Physical Grounds of the Unified Field Theory

Stanislav I. Konstantino, PhD[1]

Abstract

After a century of dominance of quantum-relativistic views, it is time to admit that in the framework of modern physics (standard model) the unified field theory cannot be created. The output of the theoretical impasse is to return to the forgotten concept of ether as an environment that ensures the transfer of all interactions in nature, which is the physical basis of the unified field.

The following works were the basis of the unified field theory:

1) The prospects of construction of noncontradictory electrodynamics by Gennady Nicolaev[5] ;
2) Fundamentals of the Theory of Ether by Anatoly V. Rykov [4] ;
3) Unitary Quantum Theory by Leo G. Sapogin [6].
The unified Field theory paves the way for the creation of space technologies of wireless power transmission, gravity control, and electric power generation at the subatomic level.

Keywords: Special and General Relativity, Standard Model, Vacuum physicist, Ether, Dipolar electrical.

More than 30 years Einstein dedicated to develop the Unified Field Theory, covering electromagnetic, gravitational and nuclear interactions, quantum and classical ideas, but he failed. The Planck's Constant, the Heisenberg Uncertainty Principle, Bohr's Postulates, the Pauli Exclusion Principle and the Schrödinger Wave Function, which are theoretical grounds for quantum mechanics, form a bad combination with the Special Theory of Relativity and the General Theory of Relativity by Einstein. At the same time, Einstein rejected Coulomb, Ampere, Maxwell, Kelvin and Tesla's ideas on the atmosphere (ether) as a full participant of all interactions in the nature as obsolete.

I.Prigozhin and I.Stengers wrote in the book Time, chaos, quantum: "The relationship between the Quantum Theory and Gravity puts scientists in front of a challenge: Can we talk about the wave function of the universe? In the today's standard model, the energy of the universe (H) is assumed to be zero. Therefore, the Schrodinger equation, with H = 0, the wave function does not depend on time (the Wheeler-DeWitt Equation). As a result, in the Einstein's Gravitational Theory, cosmological time finds itself excluded from consideration, while the universe in the Minkowski space is a frozen, dead unit, in which the birth of particles is impossible."[1]

Let us ask ourselves, whether the universe is a closed system in aspect of thermodynamics. The standard model has adopted a postulate of the adiabaticity of the space living of the universe. The adiabaticity means that between the space environment and stellar bodies there is no heat exchange (dQ = 0). A. Einstein included this postulate in the General Relativity Theory.

[1] Department of Physical Electronics, St.Peterburg State Pedagogieal University

However, N. Kozyrev in his paper The Causal Mechanics and Possibility of Experimental Study of Properties of Time [2] placed the adiabaticity of the universe evolution in doubt. He wrote, "It is amazing that even such a specific question as why the Sun and stars shine, i.e. why they are in thermal equilibrium with their surrounding environment, can find no solution within known laws of physics..."[2]

Chinese scientists rejected the postulate totally, when in 2013 in the American edition The Unsolved Problems in Special and General Relativity they published results from observations of the movement of the Mercury and other planets of the Solar System. In his papers, member of the Academy Hua Di, professors Fu Yuhua, Guo-Hua et al, totally 21 authors from PR China, proved a complete failure of the SRT and GRT by Einstein and as a result, a requirement to revise research and findings on our space environment. "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.

The space environment is an active factor in the energy exchange of the universe, which allows avoiding or significantly delaying its thermal death, and secures its evolution and living. Moreover, recognising the availability of the space environment, namely the environment that possesses certain physical properties (density, elasticity, viscosity, polarization property, εo, μo), rather than the physical vacuum with its latent form of micro particles existence allows the science to overcome insoluble contradictions that appeared from making the Unified Field Theory.

Fundamentals of the Unified Field Theory were laid in the 19th century with "poetic ideas by Maxwell, who had combined in the perfectly simple theory the light, heat rays and the phenomenon of electricity, explaining their origins with vibrations of the hypothetical fluid, incomprehensible fine structure called the ether."[3] This was a reading of Maxwell's theoretical papers by outstanding experimenter, Einstein's coeval and opponent Nikola Tesla. Following the Maxwell teachings, the Helmholtz theory of resonators, and having modified the ether model by Lord Kelvin, N. Tesla drafted The Global System for the Transmission of Electrical Energy without Wires.[3] In an interview in 1932 he said, "The wireless transmitter produces longitudinal waves in the near-Earth electrical environment, behaviour of which is similar to behaviour of sound waves in the air, except for the fact that the huge elasticity and very low density of the medium (ether) make their speed over the speed of the light."[3]

The Theory of Near-Earth Electrical Environment got its further development in A. Rykov's paper Fundamentals of the Theory of Ether [4]. He suggested that a structure of the ether includes virtual pairs of related charges, i.e. electrons and positrons that made dipoles. Having used energy relations of the photo effect (1) as a way to "penetrate" into the structure of the ether, he managed to determine a dipole distance between bound charges - r and the ultimate dipole deformation - dr, which leads to their destruction. The energy ratio of the photo effect means that the energy of the photon (Wphot) is the dipole deformation energy of the ether (Wdef) and can be represented with the equation as follows:

$$Wphot = h\ \nu = \text{Wdef} = \text{eo}\,\text{Edr} \qquad (1)$$

where h - Planck's Constant
ν - Photon frequency
eo – Dipole charge
E - Electric field

The photon with energy Wphot>=1 Mev=$1.6493\cdot10^{-13}$ joul turns into a pair of elementary particles – an electron and a positron. This means that under an influence of the photon a dipole of the ether gets destroyed.

When a size of a structural element of the ether is r = $1.3988\cdot10^{-15}$ m, the ultimate deformation of the dipole (a destruction limit) would be dr effects=$1.0207\cdot10^{-17}$m.

At that, the distance between virtual charges r of the electron and positron, forming the dipole, is 2,0145 times less than a classical electron radius. Dipole destruction occurs only when deformation is 1/137 of its integer value that says of extraordinary stability of the ether.

Deformation in the ether, which is below this value, should have an electro elastic nature. A force of the elastic deformation of the ether has an enormous value $Fdef = 1.1550 \cdot 10^{19}$ n.

The dipole arm (r) and the deformation of the dipole (dr) are connected with the ratio $dr = \alpha \cdot r$, where $\alpha = 0.0072975$ is a value called the ether fine structure constant. Through the ether fine structure constant the relationship is established between ether a stability limit and the distance in the dipole. Its physical meaning is that the ratio of the energy of the ether dipole connection Δw ($1.1949 \cdot 10^{-15}$ joule) to the energy of the electron and positron pair at rest $wep = 2moc^2$ ($1.6371 \cdot 10^{-13}$ j) is equal to the fine structure constant- α.

Structural elements of the ether (r, dr), including the dipole charge eo, as well as electromagnetic parameters of the ether - εo ,μo , environment that in full depends on the environment allow us to determine Planck's Constant- h:

$$h = 2\pi e\, r/dr \sqrt{\mu o / \varepsilon o} \qquad (2)$$

where μo - magnetic permeabilitg

εo - dielectric constant

Planck's Constant $h=6.6260 \cdot 10^{-34}$ joule·s completely depends on the characteristics of ether.

This implies that the de Broglie formula that sets a connection between the wavelength - λ of any particle and its momentum – mV :

$$\lambda = h/mV \qquad (3)$$

Also depends on the features of the environment and the momentum of the particle. The momentum belongs to the particle, while transverse oscillations (electro elastic deformation of bound charges) appear in the environment when the particle moves with speed V – this is a trace of the particle in the environment. A screw type sinuous oscillatory motion of particles is so-called uncertainty of particles' trajectories according to Heisenberg. [4]

In the Unitary Quantum Theory by Professor L. Sapogin at [5], the particle seems to be a wave packet of the unified field. But if the wave packet made with de Broglie waves spreads extremely quickly in the space, then in Sapogin's theory, linear dispersion of partial waves is chosen in such a way that the wave packet does not spread, but from time to time appears and disappears in its motion, while the envelope curve of this process coincides with the wave function. Based on this approach L. Sapogin built a model of movement for elementary particles in a spherical coordinate system (r, θ, φ), and got an opportunity to theoretically calculate a mass spectrum of all known particles, which agrees well with the experimental one. At the same time, taken to solve scalar equations in the Unitary Quantum Theory, "imaginary wire resistance and insulation conductivity" can get a very real physical meaning in relation to the environment (ether), in which the particle moves, leaving a trail in a form of a wave packet (cluster) of partial waves .

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:

$$Q = \rho m \quad (4)$$

where m-weight of the body
ρ – Proportionality factor

$$\rho = \sqrt{\varepsilon o\, \gamma} \quad (5)$$

where γ-gravitational constant,

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

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. Polarization of the medium in the presence of a spherical shape body is calculated with the formula:

$$\sigma pol = Qe / 4\pi Re^{23} \quad (6)$$

where Re - the Earth's radius, $Re = 6.3 \cdot 10^{6}$ m
Qe - gravitating electric charge of the Earth,

$$Qe = \rho Me \quad (7)$$

where Me - Earth's mass, $Me = 6 \cdot 10^{24}$ kg

$$Qe = (8.61 \cdot 10^{-11}) \text{ x } (6 \cdot 10^{24}) = 5.16 \cdot 10^{14} \text{cl.}$$

Hence, we observe a law of inverse squares of distances in the formula by Coulomb and Cavendish. It relates to a surface of a ball R^2, rather than its volume.

Having replaced the M gravitating 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:

$$F = -m\ddot{x} = QE, \quad m = -QE / \ddot{x} \quad (8)$$

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.

If the Earth has an electric charge, which, because of the Coulomb repulsion, tends to a spherical surface of the planet, then, knowing the rotation speed, one may estimate the magnetic field of the Earth on its rotation axis:

$$He = Qe / 8\pi TRe \quad (9)$$

where T – the Earth's rotation period.

The geomagnetic field intensity He= 38 A/m agrees quite well with the measured intensity He = 50 A/m .

We see a tie between axial rotation of the planet, its charge and the space ether. This tie follows from provisions of the new theory of electrodynamics by G. Nikolaev [6]. The globe, on the surface of which the negative electric charge $Q= 5.16 \cdot 10^{14}$ cl. is concentrated, while on the outer sphere currents flow, making the magnetic field 50 A/m, rotates on its axis influenced by longitudinal force action of the medium (ether) instead of transverse Lorentz forces (railgun motor effect [6]).

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.

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. Thus, having learnt transverse electromagnetic waves, the humankind will soon enter the era of learning longitudinal electrostatic and gravitational waves. This will open up before the humankind a really space prospective and equip with historically unprecedented technologies to transfer energy without wires and control gravity.

Appendix A

Riemann Spaces and Modelling the Globe Electrisation Process

As interpreted by Helmholtz-Monastyrsky [7], 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

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

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

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

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:

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

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

$$f(z) = ao + a2\, z^2$$

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 $(z\text{-}zo)^{-\varepsilon}$. Then the function f (z) itself we can represent in the neighbourhood of a specific point in the form of

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

where φ(z) - function without specifics.

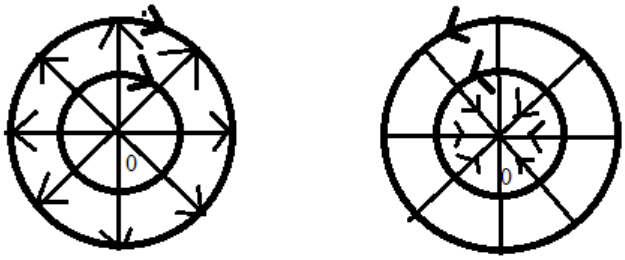
Features of flows defined with the function f (z) are made from specifics of streams made by individual components (A.5).

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 $A \log (z\text{-}zo) = u + i\upsilon$;

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.
Fig A.1



a b

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.

Acknowledgements

In conclusion, I would like to thank Professor L.G. Sapogin for his kind invitation to write this paper.

References

Prigozhin Ivan, Stengers Iren "Time, chaos, quantum." Moscow, "Progress" 1994.

Kozyrev N.A. "Selected works" L., LGU, 1991 p 288-312.

Tesla Nikola "Nikola Tesla Articles." Moscow, "Russian panorama", 2010.

Rykov A. V. "Fundamentals of the Theory of Ether," Moscow, Institute of Physics of the Earth RAN, 2000.

Sapogin L.G., Ryabov Yu.A., Boichenko V. F. "Unitary Quantum Theory and a New Source of Energy", Archer Enterprises, Geneva, NY, USA, 2005.

Nikolaev G.V. "Modern electrodynamics and reasons for its paradoxicalness. The prospects of noncontradictory electrodynamics. Theories, experiments, paradoxes." Tomsk, Politechnical University, 2003.

Monastyrsky M. I. "Bernhard Riemann", Moscow, "Knowledge", 1979