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**Correction of the base of
modern physics**

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The brochure contains the report of some results of the long-term researches started in 60th years of the last century in the former Leningrad Polytechnic institute and nowadays proceeding in the St.-Petersburg Academy of National safety.

These results allow to speak about radical modernization of the base of modern physics on the basis of discovery of electrostriction field, the electric nature of gravitation, the nature of a fireball, the nature of strong and weak interactions, creation of the theory of Galilei's relativity and other fundamental discoveries.

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1. Experimental confirmation of firmness of equality of forces by interaction

It is known for a long time, that electromagnetic interaction has rather strange property: generally, electromagnetic forces of action and counteraction are not equal each other, i.e. this interaction is not mutual.

Really, Lorentz's forces, \mathbf{f}' , for example, for interaction of linear elements $d\mathbf{l}_1$ and $d\mathbf{l}_2$ currents I_1 and I_2 are expressed as follows

$$\mathbf{f}'_{12} = \mu I_1 I_2 [d\mathbf{l}_2 \times (d\mathbf{l}_1 \times \mathbf{r}_{12})] / 4\pi r_{12}^3 \quad (1a)$$

$$\mathbf{f}'_{21} = \mu I_1 I_2 [d\mathbf{l}_1 \times (d\mathbf{l}_2 \times \mathbf{r}_{21})] / 4\pi r_{21}^3, \quad (1b)$$

Where l – length of an element of a current, μ – magnetic permeability of environment, \mathbf{r} – a vector of the shortest distance between the middle of pieces $d\mathbf{l}_1$ and $d\mathbf{l}_2$ in view of its direction, so $\mathbf{r}_{21} = -\mathbf{r}_{12}$.

It is easy to see, that in strict conformity with maxwellian electromagnetism, generally, $\mathbf{f}'_{12} \neq \mathbf{f}'_{21}$.

For example, for the T-shaped arrangement of elements of a current when they are mutually perpendicular, and continuation $d\mathbf{l}_2$ rests against the middle $d\mathbf{l}_1$, from (1a) follows

$$\mathbf{f}'_{12} = \mu I_1 I_2 dl_1 dl_2 / 4\pi r^2 \neq 0, \text{ and } \mathbf{f}'_{21} = 0, \text{ as } d\mathbf{l}_2 \times \mathbf{r}_{21} = 0.$$

Certainly, it is possible to close simply eyes on this absurdity, flagrant contradiction to normal physical judiciousness (as occurred over a century), but it is more natural to raise the question that still \mathbf{f}'_{12} should be equal $-\mathbf{f}'_{21}$, but only it is necessary to search for the nature of the \mathbf{f}'_{21} outside Maxwell's electromagnetism.

A. Shaposhnikov in the St.-Petersburg Academy of National security carried out experiments for check of this assumption in 90th years of the last century. The experiments have confirmed at once, first, that it takes place always

$$\mathbf{f}'_{21} = -\mathbf{f}'_{12}, \quad (2)$$

and, second, that \mathbf{f}'_{21} has no relation to magnetism.

A. Shaposhnikov suspended on a swing two rectilinear pieces of a wire through which was passed a current about 10 A. At that, by any relative positioning of wires on a swing, they always deviated in the opposite sides and on identical size not only in the above described situation of mutually perpendicular arrangement of pieces when f_{21} should be equal to zero according to (1b), but deviations were observed in case of in-series arrangement of pieces one after another too when both forces should be equal to zero according to Lorentz and Maxwell as per (1a) and (1b).

Nevertheless, though (2) was followed, but deviations of pieces were small, that allowed to attribute the received results to influence of disturbances or accidents.

Then in a situation with the T-shaped arrangement of pieces dl_1 it has been placed 10 pieces dl_2 at once resting in it by the continuations on all its length. These pieces were parallel each other. It, as expected, has increased deviations by the order and has removed all references to by-effects.

The interacting pieces of wires have been enclosed in a tube from a ferromagnetic material later; the forces have increased then so, that they became difficult for keeping hands, and all doubts about validity (2) have completely disappeared.

It is necessary to solve only the nature of the force f_{21} , always working in pair with magnetic force f_{12} .

2. Electrostriction field and forces caused by it

The electrostriction field, which is pairwise to an electromagnetic field, was already predicted in [4, 5, 6], based on general-theoretical considerations. Here we shall deduce it from the above-described experiments.

First, we shall pay attention, that magnetic forces are perpendicular to a linear element dl always as they include its vector product on expression in parenthesis (1). Therefore the forces found out in experiments, further called electrostriction forces, should be parallel dl , i.e. they do not contain the first vector product, but it is necessary simply to multiply dl on expression in parentheses.

Second, in order that the vector of force coincided on a direction with dl , product of vectors in parentheses should become scalar; so the electrostriction forces will be described by the next relationships

$$f_{12}'' = \mu I_1 I_2 [dl_2 (dl_1 \cdot r_{12})] / 4\pi r_{12}^3 \quad (3a)$$

$$\mathbf{f}_{21}'' = \mu I_1 I_2 [\mathbf{dl}_1 (\mathbf{dl}_2 \cdot \mathbf{r}_{21})] / 4\pi r_{21}^3. \quad (3b)$$

Clearly, that (3a) and (3b) in themselves describe the electrokinetic interactions so one-sidedly, as well as (1a) and (1b), though from the other side. But they together satisfy (2) quite well in all cases without exception

$$\mathbf{f}_{12} = \mathbf{f}_{12}' + \mathbf{f}_{12}'' = -\mathbf{f}_{21} = -(\mathbf{f}_{21}' + \mathbf{f}_{21}''). \quad (4)$$

As in (1) the vectors of a magnetic induction

$\mathbf{B}_1 = \mu I_1 (\mathbf{dl}_1 \times \mathbf{r}_{12}) / 4\pi r_{12}^3$ and $\mathbf{B}_2 = \mu I_2 (\mathbf{dl}_2 \times \mathbf{r}_{21}) / 4\pi r_{21}^3$ may be wrote by relationships

$$\begin{aligned} \mathbf{B}_1 &= \mathbf{v}_1 \times \mathbf{E}_1 / c^2 \\ \text{and } \mathbf{B}_2 &= \mathbf{v}_2 \times \mathbf{E}_2 / c^2, \end{aligned} \quad (5)$$

where \mathbf{v}_1 , \mathbf{v}_2 and \mathbf{E}_1 , \mathbf{E}_2 , accordingly, are velocities of electric charges and strengths of their electrostatic fields and c – velocity of light, then $T_1 = \mu I_1 (\mathbf{dl}_1 \cdot \mathbf{r}_{12}) / 4\pi r_{12}^3$ and $T_2 = \mu I_2 (\mathbf{dl}_2 \cdot \mathbf{r}_{21}) / 4\pi r_{21}^3$ in (3) represent scalar potentials of electrostriction fields, at that

$$\begin{aligned} T_1 &= \mathbf{v}_1 \cdot \mathbf{E}_1 / c^2 \\ \text{and } T_2 &= \mathbf{v}_2 \cdot \mathbf{E}_2 / c^2. \end{aligned} \quad (6)$$

From (5) and (6) follows, that if charges move with identical velocities, then their interaction decreases in comparison with electrostatic in $(1 - v^2 / c^2)$ time independent of their relative positioning in space that restores validity of a principle of Galilee's relativity with reference to this new electrodynamics.

According to this principle it is impossible to find out absolute movement by any experiments, i.e., in particular, interaction of moving charges cannot depend on their relative positioning. Meanwhile, interaction of the charges located on a perpendicular to a vector of their velocity decreases in $(1 - v^2 / c^2)$ time in Maxwell's electromagnetism as a result of the magnetic interaction; their interaction remains equal to their electrostatic interaction by the arrangement along a vector of speed, that allows to find out its absolute movement by turn of system. The last should not be.

This circumstance was one of preconditions for a prediction of electrostriction field. Other precondition was well-known discrepancy of classical electrostatic and electromagnetic electron mass, forcing to assume, that energy of a magnetic field of moving electron is a part of its full kinetic energy.

Really, because the interaction of moving electron with own electrostatic field decreases in $(1 - v^2/c^2)$ times simply, if we consider the electrostriction according to (5) and (6), then the full energy of its field is $e^2(1 - v^2/c^2)/8\pi\epsilon_0$, where e – a charge of an electron, r_0 – its classical radius, ϵ – dielectric permeability of environment; kinetic energy $m_0v^2/2$ is $e^2v^2/8\pi\epsilon_0c^2$, so the kinetic mass m_0 of electron coincides with classical electrostatic mass $m_0 = e^2/4\pi\epsilon_0c^2$ now owing to the additive of electrostriction field energy.

3. The major consequences: longitudinal waves and the electrostriction nature of a fireball and gravitation

It follows from above-stated thus, that the corrected system of the equations of electrodynamics should look like

$$\begin{aligned} \operatorname{div}\mathbf{E} &= \rho/\epsilon - \partial T/\partial t, & \operatorname{rot}\mathbf{E} &= -\partial\mathbf{B}/\partial t, \\ \operatorname{div}\mathbf{B} &= 0, & \operatorname{rot}\mathbf{B} + \operatorname{grad}T &= \mu\mathbf{j} + \partial\mathbf{E}/\partial t, \end{aligned} \quad (7)$$

where ρ – volume density of a free charge, \mathbf{j} – a vector of density of currents of conductivity and transfer in the set point of space.

Thus the (7) describes in absence of charges and currents, first, cross-section electromagnetic waves in the form $\operatorname{rot}\mathbf{B} = \partial\mathbf{E}/\partial t$ and $\operatorname{rot}\mathbf{E} = -\partial\mathbf{B}/\partial t$, and, second, longitudinal electrostriction waves in the form

$$\operatorname{div}\mathbf{E} = -\partial T/\partial t \text{ and } \operatorname{grad}T = \partial\mathbf{E}/\partial t, \quad (7a)$$

where $\rho_c = -\epsilon\partial T/\partial t$ – density of induced striction charge.

And if the electromagnetic wave represents the interconnected orthogonal vortexes of strength of an electric field and

an induction of a magnetic field, the electrostriction wave represents alternating condensations and rarefactions of electrostriction charge, accompanied with differences of electrostriction potential in the direction of transmission of waves.

Both kinds of waves take place at movement of charges usually. So, the maximal intensity of electrostriction waves arises in front and behind of electron at its movement, and the maximal intensity of electromagnetic waves – on the sides of electron.

The purely striction waves arise at a pulsation of a charge only, and they can serve as a means of its self-stabilization.

For example, the charge of electron does not scatter only because of the reason that the striction and magnetic attraction with energy $-e^2v^2/4\pi\epsilon r c^2$ is acting on the electron besides the electrostatic repulsion with energy $e^2/4\pi\epsilon r$ also, where v - total velocity of scattering and rotations of a charge. So, when v becomes more c , then total energy $W = e^2(1 - v^2/c^2)/4\pi\epsilon r$ becomes negative and returns a charge back.

As the velocities of a pulsation v_G and rotation v_q are orthogonal, then is $v^2 = v_G^2 + v_q^2$.

The autopulsations, which have arisen, create thus a pulsing electrostriction field with kinetic energy $e^2v_G^2/8\pi\epsilon r_0c^2$, which is quite identical to kinetic energy of mass of electron, pulsing with the same velocity, $m_0v_G^2/2$, that meets to a classical relationship $m_0c^2 = e^2/4\pi\epsilon r_0$.

It means, that a mass is generated by a pulsing charge and it is not independent essence; the well-known equivalence of weight and energy is not equivalence in practice, but identity (through a constant c).

Certainly, the matter concerns the electrostriction energy of charge pulsations only, so the mass is generated by electrostriction.

But then $e^2v_G^2/4\pi\epsilon r_0c^2 = Gm_0/r_0$, wherefrom is, first, $v_G^2 = Gm_0/r_0$, and, second, $m_0 = ev_G/c\sqrt{4\pi\epsilon G}$.

As if to v_q , it concerns to a spin of electron and, because it does not have a spherical symmetry, does not participate in formation of electron mass. Clearly, that these conclusions are fair not only in relation to a charge e of electron, but in relation to self-stabilization of

any free charge also, including in relation to a huge fireball charge q generated by an atmospheric electricity during lightning discharges.

However feature of a fireball as against electron consists, apparently, that the strength of its electric field cannot exceed breakdown strength for air in which the lightning floats, i.e. $q / 4\pi\epsilon r_m^2 \leq E_{np.} \approx 10^6 \text{ } \mathcal{E} / \mathcal{M}.$ Therefore the following relationships should be characteristic for a fireball

$$\begin{cases} r_m^2 = q / 4\pi\epsilon E_{np.} \\ m_m = q^2 / 4\pi\epsilon r_m c^2 \end{cases} \quad (8)$$

which for a charge $q \approx 10^{-6} \text{ } \kappa\gamma\mathcal{L}$ give usually observable parameters of a fireball $r_m \approx 0,1 \text{ } m$ and $m_m \approx 10^{-18} \text{ } kg.$

If the charge is more, then sizes and mass of a lightning are more according to (8) also. So, if a charge is increased by two degrees up to $q \approx 10^{-4} \text{ } \kappa\gamma\mathcal{L}$, the sizes of a fireball will increase up to $r_m \approx 1 \text{ } m$, and its mass up to $m_m \approx 10^{-15} \text{ } kg.$

Such lightnings are observed by sea-folk during a thunderstorm in ocean open spaces occasionally, but in both cases the mass of a lightning is so small, that does not interfere with it to float in streams of air in a suspension.

Thus the lightning remains cold, that is marked by all observers, but it can give the striking of huge power by contact with good conductors. So, the striking of a small fireball in the size of $0,1 \text{ } m$ with energy $0,1 \text{ } \text{joule}$ can give out of $100 \text{ } \text{kW}$ power during one micro second.

4. Pass of light and the theory of Galilei's relativity

The so-called "crisis" of the classical physics which has burst at the end of 19 – begin of 20 centuries, has been generated substantially by sensational results of the numerous optical experiments, declared purpose of which was measurement of velocity of absolute movement of the Earth in space ether.

Generally the negative outcome of similar experiments was predicted still by a principle of a Galilei's relativity, however indisputable success of maxwell's electromagnetism, which did not answer a principle of a relativity, has undermined trust in this principle that has resulted for physics of XX century in impasse of Einstein's relativism.

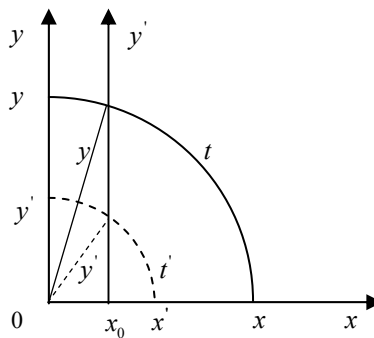
Meanwhile, a principle of Galilei's relativity means the impossibility of measurement of real changes of velocity of light at movement of its source or the receiver (observer), because otherwise it would be possible to fix an absolute movement of optical system by change of a direction of a light beam.

Simultaneously it does not put under doubt a reality of changes of velocity of light, therefore a positivistic Einstein's identification in his well-known postulate of a complex of sensations (measurements) with a real state of affairs was a fatal mistake of relativism of the last century.

Unconditionally having accepted a postulate on a real constancy of velocity of light, the physics, thus, has refused search of the reasons of this constancy from the point of view of any observer though explanations laid on a surface.

Really, in fact even the stationary observer, being in the location of a source of a spherical light wave (see figure), cannot establish true position of its front by any means by virtue of delay of the information. What is here to say about the moving observer?

In fact to the moment t when the front has position $x = y = z = ct$ in the Cartesian coordinates really, where c – velocity of light, the stationary observer in the beginning of coordinates sees $x' = y' = z' = ct'$, at that $t' = t/2$ (dotted line). And nevertheless he measures velocity of light as $x'/t' = y'/t' = z'/t' = c$.



If the stationary observer is not in the beginning of coordinates, but in a point x_0 on an x-axis, then the spherical wave extending of the beginning of coordinates is objectively asymmetrical concerning him, because the wave front at the moment t is on distance $x - x_0$ in front of observer, and behind of him – on distance $x + x_0$.

From above and sideways the front is on distance $\sqrt{y^2 - x_0^2}$, or in the symbolical form $y' = y - jx_0$ and $z' = z - jx_0$, where $x = y = z = ct$.

The time on axes of his displaced system is different in exactly the same way. So, at the moment t in front of x' it is for wave front $t'_{x1} = t - x_0 / c$, behind $t'_{x2} = t + x_0 / c$, and on each side $t'_y = t'_z = t - jx_0 / c$.

But thus velocities of light on all axes are measured by the observer as $x' / t'_x = y' / t'_y = z' / t'_z = c$ though actually velocity of light front, for example, on y' is $c\sqrt{1 - x_0^2 / y^2} < c$.

If the observer goes along an axis x with a velocity \mathbf{v} , then, first, x_0 gets dependence on time and becomes $x_0 = vt$, and, second, velocity of light relative to the moving observer on an axis x becomes $c - v$ objectively, and it becomes $c - jv$ on axes y and z , so

$$\begin{aligned} t'_x &= x' / c = (x - vt) / (c - v), \\ t'_y &= y' / c = (y - jvt) / (c - jv), \\ t'_z &= z' / c = (z - jvt) / (c - jv), \text{ from where} \\ x' &= (x - vt) / (1 - v/c), \quad y' = (y - jvt) / (1 - jv/c) \text{ and} \\ z' &= (z - jvt) / (1 - jv/c), \text{ where we have taking into account } x = \\ y = z = ct \quad t'_x &= (t - vx/c^2) / (1 - v/c), \\ t'_y &= (t - jvy/c^2) / (1 - jv/c), \quad t'_z = (t - jvz/c^2) / (1 - jvc). \end{aligned}$$

As thus $x' / t'_x = y' / t'_y = z' / t'_z = c$, it naturally explains the results of all optical experiments of light velocity measurement.

And in general it is from these relationships for a light wave $x' = x$, $y' = y$, $z' = z$, $t' = t$, as a consequence the observer hasn't any hopes for detection of own movement by observing of pass of light.

By the way, transformations of coordinates of Lorentz – Einstein in the theory of a relativity

$$\begin{aligned} x' &= (x - vt) / \sqrt{1 - v^2 / c^2}, \quad y' = y, \quad z' = z, \\ t' &= (t - xv/c^2) / \sqrt{1 - v^2 / c^2} \text{ for front of a light wave when } x = \\ y = z = ct, \text{ give } x' / t' &= c, \text{ but } y' / t' \text{ and } z' / t' \text{ are equal} \end{aligned}$$

$c\sqrt{1-v^2/c^2}/(1-v/c) \neq c$, that means violent discrepancy to own postulate of the theory on a constancy of light velocity for any observer. The isotropy of light wave for the moving observer in this theory is broken, that makes the special theory of relativity (STR) internally inconsistent and absurd in the bases.

The invariance of Maxwell's equations to transformations of coordinates STR confirms it also, because, as it has been earlier shown, the Maxwell's electromagnetism itself contradicts a principle of relativity.

In addition, Einstein having made a step in a correct direction and having refused from absolute time in transformations of Galilei's coordinates, has stopped halfway, having kept universal time for all axes of coordinates.

And this position is finally confused by arbitrary designing of four-dimensional continuums for space – time and of corresponding invariants, withdrawing a problem of the observer to the sphere of abstract mathematical speculations though our ingenuous observer (nature) does not operate with quadratic forms, and can register the position of a light wave on axes of coordinates only. Besides Einstein builds these forms in rectangular coordinates always although the coordinate system for the moving observer seems oblique-angled

because of delay of the information, since y' and z' as though deviate back. Therefore only coincidence of coordinates of light wave front in moving and stationary systems (9) is an exhaustive guarantee of a apparent constancy of light velocity in any circumstances and corresponding isotropy of a spherical light wave, whereas invariance of quadratic forms to STR transformations, as it has been shown above, does not guarantee it, since it does not keep the sizes of light sphere: $R = ct \neq R' = ct'$.

Worse, if we consider a point on moving sphere with coordinates $x \neq y \neq z$, then an anisochronism of time arises unavoidably in view of finiteness of time of designing and receipt of the information to the observer in the beginning of coordinates from projections and directly from the point on sphere; time differs for radius - vector $\mathbf{R}(t)$ and its projections, i.e. $t_x \neq t_y \neq t_z \neq t_R$.

Thereof the equation of moving sphere $x^2 + y^2 + z^2 = ct$ is physically senselessly.

The stated theory of Galilei's relativity (TGR) accepts in contrast to STR, first, as a postulate an original principle of Galilei's

relativity in the form of thesis about a apparent constancy of light velocity in any inertial reference systems.

Second, it uses transformations of coordinates

$$\begin{aligned}
 x' &= (x - vt_x)/(1 - v/c), \quad y' = (y - jvt_y)/(1 - jv/c), \\
 z' &= (z - jvt_z)/(1 - jv/c), \\
 t'_x &= (t_x - xv/c^2)/(1 - v/c), \quad t'_y = (t_y - jyv/c^2)/(1 - jv/c), \\
 t'_z &= (t_z - jzv/c)/(1 - jv/c),
 \end{aligned} \tag{9}$$

which meet the requirements of a principle of a Galilei's relativity completely, providing for a light wave with coordinates of front $x = y = z = ct$ in moving system $x' = x$, $y' = y$, $z' = z$, $t'_x = t'_y = t'_z = t_x = t_y = t_z$.

A. Einstein said: "A beauty of mathematical theory and its significant success hide a weight of those victims from our look, which should be brought for this purpose." The victim of mathematical beauty is physics of 20-th century in this case. Therefore we do not begin to design a 6-dimensional continuum of space - time (and (9) allows it), which is mathematically attractive, but insufficient for a principle of relativity; we shall be limited by prosaic, but exhaustive ascertaining (9) of coincidence of coordinates of light wave front in anyone Galilei's reference systems.

At that the light velocity is, naturally, a true invariant of transformations

$$\mathbf{C} = \frac{x - x'}{t'_x - t_x} = \frac{y - y'}{t'_y - t_y} = \frac{z - z'}{t'_z - t_z}, \tag{10}$$

instead of the mythical 4-dimensional relativistic interval, which is so defective from the point of view of Galilei's principle of relativity, as the equation of a spherical light wave front, on the basis of which (equation) it is designed in STR.

Nevertheless, it is possible – if needed –to generate on base of (10) a system of three two-dimensional (flat) continuums (intervals) of coordinate – time which form in aggregate 6-dimensional continuum of space – time:

$$\begin{cases} x + ct_x = x' + ct'_x \\ y + ct_y = y' + ct'_y \\ z + ct_z = z' + ct'_z \end{cases} \quad (10a)$$

not having any other physical sense besides (10).

In this connection it is necessary to note, that Einstein's indisputable historical merit is an inclusion of the observer to the description of physical processes. However the observer in physics (in particular, the test charge in an electric field), if to use an analogy to behaviour of biological objects, submits to congenital unconditioned reflexes only, according to the sensations (direct supervision), but it "does not know" at all the laws of the nature composed by us for the sake of own convenience, not speaking about any equations. Therefore Einstein has forced the observer to follow the transformations of the equation, for example, spheres in various reference systems wrongfully, since the tool restrictions (watch and ruler) allow the observer to trace a movement of light along the axes of coordinates only. In addition the ingenuous observer acquires identical both true (from our point of view) and false information, because he hasn't any means of its verification.

It means, that, having received a false information about a constancy of light velocity in arbitrary Galilei's reference systems, the observer accept this information as truth ingenuously. The same is done by much less ingenuous Einstein with his postulate of light velocity constancy, although he has attributed (up to then in the contradiction with the above said) the ability logically to argue about the equations to his observer, i.e. the ability to get to the truth.

5. Invariance of the equations of electrodynamics to transformations (9) and some consequences

It is easy to see, that the equations of corrected electrodynamics (7) are invariant to transformations (9) if the following transformations of parameters of a field take place only:

$$\begin{aligned} E'_x &= E_x - vT, & E'_y &= E_y - vB_z, & E'_z &= E_z + vB_y, \\ T' &= T - vE_x/c^2, & B'_y &= B_y + vE_z/c^2, & B'_z &= B_z - vE_y/c^2, \\ \rho' &= \rho - v\delta_x/c^2, & \delta'_x &= \delta_x - \rho v, & \delta'_y &= \delta_y - \rho v, \\ \delta'_z &= \delta_z - \rho v, & x' &= x - vt_x, & y' &= y - vt_y, & z' &= z - vt_z, \end{aligned} \quad (11)$$

$$t'_x = t_x - xv/c^2, \quad t'_y = t_y - jyv/c^2, \quad t'_z = t_z - jzv/c^2.$$

Contrary to (9) the transformation of coordinates and time in (11) means their harmonious averaging for $c > 0$ and $c < 0$, i.e. for receipt of the information to the observer in front and behind. At that (11) differs from classical transformations ($c = \infty$) by transformations y' and z' , since the real moving observer can measure y and z even under condition of instant reception of the information, only having inclined his rulers y' and z' up to their crossing with y and z , i.e. by using of oblique coordinates, whereas classical transferring y and z to y' and z' is instrumental impossible.

Therefore in contrast to STR both (9) and (11) give a rule of addition of velocities, identical for all axes of coordinates

$$\begin{aligned} x'/t'_x &= (v_x - v)/(1 - v v_x/c^2); \\ y'/t'_y &= (v_y - jv)/(1 - jv_y v/c^2); \\ z'/t'_z &= (v_z - jv_z)/(1 - jv_z v/c^2). \end{aligned}$$

However it is much more important to understand physical sense of the changes caused by movement of the observer or object of observation.

If the observer (it is a test charge in this case) moves with a velocity v_x along an electrostatic field with the strength E_x , and because $E_x = D_x/\varepsilon$, where D – a vector of displacement, and $D_x = dq/dydz$, then we have according to (9) $D'_1 = D(1 + jv/c)$ on the right and from below of the observer ($c < 0$) both $D'_2 = D(1 - jv/c)$ at the left and from above from its ($c > 0$).

Having collided with apparent anisotropy of a field, the observer is forced to average D'_1 and D'_2 arithmetically for development of his reaction; it will be received $D' = D$.

But the anisotropy of a field creates an apparent compression of environment in front of a moving charge and an apparent stretching behind of it $(D'_1 - D'_2)/2 = Dv/c = cT$ besides attractive or repulsive forces also; here $T = v_x B_x/c^2$ is a potential of striction field.

Thus, the field does not change, at the average, for test charge at movement of this test charge along a field, but it appears an illusion of striction field additionally owing to apparent anisotropy.

Also an apparent anisotropy of a field arises in front $E'_{y1} = E_y(1 - v/c)$ and $E'_{z1} = E_z(1 - v/c)$, and behind $E'_{y2} = E_y(1 + v/c)$ and $E'_{z2} = E_z(1 + v/c)$ at movement of the observer with a velocity v_x across fields E_y and E_z according (9).

On the average, it gives, first, $E'_y = E_y$ and $E'_z = E_z$, and, second, apparent rotation of environment around of the charge $(E'_{y2} - E'_{y1})/2 = E_y v/c$, that corresponds to a magnetic induction $B_z = E_y v_x / c^2$, and $(E'_{z2} - E'_{z1})/2 = E_z v/c$, that corresponds to $B_y = E_z v_x / c^2$.

Thus, movement of the test charge across a field, on the average, does not change the influence to it of the field in comparison with a stationary charge, but it generates illusion of magnetic field owing to apparent anisotropy of the field.

So, movement of a charge in a field does not change its interaction with the field, but creates illusion of magnetic and striction fields.

The same picture is observed at movement of a source of a field in relation to the observer also.

In this case the electrostatic field contrary to relativistic tradition not only is not exposed to any "flattening", but remains constant, although it is accompanied by occurrence of a magnetic field on each side of a source and by occurrence of striction field in front and behind; these fields do not have any influence on the stationary observer (a test charge).

Other situation when both the source of a field and the test charge move lengthways x . In this case the transformations of coordinates (9) should be made twice, but with different signs of velocities if they are directed to one side, and with the same signs, if they are directed opposite, because if the source of a field moves relative to environment to one side, the environment moves relative to the test charge (observer) to other side. In result is $\mathbf{E}'' = \mathbf{E}(1 - v_1 v_2 / c^2)$, if the movements are in one direction, and $\mathbf{E}'' = \mathbf{E}(1 + v_1 v_2 / c^2)$, if they are opposite.

In the specific case of absolute movement, when $v_1 = v_2$, the field of a source does not change its configuration, but decreases in $(1 - v^2 / c^2)$ time; both magnetic and striction fields do not arise in this situation, that excludes an opportunity of detection of absolute movement of such system.

Really, any measurement is comparison with the standard, but the standard itself participates in absolute movement with the same velocity, as the researched system; as a result the reference interaction weakens in as much time, as researched, and their balance is kept both in rest, and in movement, that quite corresponds to Galilei's principle of relativity.

All said above concerns equally to magnetic and striction fields which get environment in the form of rotation and divergence of vector E of electric field strength; the magnitude and the form of these fields, on the average, do not change from the point of view of the moving observer; but the fields decrease in $(1 - v^2 / c^2)$ time in case of absolute movement with a velocity v .

Obviously a movement of an electric charge with a velocity v weakens its interaction with itself (own or internal energy) in $(1 - v^2 / c^2)$ time, because it acts in a role of a moving source of a field, generating its anisotropy, at first, and then acts in a role of a test charge, which is moving in this field with the same velocity.

Lorentz factor $\sqrt{1 - v^2 / c^2}$ does not arise in all these cases anywhere; it corresponds to the linear nature of electrodynamics well to which Lorentz - Einstein's transformations, hence, are alien; these transformations are applicable restrictedly to mechanics only.

6. Transformation of mechanical quantities and some consequences

Transformations of coordinates and time (9) have universal character; they result in the same apparent anisotropy of mechanical quantities from the point of view of the moving observer, as well as in electrodynamics. Another matter, that the gravitational (mechanical) observer (test mass) makes the forced averaging of this anisotropy, submitting to the specific unconditional "reflexes" which are distinct from "reflexes" of the test electric charge.

So, having faced according to (9) with anisotropy of gravitational potential of a spherically symmetric field $V_1^2 = -Gm(1 - v/c)/r$ and $V_2^2 = -Gm(1 + v/c)/r$, the test

mass moving with velocity \mathbf{v} , based on the equivalence of inertia and gravitation, will interpret V^2 as a square of imaginary velocity that will demand geometrical averaging

$$V^2 = V_1 V_2 = -Gm\sqrt{1 - v^2/c^2} / r. \quad (12)$$

Here also appears Lorentz factor $\sqrt{1 - v^2/c^2}$, which decreases gravitational potential and strength of the gravitational field with reference to the moving observer.

Certainly, this observer will average velocities and coordinates on an axis x also, that coincides with Lorentz - Einstein's transformations in respect of x . However this similarity does not cover y , z , t and especially the electromagnetism where these transformations have been introduced wrongfully in the name of uniformity of the approach and for the sake of all of same notorious "beauty" of the theory.

Contrary to it the gravitational observer will average (9) geometrically in the form

$$\begin{aligned} x' &= (x - vt_x) / \sqrt{1 - v^2/c^2}, \\ y' &= (y - jvt_y) / \sqrt{1 - v^2/c^2}, \\ z' &= (z - jvt_z) / \sqrt{1 - v^2/c^2}, \\ t'_x &= (t_x - xv/c^2) / \sqrt{1 - v^2/c^2}, \\ t'_y &= (t_y - jyv/c^2) / \sqrt{1 - v^2/c^2}, \\ t'_z &= (t_z - jzv/c^2) / \sqrt{1 - v^2/c^2}, \end{aligned} \quad (13)$$

This, first, does not change a rule of addition of velocities for arbitrary coordinates, and, second, at mutual movement both source of the information (field) and its addressee (observer) with identical velocities \mathbf{v} weakens a field in $(1 - v^2/c^2)$ time as it was in case of an electric field.

As a result Galilei's principle of a relativity triumphs absolutely, because the measured and reference interactions will be changed equally in moving system without dependence from the physical nature of that and another.

Let's pay attention to that circumstance, that if the "electric" observer, wishing to determine a velocity of a piece of a straight line

flying by it (true length is l_0), begins to average harmoniously apparent lengths $l_1 = l_0 / (1 - v_0 / c)$ by approach of a piece and $l_2 = l_0 / (1 + v_0 / c)$ by its moving away, it will receive $l = l_0$. Then, this observer, having divided l for the period Δt of passage of the piece from the beginning up to the end by the observer, will receive true velocity of the piece $v = v_0$. The "Gravitational" observer by the same circumstances begins to average l_1 and l_2 geometrically and will receive the overestimated length of the piece $l = \sqrt{l_1 l_2} = l_0 / \sqrt{1 - v_0^2 / c^2}$ and, accordingly, the overestimated velocity

$$v = v_0 / \sqrt{1 - v_0^2 / c^2} . \quad (14)$$

The conclusion follows from (14) that any mechanical (gravitational) devices with reference to the gravitational waves, which moves with velocity $v_0 = c$, will show always that their length l and velocity v are infinite, i.e. that such waves do not exist. Long-term fruitless attempts of detection of gravitational waves testify to it too, although formally geometrical averaging of anisotropy (9) for $c > \theta$ and $c < \theta$ gives on each side of the moving mass something similar to a vector magnetic field, and in front and behind from it - something similar to scalar striction field.

Since Lorentz factor turns to one for $v_0 \ll c$, the equations for gravitational analogues of strength \mathbf{E} of an electric field, induction \mathbf{B} of a magnetic field and striction potential T are similar in small to the equations of electrodynamics:

$$\begin{aligned} \mathit{div} \mathbf{a} &= 4\pi G \rho_m, \quad \mathit{rot} \mathbf{B}_m + \mathit{grad} T_m = \mu_m \mathbf{d}_m, \\ \mathit{rota} &= -\partial \mathbf{B}_m / \partial t, \quad \mathit{div} T_m = -\partial T_m / \partial t, \end{aligned} \quad (15)$$

Where \mathbf{a} – strength of a gravitational field, \mathbf{B}_m – an induction of gravitational analogue of a magnetic field, T_m – scalar potential of gravitational analogue of a striction field, ρ_m – volume density of mass, \mathbf{d}_m – density of a current (discharge) of mass transfer, μ_m – gravitational analogue of environment magnetic permeability. However in contrast to the electrodynamics the gravitational current

of displacement $\partial \mathbf{E} / \partial t c_m^2$ is always equal to zero here owing to (14), because the apparent (measured) velocity of gravitational waves c_m is equal to infinity always, if we attribute to gravitational waves the light velocity c ; consequently in "empty" space $rot \mathbf{B}_m = grad T_m = 0$.

It follows from (15), that two gravikinetic fields can exist else besides of gravistatistical field \mathbf{a} : vector field \mathbf{B}_m and scalar field T_m , which, probably, are found out in the form, for example, "torsion" etc. phenomena, though these fields do not affect usually ordinary practice in view of their extreme smallness.

The thesis about absence of gravitational waves does not mean, that all these fields cannot be pulsing, but such pulsations will be always synchronous and inphase in all points of space; so, strictly speaking, the question is not absence of gravitational waves, but the absence of their propagation. So if to force ρ_m to change sinusoidally, then intensity and potential of a gravitational field begin to change sinusoidally according to (15), however without any delay in the removed points; so the concept of "delayed potential" does not exist for the gravitational field. And this implies, that the realization of instant gravitational communication between arbitrarily removed points, including space distances, is possible at technical development of corresponding procedures.

As regards actually the theory of gravitation, then all the theory (except for up to now indistinct "torsion" fields) is covered in equivalence of gravitation and inertia, from which follows, that the universal relationship takes place according to (14) between Newton's gravitational potential V_0^2 , received from Poisson equation $\Delta V_0^2 = -4\pi G \rho_m$, and really working potential V^2

$$V^2 = V_0^2 / (1 + V_0^2 / c^2), \quad (16)$$

This relationship is the "relativistic" improvement of Newton's law of gravity.

Here the sign a minus from (14) has turned to plus because (16) means, that if Newton's potential V_0^2 orders to test mass to fall from infinity in the given point with imaginary velocity V_0 , then the test mass will move really with velocity V , which is measured as V_0 owing to inadequacy of measurement of its velocity (14).

Similar the test mass gets in a field not Newton's acceleration \mathbf{a}_0 , but acceleration $\mathbf{a} = \mathbf{a}_0 / (1 + V_0^2 / c^2)$ in view of apparent decreasing of interaction of a imaginary moving charge with a field.

For the central field (16) turns in

$$V^2 = -Gmc^2 / (rc^2 - Gm), \quad (17)$$

That explains existence of any sort of pulsars and "black holes", and neutral electron-positron nucleus by heavy elementary particles also owing to the change of a sign by $r = Gm / c^2$ and transition from an infinite attraction to infinite repulsion.

Since the electric charge Q repulse itself always, the radius of balance r_G increases for size r_0 at presence of a charge and (17) looks

$$V^2 = -Gmc^2 / [(r - r_0)c^2 - Gm], \quad (18)$$

where $r_0 = q / 4\pi\epsilon m_0 c^2$, if the mass m_0 is generated by a charge q .

If all the mass m is generated by a charge Q (as by electron and positron), then is $m = m_0$. If an elementary particle has neutral electron-positron nucleus still, which radius is less and the mass is more than by the external charged environment (on three order as by proton), that $m > m_0$, and m_0 concerns to the external charged environment only. Therefore the sizes of all elementary particles are practically identical without dependence from their mass, since they are determined by (18), where $q = e$ – a charge of electron, and m_0 – its mass.

In relation to the test mass, which is moving with velocity v_0 , the potential (16) decreases in $\sqrt{1 - v_0^2 / c^2}$ time owing to averaging anisotropy of a field. The same occurs with a vector \mathbf{a} of field strength. Acceleration got at it coincides with acceleration of Minkovsky's force, but it does not demand any growth of mass.

It is remarkable, that if we multiply (14) by mass m of a moving body, we shall receive the expression externally conterminous with a relativistic pulse, however in which the Lorentz factor $\sqrt{1 - v_0^2 / c^2}$ concerns not to the mass, but to its velocity, that

testifies to myth of relativistic growth of the moving mass and to its constancy in any circumstances.

The same is, if we find accelerations from (14), transversal to the velocity and longitudinal to it, $\mathbf{a}_\perp = \mathbf{a}_0 / \sqrt{1 - v_0^2 / c^2}$ and $\mathbf{a}_\parallel = \mathbf{a}_0 / (1 - v_0^2 / c^2)^{3/2}$, which even if them to multiply on m , do not generate Lorentz problem of "longitudinal" and "transversal" masses, because the mass is constant, and various degrees of Lorentz factor concern to acceleration.

7. Electrostriction origin of gravitational, strong and weak interactions

The pulsations of a moving charge Q with root-mean-square velocity v_G are a special case of interaction reducing of this charge with themselves; these pulsations generate purely strictional spherically symmetric field around of the charge. At that a reducing of energy of repulsion of the charge can be quite attributed to the gravitation caused by mass m , which is generated through the pulsation of the charge $q^2 v_G^2 / 4\pi\epsilon r c^2 = Gm^2 / r$, i.e.

$$m = qv_G / c\sqrt{4\pi\epsilon G}, \quad (19)$$

where r – average radius of the pulsing charged sphere, G – Newton's gravitational constant.

An interaction of opposite pulsing charges is quite covered - from the formal point of view – by (19), because the change of a sign of the charge is compensated by respective change of a sign of a radical. However in practice it means, that pulsations of the same charges are always inphase, and pulsations of opposite charges occur in an antiphase.

Besides it means, that frequencies of pulsations of all elementary particles are equal irrespective of their masses.

Really, since for electron is $e^2 / 4\pi\epsilon c^2 = r_0 m_0$, and for nucleus of elementary particles is $e^2 / 4\pi\epsilon c^2 = rm$, then $rm = r_0 m_0 = const$, and taking into consideration (19) $v_G^2 = Gm / r$. Therefore frequency of pulsations in all cases is $f = v_G / 4r_G = c^2 / 4\sqrt{Gmr} \cong 10^{44}$ Hz, that facilitates

synchronization of pulsations of gravitational interacting charges. Thus, the assumption about electrostriction origin of gravitation has convincing confirmation.

In addition if from (18) to deduct Newton's gravitational potential $-Gm/r$, the rest come apart up to two components, which are rather similar on the structure of potentials of, accordingly, strong and weak interactions:

$$V_c^2 = -Gmr_0c^2 / r[(r - r_0)c^2 - Gm] \quad (20)$$

$$\text{and } V_{ci}^2 = -G^2m^2 / r[(r - r_0)c^2 - Gm]. \quad (21)$$

It can mean, first, that the potential (18) represents the sum of potentials of Newton's (gravitational), strong (20) and weak (21) interactions, and second, that all known interactions have electric nature only.

This conclusion is true in absence of a free charge too, when $r_0 = 0$, because the gravitation is created in that case by a pulsation of the connected charges with opposite signs, for example, electron-positron pairs.

Above-stated means, that Russia can pretend to Nobel Prizes on physics (at appropriate care about the prestige in the world instead of traditional self-destruction), at least, for discovery of electrostriction field, for creation of the theory of Galilei's relativity, for creation of the theory of gravitation, for discovery of the nature of a fireball, for discovery of the electric nature of all known interactions. At that, generally speaking, from the point of view of pedant the discoveries of the electric nature of gravitation, strong and weak interactions deserve separate prizes each.

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