Smulsky, J.J. 1994. " Yes, Science is Confronted by a Great Revolution ", Chinese Journal of Systems Engineering and Electronics, Vol. 5, No. 2, pp. 72 - 76.

Chinese J. of Systems Engneering & Electronics, Vol.5, No.2, 1994, pp.72–76

Yes, Science is Confronted by a Great Revolution

Jozeph J. Smulsky
Inst of Earth's Cryosphere, Siberian Branch, Russian Academy of Sciences,
625000, Tyumen, P.O. Box 1230, Russia

(Received on January 18, 1994)

Three papers[1][2][3] written by Xu Shaozhi and Xu Xiangqun have been published in U.S.A., Canada and China, in which the authors have shown the Theory of Relativity (TR) is logically untenable. All the authors' arguments and their conclusion on the error of TR system en bloc are correct.

During three generations a few scientists in different countries found the error of the TR. But their works have not been published in the scientific press. Therefore, everyone has to examine the foundation of the TR and discover the verities about the erorr of the TR for himself. The meaning of Xu Shaozhi and Xu Xiangqun's paper[3] is significant, because the paper is published in a State high–tech journal and the authors have shown the error of the TR wirh weighty proof. On the foundation of this proof the new generation of scientists can move further on the way to truth.

TR is founded on two erroneous principles: principle of relativity and principle of limited velocity. In studying the electromagnetic (EM) interactions in TR it is assumed that EM interactions do not depend on velocity. Therefore, to satisfy the experimental facts, it is necessary to introduce mass, space and time which depend on velocity. In fact, the forces of interaction between two point charges, for example, depend not only on the distance between them, but also on their relative velocity; and the mass, space and time do not depend on velocity. Let us show this in more detail.

Numerous experiments demonstrate that a motionless charged body produces an action on another charged object but has no action upon a magnet or a conductor carrying current. In contrast, the experiments of Rowland, Eihenwald and Roentgen demonstrate the action of a moving charged body upon a magnet or conductor with current. Analogously, a motionless magnet or current loop does not act upon a charged body; however, when relative motion appears, an action also appears.

These phenomena are summarized by Faraday's law of electromagnetic induction. These two phenomena groups–an appearance of action on a magnet in the specific force form H during the charge's motion, and an appearance of action on a charge in the specific force form E during the magnet's motion–are described by the first and the second Maxwell's laws:

$$\vec{\nabla} \times \vec{H} = \frac{4\pi}{c} \rho \vec{V} + \frac{\varepsilon}{c} \frac{\partial \vec{E}}{\partial t} \tag{1}$$

$$\vec{\nabla} \times \vec{E} = -\frac{\mu}{c} \frac{\partial \vec{H}}{\partial t} \tag{2}$$

where ρ is the charge density, ε is the permittivity, and μ is the magnetic permeability, E and H are the forces per unit of charge and magnetism, respectively. The reader may know that the E and H vectors are not described in terms of electric and magnetic field strength.

So, by the complicated formulation of differential equations, the action of one charged body on another is described in terms of their relative motion. By combining equations (1) and (2), we can determine the action on a charged object. For example, by eliminating H, we get D′Lambert′s equation for the action of charges in relative motion

$$\Delta \vec{E} - \frac{1}{c_1^2} \frac{\partial^2 \vec{E}}{\partial t^2} = \frac{4\pi}{c_1^2} \frac{\partial \rho \vec{V}}{\partial t} + \frac{4\pi}{\varepsilon} \vec{\nabla} \rho \tag{3}$$

In solving this equation with the help of δ–function describing the density ρ of partical charge q_1, we get the expression for the moving point charged body force of the action on the motionless point charge body q_2 [4–5]:

$$\vec{F} = q_2 \vec{E} = \frac{q_1 q_2 (1 - \beta^2) \vec{R}}{\varepsilon [R^2 - [\vec{\beta} \times \vec{R}]^2]^{3/2}} \tag{4}$$

where $\vec{\beta} = \vec{V} / c_1$, and $c_1 = c / \sqrt{\varepsilon\mu}$ is the electromagnetic velocity or velocity of light in space with permittivity ε and permeability μ; $\vec{V}$–velocity of charge q_1.

As a result of E elimination out of Maxwell′s equations (1)–(2) we get the equation for magnetic tension created by the moving charge:

$$\Delta \vec{H} - \frac{1}{c_1^2} \cdot \frac{\partial^2 \vec{H}}{\partial t^2} = \frac{4\pi}{c} \operatorname{rot}(\rho \vec{V}) \tag{5}$$

In solving this equation with the help of δ–function, we get the expression for the moving point charged body force of the action on the single magnetic pole:

$$\vec{H}_q = \frac{q_1 (1 - \beta^2) [\vec{\beta} \times \vec{R}]}{\sqrt{\varepsilon\mu} \cdot [R^2 - [\vec{\beta} \times \vec{R}]^2]^{3/2}} \tag{6}$$

The force of the action on the moving particle q_1 will be opposite to the force (4) created by this particle. Therefore, changing the sign in the expression (4) and simultaneously substituting the new distance $(-\vec{R})$ of the stationary body q_2 from the moving one which is opposite to the previous one, we shall formulate the same expression (4) for the force acting on the moving body q_1.

It is more difficult to obtain the magnetic force acting on the moving body q_1 from the equation (6) because this expression describes the moving particle force action on the unit point magnetic pole. Since the magnet is characterised by the intensity $\vec{H}$ (by the force on a unit point pole in its surrounding space points, the magnet force acting on the particle depending on $\vec{H}$ must be calculated, In this case it is necessary to calculate the particle force acting on a magnet with finite sizes using (6) and to take the magnitude opposite to this force. It will be the magnet force acting on the particle including this magnet intensity $\vec{H}$. For different magnets the expressions will differ, but all of them can with sufficient accuracy be described by a common expression. Let us derive it.

If an elementary part of the magnetic pole has a magnetic charge dM, then the particle q_1, in accordance with (6), acts on it with the force

$$d\vec{F}_{dM} = \mu dM \cdot \vec{H}_q = \frac{q_1 \mu (1-\beta^2)[\vec{\beta} \times \vec{R}]dM}{\sqrt{\varepsilon\mu} \cdot R_v^3} \tag{7}$$

where $R_v = \sqrt{R^2 - [\vec{\beta} \times \vec{R}]^2}$.

On the other hand, this element dM creates a magnetic intensity at the point of particle

$$d\vec{H} = \frac{dM(-\vec{R})}{R^3} \tag{8}$$

If we substitute dM of (8) in (7) and take into account that $\vec{\beta} / \sqrt{\varepsilon\mu} = \vec{v} / c$, we get

$$d\vec{F}_{dM} = -\mu \cdot \frac{q_1 (1-\beta^2) R^3}{c R_t^3} \cdot [\vec{v} \times d\vec{H}] \tag{9}$$

The force on the particle from element dM will be the inverse of (9)

$$d\vec{F}_q = -d\vec{F}_{dM} = \mu \cdot \frac{q_1 (1-\beta^2) R^3}{c R_t^3} \cdot [\vec{v} \times d\vec{H}] \tag{10}$$

But the force on the particle from the whole magnetic pole M will be defined after integrating (10) on all the elements of magnet M

$$\vec{F}_q = \mu \cdot \frac{q_1 (1-\beta^2)}{c} \cdot \left[\vec{v} \times \int_M \frac{R^3}{R_v^3} \cdot d\vec{H} \right] \tag{11}$$

Particle distances R and R_t between magnetic pole elements are still in the integral. Therefore the force will depend on the configuration of the magnetic pole. But since it is acceptable to express the magnet influence through tensity H, in the first approximation we can assume that:

$$\int_M \frac{R^3}{R_v^3} \cdot d\vec{H} \approx \vec{H} \tag{12}$$

where $\vec{H}$–is the full magnetic intensity, created by the magnet. Upon the substitution of (12) in (11) we get the expression:

$$\vec{F} = \frac{\mu q_1}{c} (1-\beta^2) \cdot [\vec{v} \times \vec{H}] \tag{13}$$

Similarly, for expression (4) we can derive the force acting on a moving particle q_1 as

$$\vec{F} = (1-\beta^2) q_1 \vec{E} \tag{14}$$

The resulting expressions for the force of action on the moving particle from the charged body (14) and the magnet (13), at low particle motion velocity $\beta \to 0$, coincide respectively with the classical law and Lorentz force

$$\vec{F}=\frac{\mu q}{c}\cdot[\vec{v}\times\vec{H}] \tag{15}$$

But at high velocities, tending to the velocity c_1 of the electromagnetic wave propagation in the medium ($\beta=v/c_1\rightarrow 1$), these expressions produce forces equal to zero.

Scientists have come to verity in different ways. Expressions, analogous to (4), have been derived by Thomas G.Barnes et al[6], and Charles W.Lucas, Jr. and Joseph P.Lucas[7] by classical methods, which differ from each other and differ from our ~~result~~ method. In addition, the authors of paper [7] have derived the expression (6).

By the application of equations (4), (6), (13) and (14) one can calculate all EM—interactions between moving bodies. In this case the mass, space and time do not depend on velocity.

Now let us return to the second principle of TR——principle of limited velocity. Since the result of a Lorentz transformation becomes meaningless as an object's velocity approaches the speed of light, advocates of TR assumed that this speed represented a physical limit. But since the Lorentz transformations only represent a mathematical method of treating the influence of relative velocity, the end limit of the object's velocity does not exist.

In the General Theory of Relativity (GTR) the gravity propagation velocity was assumed to be equal to the velocity of light. Due to this hypothesis the GTR was constructed by analogy to electrodynamics. Thus, using this analogy we can derive the interaction force of two moving mass m_1 and m_2 in accordance with eqution (4) as

$$\vec{F}=\frac{-Gm_1\, m_2(1-\beta^2)\vec{R}}{[R^2-[\vec{\beta}\times\vec{R}]^2]^{3/2}} \tag{16}$$

where G—constant of gravity.

Equation (16) and similar results are used to explain the General Theory of Relativity and the effects of GTR: the rotations of planets′ perihelion, deflections of star light by a gravitational mass, and the existence of gravitational waves. According to GTR, a star may become so dense that its radius r will be smaller than the gravitational radius r_g and it retards light and slows its velocity to produce a "black hole". But as there is no reason to consider that gravity propagates at the speed of light, there is also no reason to take these GTR effects seriously.

Thus we see that one can reject the TR and all phenomena can be calculated by the above—mentioned approach. The new approach to electrodynamics is based on the following general postulates:

1. Length, time and mass are determined in comparison with standard bodies and processes. These terms are unique, unchangeable and inherent properties that are quantified in relation to the standard bodies.
2. The electromagnetic force of action between two bodies depends upon the distance and the speed between them.
3. The principle of relativity incorrectly states the actions between bodies, if they depend

4. The speed of bodies does not have a limit.
5. There is no reason to make the propagation of gravitational effects equal to the speed of light.

I fully agree with Xu Shaozhi and Xu Xiangqun in thinking that science (not only theoretical science) confronts a great revolution. The first application using the above–mentioned approach gives a revolutionary change of knowledge about nature. I think that soon we shall obtain simple and clear knowledge about micro– and macrocosm and we shall wonder why earlier we believed in such a fancy as TR.

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Joseph J. Smulsky, research professor and author of more than 50 scientific works and inventions, was born on April 13, 1944 in the Ukraine Republic, USSR. He graduated in flight dynamics and automatic system engineering from Charchov Aviation Institute in 1967. Until 1988 he worked in Novosibirsk Research Institutes and Designed Offices, then in the Tyumen Scientific Centre of the Siberian Academy Science. In 1992 his book "The Aerodynamics and Processes in the Vortex Chambers" was publicated by Siberian Branch of the "Science Publisher". The methods of calculation flow and processes are given in the book. Here the theory of tornado is given too. In 1984 he suggested the new complex estimate index of the atmospere polution and later worked out the automatic system of the city atmosphere pollution estimate. From 1982 he is working at new type of wind turbine. This turbine, very likely, will cheap and reliable. More 25 years he is working out the new approach in electrodynamics and gravity theory, based on the classical mechanics. His book "The Electromagnetic and Gravitic Actions. (Nonrelativity Tractats)" will be publicated by the Siberian Branch of the "Science Publisher" to the second part of 1994.