natural objects of particle interaction with the cosmic environment and with each other belong. Numerical values of structural elements (dipoles) of elastic cosmic environment and computation of energy released by environment by the medium of its deformation (polarization). Cold nuclear fusion (CNF) reactors built on the basis of technology developments by Andrea Rossi and V.S.Leonov are considered at the ultra-deep penetration into the target are proposed

Keywords: *non-equilibrium systems; Large Poincare Systems (LPS), irreversible (non-integrable) processes, resonance, cosmological time, i.e. evolutionary, vector one; cyclic time, i.e. invariant, scalar one, dipoles, polarization, vector magnetic field, scalar magnetic field, longitudinal gravitational waves, cold nuclear fusion (CNF).*

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INTRODUCTION

Today, science has irrefutable arguments to say that a concept of the space environment goes far beyond a concept of the physical vacuum. Within a standard model, recent astronomical observations made by Chinese scientists (1) have not found their explanation. From the perspective of the general relativity theory, it is impossible to explain anisotropy of three-degree background thermal radiation discovered by American scientists from the NASA (2). A nature of superluminal radiation by N. Kozyrev (3) also has remained a mystery, as well as of torsion radiation by G. Shipov (4). We need a new approach to assessing a role of the space environment of Universe evolution. In 2013 in the American edition the Unsolved Problems in Special and General Relativity, member of the Academy Hua Di, professors Fu Yuhua, Guo-Hua et al, totally 21 authors from PR China and professors L.G.Sapogin and Florentin Smarandache, proved a complete failure of SRT and GRT by Einstein.

The curtain of physical farce, which has lived for a century and a half, will fall in the near future": Chinese scientists stated with eastern delicacy. A conclusive evidence for existence of the space ether is so-called "relic" thermal radiation identified in 1965 bu A.Penzias and R.Wilson. The radiation has an average temperature of 2.7 degrees Kelvin. Later, professionals from the NASA, made corrections to initially recognized isotropic distribution of radiation in the universe. With the help of Cosmic Background Explorer (COBE) they found available little deviations from homogeneous distribution. Experiments show that background radiation anisotropy arises due to motion of The Solar System relative to this radiation (2). For a cause for thermal of background radiation one should search in physical nature of the space environment (5) To write that referring to background radiation as a relic one is totally incompetent, it is more correct to identify it with neo-ether (5,6).

N. Kozyrev, professor at the Pulkovo Observatory, devoted forty years of his activities to solve an issue of stellar systems evolution. In his well-known work *The Causal Mechanics*, he wrote, "It is amazing that even such a specific question as why the Sun and the Stars shine, i.e. why they are in a thermal equilibrium with the surrounding space, cannot be solved within the framework of known physical laws. This conclusion follows an analysis of astronomical data. Degraded conditions of systems would have to prevail, whereas they almost never occur. A challenge is to understand why certain systems and celestial bodies themselves keep existing despite their short relaxation time?" (3).

N.A. Kozyrev in time of his astronomical observations of the star Procyon using a telescope, equipped with a special signalling sensor, found unknown radiation. Herewith the telescope was not focused on a place, which was seemingly emitting visible light, but the place where the star was actually located at that time, taking into account the light speed of light and a direction and speed of the star motion star. A propagation velocity of unknown radiation was significantly higher than the light speed (a signal reaches the earth almost instantly). N. Kozyrev recognised the time as a radiation source, as in math aspect he concluded that in the star all the forces were balanced to such an extent that there was just nowhere for power to come from (3).

However, in the late 60-ies, young scientists A. Akimov and G. Shipov reproducing N. Kozyrev's experiments concluded that it was not the time as a source of mysterious radiation, but massless inertia vortices, which they called torsion radiation. A nature of inertia vortices formation has been still unclear, but having accepted the hypothesis of cosmic ether, we can assume that a reason for vortices formation is outrage of the space environment (4).

N. Kozyrev was the first scientist to evaluate in amount a contribution of the active impact of the environment into a progress of non-integrable, irreversible processes. Herewith, scientists did not only hold experiments on a global scale (gyroscopes, telescopes with bridges to measure currents, arising under an influence of an unknown superluminal radiation), but also recorded a change to the inertial mass in the context of an inelastic collision of two bodies or bodies heating. N. Kozyrev considered those effects as especially clear evidence saying that the cosmic environment (time, according to Kozyrev) had existing active properties. Here's how he described those properties, "Our multiple laboratory experiments have shown that the environment (time, according to Kozyrev) besides passive properties, also possesses active properties, i.e. the motion directivity and the density that determine an extent of its activity. As a result, the environment (time, according to Kozyrev) does not only provide a chance for a progress of processes, but also can influence them and a state of the matter as a kind of physical reality."(3).

A further research led N. Kozyrev to a conclusion that a cause for the evolution of natural space systems is an energy, inflowing "from the outside." He found that active properties on the part of the surrounding space environment (time - according to Kozyrev) were only represented in time of system reconfiguration, a transition from its stable equilibrium to a non-equilibrium, when, within the system, irreversible, non-integrable processes were prevailing, differences between the past and the future appeared (3).

Regardless N. Kozyrev, Nobel Prize winner I. Prigogine, exploring the dynamics of systems development and in particular the growth of entropy, established inconsistency in the Clausius statement on the "heat death of the Universe." (7) He wondered: "Is the Universe a closed system in terms of thermodynamics?" Answering to this question, I. Prigogine concluded that an assumption about the cosmic evolution adiabaticity was wrong saying that between the environment and the elementary volume there had been no heat exchange:

$$dQ=0,$$

Albert Einstein put that assumption as the basis for the standard model of the Universe. In *the Time*, *Chaos*, *Quantum*, he writes, "In a stable steady condition, an active influence from the outside on the system is negligible, but it can become of major importance when the system goes into a non-equilibrium condition. Herewith, the system becomes non-integrable, the time loses its invariance and its behaviour is probabilistic in nature."(7).

On the cosmic scale, where according to I. Prigogine "irreversibility is a consequence of an imbalance between forces of the gravity and the mass inertia," the relativistic Standard Model fails to describe adequately non-integrable, irreversible processes of the matter birth. In the Minkovski's flat space, a birth of particles is impossible as the cosmic time turns to be excluded from consideration (Wheeler-DeWitt Equation). With the General Relativity Theory (GRT), Einstein proposed a new interpretation for acceleration. The acceleration, explained by Newtonian physics in terms of the gravitational interaction, is considered within the GRT as a result of the curved space-time, whereas the inertial motion meets a case of the "flat" space-time. Herewith, the true cosmic time, included into the Newton's Second Law, disappeared from consideration.

In their work *the Time, Chaos, Quantum,* I. Prigogine and I. Stengers drew attention to a dual nature of the time. They wrote, "We need to go beyond the concept of time as a parameter describing the motion of individual systems. In harmonic oscillators (classical and quantum), the time is unambiguously connected to laws of motion, while in non-integrable systems it plays a dual role. If sustainable systems are associated with a notion of the deterministic symmetric time, then instable chaotic systems are associated with a notion of the probabilistic time."

The two-dimensional world of the time includes the invariant cyclical time of planetary circulation around the central aster and the cosmic non-invariant time, the time of evolution of planetary systems from their birth to extinction. It is this time that does not exist in the Standard Model of the Universe.

Eddington in his latest work "Fundamental Theory" said that according to his theory, the Uranoid (the flattened Universe), entirely consisting of charged particles, should occupy the three-dimensional space and have the two-dimensional time .
"The E-frame provides a fifth direction perpendicular to the axes x1,x2,x3,t ; and the position vector can be extended t0 :

$$X = E_{15}\, ix_1 + E_{25}\, ix_2 + E_{35}\, ix_3 + E_{45}\, t + E_{05}\, t_0 , \qquad (1)$$

where according to the reality conditions t0 should be real." (8).

He said that this "with great difficulty presented result is not surprising as the considered hypothetical system is completely out of the experience." (8). However, should we assume that the space environment consists of charged particles, and then we will have in front of us the Eddington's real "Uranoid".

This is a three-dimensional world of the space (R^3) and a two-dimensional world of the time (T^2), a Kepler – Newton – Eddington world. The Kepler constant obtained from multi-year observations over the movement of planets in the Solar System, objectively reflects the quintamensional dimension of our world.

$$K = \frac{R^3}{T^2} \qquad (2)$$

where: R is planet orbit radius.

T is time of planet movement around the Sun and time of the planet and the Solar System movement towards the centre of the Galaxy (9).

Half a century after Kepler, Newton introduced forces into the spatial model of the universe (9). The space of the universe produces gravity and inertia forces acting following quadratic laws of interaction between bodies (laws by Coulomb and Cavendish). Having articulated his laws of dynamics and universal gravitation, Newton got Kepler's third law as consequence of the universal gravitation law and the second law of dynamics as follows:

$$K = GM\frac{m\,gr.}{m\,in.} = \frac{R^3}{T^2} \qquad (3)$$

where
m gr. is the planet gravitational mass, interacting with the Sun, the M mass, produces a centripetal force of gravity;
m in. is the inertial mass of the planet. It is rotating around a circle of R radius and producing a centrifugal force of repulsion,
R is a distance from the centre of the planet to the centre of the Sun,
T is a period of the planet rotation around the Sun,
G is the gravitational constant (9).

Thus, Newton strictly mathematically formulated the condition of equilibrium planetary motion in the five-dimensional Kepler world using the interactions of fields of gravitation and inertia and connecting constants: K, G and M.

In the 20 th century, many scientists including Albert Einstein undertook repeated unsuccessful efforts to unite gravitation and electromagnetism geometrically in the framework of four dimensions of Minkowski continuum, and only T.Kaluza has managed to do it, but in the fife-dimensional formal world of four spatial dimensions and one time dimension.

Eddington's statement that "a matter particle understood as a population of events is a system the linear extent of which has a time character" allowed him to pass on to the fife-dimensional Kaluza theory. Here absolutely implicit physical meaning of the Kaluza fifth coordinate (hidden dimensions) becomes the real pseudo-spatial x0 – coordinate. "The neutral uranoid (or the space which it occupies) cannot be curvet either in the positive or in the negative direction of the t0 axis, because such curvature represents a condition biased as between positive and negative charges. If it has a property which can be legitimately represented as curvature in a direction perpendicular to the space-time axes, this direction must be represented symbolically by E05 E16 ; for E05 E16 , being the product of two chiral symbols , is not altered by reversing the chirality, and it is perpendicular to (anticommutes with) E15 , etc. Denoting the coordinate in the E05 E16 direction by x0 , the fifth term in the position vector E05 E16 x0 . Or, adopting as usual a right-handed frame, the position vector is

$$X = E_{15}\, ix_1 + E_{25}\, ix_2 + E_{35}\, ix_3 + E_{45}\, t + E_{05}\, ix_0 , \qquad (4)$$

with x1 , x2 , x3 , t, x0 real" (8).

Eddington five-dimensional world absorbed all the advantages of the Kaluza five-dimensional world over the planar four-dimensional Minkowski continuum, allowed to reveal the connection between macrocosm, including space-time vision, and microcosm with the charge and mass of elementary particles, with presence of cosmic environment (uranoid), with the existence of electromagnetic vector and scalar fields. Yu.S.Vladimirov, professor of the Moscow State University, states: «In the curved Riemannian space-time, operating with the components of five-dimensional metric tensor, one can obtain ten components of metric tensor of the Einstein's general theory of relativity, four components of electromagnetic vector potential A of the Maxwell theory, and one component which theoretically can describe any new scalar field» (10). Tomsk physicist G.Nikolaev, using the single-valued magnitude of physical property of vector potential A and moving charge e, at (v « c) (11)

$$?? = \frac{ev}{cr} \qquad (5)$$

ascertained existence of two types of magnetic fields in the space around it:

$$\text{vector field } H^{\perp} = \text{rot}A \qquad (6)$$

$$\text{scalar field } H^{\parallel} = -\text{div}A \qquad (7)$$

In his papers, Nikolaev presented himself as a follower to Maxwell theory, but the theory based on a corporeal medium, in which bias currents play a leading role. The most important achievement of the new theory was discovery of new scalar magnetic field $H^{\parallel}$ =-divA, supplementing the vector magnetic field $H^{\perp}$ = rotA. (11)

Under the new theory of electrodynamics, many phenomena have found their explanations the results of Aronov-Bohm experiments, for which, going from transverse Lorentz forces, there has been no correct explanation found.

Experimental discovery of the phenomenon of longitudinal force effect of interaction along the axis of current toroid of electrons with the field of vector potential A in the experiments of Aharonov-Bohm make one revise the well-established view about the transverse magnetic Lorentz forces alone and accept the presence of longitudinal forces of magnetic interaction. The presence of scalar magnetic field generates forces acting on the charge in the line of the velocity of its motion.

This fact allowed A.V.Rykov to state hypothesis that the deformation of bound charges in the ether has a universal nature for electromagnetism, electrostatics and gravity. A difference is in direction of polarization relative to the direction of interaction - longitudinal for electrostatics and gravity, cross for electromagnetism. The electric field is original in all interactions, all other fields, including magnetic, gravitational and nuclear interactions are secondary.

A speed of transverse electromagnetic waves distribution is limited with the speed of light. This is because in the transverse deformation electron-positron dipoles are perpendicular to displacement currents appear, between which the magnetic intensity appears. The born magnetic field besides a mutual "transformation of electric and magnetic energy" acts as a buffer, limiting the speed of transverse waves distribution. The magnetic component of the signal decreases by the known dependence of the magnetic field on the speed of the charge motion.

Unlike transverse waves, distribution speed for electrostatic and gravitational longitudinal waves has no limits at all, because longitudinal movement of the polarization front of bound charges is not accompanied by a magnetic field generation.

The speed of distribution for electrostatic and gravitational waves is high. A gravitational signal goes along the universe radius for $1.7 \cdot 10^{-11}$s.

When on July 16, 1994, a huge nucleus of the Shoemaker-Levy Comet collided with Jupiter's gas sphere, radial oscillations of its surface generated gravitation waves that instantly caused oscillations in several geodetic satellites of the Command and Measuring Complex of Russia. Geodetic satellites usually have an orbit that is inside the tube with a diameter of about 1 km. In time of a collision, the tube trajectory diameter increased 5-8 times.

In case of deformation of bound charges - polarization of the space environment influenced by massive celestial bodies, around the latter the electric charge Q appears. The value of the charge is proportional to a weight of the body that caused polarization:

$$Q = ?? m \qquad (8)$$

where m - weight of the body
ρ – proportionality factor

$$\rho = \sqrt{\varepsilon_0 \gamma} \qquad (9)$$

where γ-gravitational constant,
ε0-dielectric constant

$$\rho = 8.61 \cdot 10^{-11} [a \cdot kg^{-1} \cdot s)$$

To a question of the beam polarity, a definite answer is given with the Earth's magnetic field direction and the direction of its rotation - the Earth has a negative charge.

Having replaced the gravitating M body mass with the electric charge Q, instead of "mysterious" gravity force, we obtain a known electric Coulomb force, while instead of the inertia force the electric force F:

$$F = -m_{in} \cdot \alpha = qE \quad m_{in} = -\frac{qE}{a} \qquad (10)$$

will appear, a source of which is induced voltage E preventing accelerated motion of the charge. This eliminates a need in the equivalence gravity and inertia principle as a way to interpret the inertia in the General Relativity.

The nature of inertia is different from that of gravitation. Gravitation is determined by the charge magnitude of the body, while inertia is determined by the presence of electromagnetic cosmic environment (ε,μ) and its source is the induced electric intensity generating force F preventing the accelerated motion of body (13). Difference is that the inert acceleration is a vector directed in the line of force F, while gravitational acceleration has radial direction and therefore it is scalar with gradient inversely proportional to the value of squared distance.

The Earth has an electric charge, which, because of the Coulomb repulsion, tends to a spherical surface of the planet. The electrification process of the near-Earth environment that behaves like the incompressible fluid looks like according to an expression by N. Tesla a yield state. At that, the energy is primarily transmitted along the curve - the shortest way between a source and a receiver on the Earth's surface. Distribution of currents of the "electric fluid" on the Earth's surface one describe analytically with the theory of the stationary, two-dimensional, ideal incompressible fluid on the Riemann surface.
See Appendix A.

Now let us consider a mechanism of the Universe evolution in terms of its resonance interactions with the space environment. The space environment is a global field of oscillators' super-positions with the continuum of frequencies. In contrast to the field, a particle oscillates with the same fixed frequency. In front of us, there is an example of the non-integrable Poincare system. Resonances will occur whenever the frequency of the field and the particle are several-fold. The evolution of dynamical systems (field-particle) up to the self-organized matter depends on available resonances between degrees of freedom. This was a conclusion by I. Prigogine and I. Stengers in their monograph *the Time, Chaos, Quantum* (7). They revived an idea by N. Tesla on a theory of global resonance. Nevertheless, if the Tesla's resonance theory of the matter birth in the Aether had been based on an intuition of the ingenious experimenter, then in case of I. Prigogine, this theory acquired rigorous mathematical view. Proved by Poincare non-integrable dynamical systems and the theory of resonant trajectories by Kolmogorov-Arnold-Moser allowed Prigogine to conclude that the mechanism of resonance interaction of particles in large-scale Poincare systems (LPS) was "essentially" probable, i.e. binding. With increasing communication parameters, there is an increase in likelihood of resonance outcomes. It is such LPS dynamic systems, to which systems of particle interaction with the space environment and with each other belong. I. Prigogine wrote, "Should the systems be integrable, then for coherence and self-actualisation there would be simply no place as all dynamic movements would essentially be isomorphic movements of free (non-interacting) particles. Fortunately, the LPS in nature prevail over other systems." (7)

The role of resonances in the occurrence of fluctuations and the birth of elementary particles in the space environment is undeniable. This is confirmed by A.Rykov in his studies associated with the photoelectric effect in the cosmic ether (12).

A resonant behavior of the photoelectric effect phenomenon in the ether results from an analysis of dipole deformation dependence (a structural element of the cosmic ether) on frequency of a photon, which strikes the ether. The photon energy in 1 MeV, sufficient to destroy the dipole and give birth to an electron-positron pair is a photoelectric threshold. We obtain the photon frequency corresponding to this energy (νκ) from the equation as follows:

$$\nu_K = \frac{W}{h} \quad \nu_K = 2.4891 \cdot 10^{20} \text{ Hz} \qquad (11)$$

For photons with their frequency lower than the νk < νmax < νk' value, the photoelectric effect has not been observed. However, the photoelectric effect has neither been observed for gamma radiation. A decrease in the photoelectric effect frequency dependence within an area of photons' high frequencies and an available photoelectric effect peak at the

frequency νκ says of a fact of the resonant interaction between photons and the cosmic ether and available own oscillations in the dipole. The frequency of dipole own oscillations provides a solution to a challenge of stability in structural elements of the cosmic ether from the same classical perspective as stability in atomic structures based on nuclei and electrons. An electron "does not strike" a nucleus because of Pauli's quantum exclusions. The last mentioned are connected with the integer for de Broglie wavelengths that fit into a length of a stable orbit. The ether dipole is not destroyed due to the integer of its wavelengths that are put into an orbital trajectory of dipole rotation. In his ether theory, A. Rykov identified the frequency and wavelength for the dipole as follows:

$$\nu_d = 4.6911 \cdot 10^{24}\ \text{Hz}\quad \lambda_d = 6.3907 \cdot 10^{-17}$$

, (12)

The length of a circular orbit for the dipole is

$$L_d = 2\pi r \qquad L_d = 8.7890 \cdot 10^{-15}\text{m}.$$

, (13)

where r is a size of a dipole structural element equal to a distance between virtual particles, i.e. electrons and positrons in the dipole.

$$r = 1.3988 \cdot 10^{-15}\ \text{m}$$

A ratio of the dipole orbit length Ld to the dipole own wavelength λd is equal to 137.5335. This approximate integer value of wavelengths' halves fits into the orbit length and is a quantum condition for stability in the dipole structure of the cosmic ether. Number 137.5335 agrees well with the experimentally obtained value for a magnitude of the fine structure α=137.0355 of elementary particles. This fact underlines a deep connection between a structure of the structural unit within the cosmic ether (dipole) and a structure of elementary particles.

The structure of cosmic environment determines the inertia of bodies as the resistance of electric dipoles (their polarization) to any acceleration. Under positive acceleration the elastic force of environment counteracts accelerated motion. Under negative acceleration (deceleration) the elastic force of environment arises, which counteracts velocity slowing down and which is directed to the continuation of uniform rectilinear motion of any body. Inertial forces of acceleration and deceleration are directed to the opposite directions. Such is the dynamics of 'target–particle' system. Being guided by the theory of electrical environment, A.Rykov performed the computation of energy released by environment on a dipole deformation (13). Formula for the determination of environment dipole deformation under the acceleration of any body and any mass will be given by:

$$\Delta r = \sqrt{\frac{\alpha}{4\pi E_e S}}\ \text{m}, \qquad (14)$$

where α (m s^{-2}) is acceleration,
E = 0.7744 (cl^{-1} m^3 s^{-1}) is specific surface electric intensity of environment,
S = $6.253387 \cdot 10^{43}$ (cl m^{-4}) is environment polarization per unit area.
Energy of environment deformation is determined by the coefficient of electric elasticity and squared deformation:

$$W = b\,(\Delta r)^2\ , \text{Joul}, \qquad (15)$$

where b = $1.155496 \cdot 10^{19}$ (kg/s^2) is coefficient of electric elasticity of environment dipoles.
We have the dependence of elastic energy of environment on the acceleration:

$$W = \frac{b}{4\pi E S}\,\alpha\ , \text{Joul} \qquad (16)$$

Under positive acceleration, environment gets the energy of body moving with acceleration, which is influenced by outside forces. Under negative acceleration (deceleration) of body in the target, body gets the energy of environment, i.e. energy is released from environment. In fact, the body fallen on the target imparts energy composed of the kinetic energy of particle and energy released from environment to itself and to the target.

The calculation of balance for the energy of incidence and deceleration of particles taking into account their interaction with cosmic environment is proposed in the works by A.V.Rykov.

$$w_\Delta = w_g - w_\alpha = \frac{b}{4\pi E_e S}(g + |\alpha|)$$

, Joul, (17)

где g- is the gravitational constant.

The issue how one can move from the deformation of a dipole to the calculation of energy at macrocosm remains open. To do this, we introduce of "efficiency" of ether in the microscopic processes:

$$\frac{w_e}{w_g} = \frac{|\alpha|}{g} = \text{«efficiency»}$$

(18)

Since falling object will warm up much faster than that provider by the laws of classical physics, the "efficiency" of the ether in the macrocosm is easy to determine the experience of falling bodies in the calorimeter (13).

The designers create and put into production the power reactors for thermal energy production on the basis of up-to-date technologies of the effect of ultra-deep penetration of particles into the target without the recognition of new physical realities by the official science and without the complete disclosure of cosmic environment structure and energy transformation mechanism. Reactor should include particle accelerator, heat-producing element (target), and heat exchanger. Evaluation of minimal energy-release at a rate of ultra-deep penetration of particles into the target gives a size of order of 10^{10} J/kg and noticeable energy imbalance (10,000 times) (14). Efficiency (output) of the proposed energy cycle of energy release from cosmic medium is very high and close to unity, as the expenditure of energy for the maintenance of energy-release process is much less than released energy. Optimizing particle velocity and their size with powder and target material, one can gain maximal value of reactor efficiency.

Active influence of environment on the system can assume different shapes. Thus, under ultra-deep penetration of particles moving with acceleration into the target body, anomalous release of energy by a factor of hundreds exceeding the kinetic energy of particles at the moment of impact was observed in N.Kozyrev experiments on the absolutely non-elastic collision of two bodies (completely irreversible process) and in later Veinik and Usherenko experiments, and here the total mass of the system varied (3,15,16). Similar effect was observed on the firing of the target using electron injector in the experiments connected with the investigations of secondary electron emission in spherical condensers and accelerators in deep vacuum conditions. Certainly,

it is necessary to carry out the additional investigation of this effect for various materials of impact particles and targets and for various values of particle energy (to determine the resonance frequency). However, if one bases oneself on the presence of elastic cosmic environment, then the core of the process is extremely simple. Polarization of cosmic environment and deformation of the structural elements of environment (dipoles) occurs on the acceleration and deceleration of particles. Those processes give rise to generation of the elementary particles, their partial annihilation, and target glow. Those processes underlay the theory of cold nuclear fusion (CNF) on which basis the latest technologies are being created (14). CNF reactor built according to the scheme developed by an Italian engineer Andrea Rossi and operating on nickel is currently the most promising source of energy. Energy-conversion efficiency of nickel fuel in the nuclear cycle is million fold than of gasoline. Approaches and calculations are different in these works, but the conclusion on the release of huge amount of excess energy under irreversible, nonintegrable processes and the proposal of various innovation projects are common. It is necessary merely to keep in mind the caution by Nikola Tesla: «Matter is structured out of enviroment and then again dissolved in enviroment, but when the energy generated is greater than the energy vanished, the cosmic disasters occur» (17). The lack of the scientific methods of taking into account the enviroment energy contribution to the total balance of energy producing systems results in the man-caused disasters at the nuclear power stations, hydroelectric stations, and other power-generating facilities.

Active contribution of enviroment appears in cosmology in the maintenance of constant energy thickness under the accelerated extension of the universe. V.Rubakov, a member of the Russian Academy of Sciences, writes in his paper «Energy is as clear as mud»: «There is no law of conservation of energy in cosmology. The universe expands, but energy thickness is constant. Volume increases and the energy in that volume increases, too. Where does it come from? Vacuum energy is constant and it is the major characteristic» (18). The quantity of degrading stellar systems which is registered by N.Kozyrev and

abnormally small from the point of view of the present-day science (3) and the particularities of Mercury's motion (19) can illustrate the active contribution of cosmic medium to the universe evolution.

In conclusion, one can state that the engineering thought has left behind the fundamental science (Nikola Tesla's projects, Andrea Rossi's reactor, V.S.Leonov's «gravitsapa», V.Roshchin's converter, and other projects breaking the laws of the present-day physics). A collapse of SRT and GRT by Albert Einstein put science in a difficult situation (1 and 20). It is time to revise the fundamental provisions of physical science and change our views of the cosmic medium, time, and space.

Appendix A

Riemann Spaces and Modelling the Globe Electrisation Process

As interpreted by Helmholtz-Monastyrsky (21), the theory of analytic functions on the Riemann surface we can present as an issue of physics. We will show that the theory of the stationary two-dimensional ideal incompressible fluid on the surface entirely down to reduces to the theory of analytic functions.

Let us consider a stationary fluid flow u on the plane (x, y).The flow speed at each point has x-component P (x, y) and y-component Q (x, y).Through the cell with sides Δ x, Δy per a time unit the mass of liquid outflows (liquid density is constant and equals to I) :

$$\int_0^{\Delta y} \{P\,(x+\Delta x,\ y+h) - P\,(x,y+h\}\,d\,h + \quad (A.1)$$

$$+\int_0^{\Delta x} \{Q\,(x+l,\ y+\Delta y) - Q\,(x+l,y\}\,d\,l$$

Approximating an arbitrary domain Ω with rectangles and applying the Green's formula, we obtain that the integral (A.1) is equal to :

$$\iint \left(\frac{dP}{dx} + \frac{dQ}{dy}\right) dxdy. \quad A.2)$$

Since the fluid is incompressible and nowhere appears and disappears in the Ω domain, it follows that the expression (A.2) is zero. The stronger statement is also reasonable, i.e. flow divergence u is zero:

$$\text{Div U} = \frac{d\,P}{dx} + \frac{dQ}{dy} = 0 \quad (A.3)$$

The flow circulation along the curve C is defined as the integral

$$\int P dx + Q dy.$$

If this integral along any closed curve is zero, then the flow is called irrotational. For any single-bound domain, it follows that statement Pdx + Qdy is a complete differential of the function u (x, y).This function is harmonic.

The function U (x, y) is called the flow speed potential. Helmholtz introduced this concept. Curves U (x, y) = const are called equipotential lines. A tangent line to the equipotential line forms such an angle α with the axis x, that

$$\text{tg}\,\alpha = -\frac{d\,U}{dx} \Big/ \frac{d\,U}{dy}$$, if only ΔU≠0.

The flow speed vector makes an angle β with the x axis,

$$\text{tg}\,\beta = \frac{d\,U}{dy} \Big/ \frac{d\,U}{dx}$$

i.e. the flow goes orthogonally to equipotential lines in the direction of increasing U function.

As we remember, the harmonic function u (x, y) defines the function of

$$f(z) = u + i\upsilon$$

where υ is a conjugate to the harmonic function u, defined from Cauchy-Riemann equations (A.4) . Essentially, Cauchy solves the following problem, under which conditions for the complex function f (z) the integral ∫ f (z) dz in a closed loop ℓ is zero. However, he does not speak explicitly of the complex function, but applying pairs of real functions P(x, y) and Q (x, y), gets his main result: the integral ∫ f (z) dz does not depend on the integration path if such conditions are met:

$$\frac{dP}{dx} = \frac{dQ}{dy}; \frac{dP}{dy} = -dQ/dx \qquad (??.4)$$

This condition is a (A.4) - characteristic property of analyticity (holomorphicity) of function of a complex variable. In modern literature, the common name is the Cauchy-Riemann condition. The function f (z) people call the complex potential of the flow.

The tangent line to the curve υ = const makes an angle γ with the x axis and

$$\text{tg } \gamma = -\frac{dv}{dx} / \frac{dv}{dy} = \frac{du}{dy} / \frac{du}{dx} = \text{tg } \beta$$

i.e. the u flow goes along the curve υ = const. These curves people call streamlines.

The condition $\frac{d^2u}{dx^2} + \frac{d^2u}{dy^2} \neq 0$, equivalent to f '(z) ≠ 0,

indicates that streamlines are orthogonal to equipotential lines except at points where f' (z) = 0.

This physical analogy allows us to interpret any properties of analytic functions exceptionally clearly. For example, if the analytic function f (z) has at the point zo f' (zo) = 0, then curves u = const and υ = const do not cross at zo = xo + iyo at right angles. Such points are called stationary points, e.g. for the function

$$f(z) = a_0 + a_2 z^2$$

curves u = const and υ = const intersect at an angle π / 4.

With the same success, we can explore arbitrary features of analytic functions.

Consider the flow with the potential f (z), a derivative f '(z) of which is the rational function, i.e. has only pole specifics $(z-zo)^{-n}$. Then the function f (z) itself we can represent in the neighbourhood of a specific point in the form of

$$f(z) = A \log (z - zo) + A1 (z - z_0)^{-1} + \ldots + \varphi(z) \qquad (A.5)$$

where φ(z) - function without specifics.

Features of flows defined with the function f (z) are made from specifics of streams made by individual components (A.5).

Let us consider an influence of the logarithmic term. Let us at first assume that A is a real number. Let us choose a circle of the radius r around the point zo:

$z = zo + re^{i\varphi}$ and assume that $A \log (z-zo) = u + i\upsilon$;

separating the real and imaginary parts, we obtain $A \log r = u$, $A\varphi = \upsilon$.

Streamlines υ = const will be radii going from the point zo, while equipotential lines u = const - will be circles with a centre in zo.

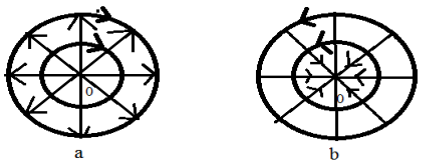


Figure A1

Thus, the point zo will be either the source (Fig. A.1) or a fluid outlet (Fig. A.1 a) or the fluid outlet (Fig. A.1b), depending on the operator A (the liquid will either outflow, or flow into the point z0). If A is a purely imaginary value, then we obtain the conjugate stream A = iB, u = - B φ, υ = log r. Circles will be streamlines. Such streams are called curls. Direction of motion (clockwise or counter clockwise) depends on the B operator.
We have obtained a great result. All features of the analytic function f (z) on the sphere we can describe in terms of the fluid flow with a defined number of sources, outlets, curls, etc

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