Upgrade theory of relativity from version 1.0 to version 2.0

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Abstract

There are three attitudes towards orthodoxy theory in different periods: The first is the right leaning who fully believes in and supports; The second is to completely reject and deny the same (left leaning); The third is to modify the old theory in the process of innovation (compromise). The people who have made the greatest contribution to promoting scientific development are those who admit that the old theory has shortcomings and are determined to develop the orthodox theory. Upgrading the 1.0 version of relativity to the 2.0 version of relativity is the third attitude mentioned above. With this attitude, we view and reform relativity, and get a new theoretical system that recognizes the existence of absolute stationary system but retains the relativistic effect, and applies the relativistic motion effect to electrodynamics and general relativity.

Key words: 2.0 version of relativity, Relativistic effect, Retardance of field, Maxwell's equations, Einstein's gravitational field equation.

1. Introduction

Several corollaries of special relativity without relativity principles are: The moving ruler or moving space shrinks, the moving clock slows down, and the mass of movement increases. With the principle of relativity, the more accurate inference of special relativity is: At the same time, it is relative; when observing each other, the clock of the observed side slows down, the ruler shortens, and the mass becomes larger. In terms of experimental verification, people only verified the inference of special relativity without the principle of relativity (the contraction of space due to motion has not been directly verified), but never verified the inference of special relativity including the principle of relativity.

In the world, there are thousands of articles criticizing the special theory of relativity [1-22]. The most serious problem of logic is simultaneous relativity and the principle of narrow relativity. This paper will reveal some logical contradictions of special relativity in Supplement A. The results and conclusions of the experimental analysis and logical analysis of critical special relativity point to "the existence of absolute static system, but absolute motion has the following motion effects: the clock of absolute motion slows down, the ruler of absolute motion shrinks in all directions, and the mass of absolute motion increases". That is to say, the conclusion of criticizing the narrow sense points to the fact that "absolute motion exists, and the relativistic effect of absolute motion also exists". This fact is the existence of "theory of relativity-absolutism". In other words, only by using the theory of relative absolutism (that is, upgrading the special theory of relativity to the theory of relativity-absolutism), all the contradictions of the special theory of relativity will no longer exist.

In the theory of relativity-absolutism, the principle of relativity is no longer the core of the theory, and the relativistic effect (*i.e.*, motion effect) is its theoretical core. The core of this theory indicates that another major disadvantage of special relativity is that it only applies the relativistic effect to classical mechanics, and does not apply the relativistic effect to electrodynamics. That is to say, there are motion effects on the motion of electric charge and permanent magnet (that is, there are also relativistic effects on the motion of electric charge and permanent magnet). Failure to consider such

relativistic effects is a dereliction of duty of relativity. The special theory of relativity was originally called "Electrodynamics of moving bodies". However, special relativity only applies Lorentz transformation, which explains the principle of special relativity, and the relative relativity of electromagnetic phenomena to electrodynamics (in addition, it applies the relativistic effect to classical mechanics), but it fails to apply the motion effect produced by high-speed motion of electromagnetic source to electrodynamics in time. The space-time metric and energy-momentum tensor in Einstein's gravitational field equation can contain time, but that is the coordinate time of the system (that is, the time coordinate in four-dimensional space-time) rather than the inherent time associated with the source of the motion field (that is, it is not the intrinsic time of the source of the motion field). This determines that Einstein's gravitational field equation, like Newton's $F = -\frac{GMm}{r^2}$, belongs to the static field equation, without considering the gravitational field retarded effect and the increase of mass caused by motion of mass. In other words, Einstein's gravitational field equation cannot accurately describe the "consequences of the motion of the field source". Even if space-time metric and energy-momentum tensor can contain time, it cannot be guaranteed that Einstein's gravitational field equation can describe the influence of the motion of the gravitational field source on the result.

Many scholars have seen this. In particular, Dr. Zhonglin Wang, a foreign academician of the Chinese Academy of Sciences, made efforts to make up for this shortcoming of the special theory of relativity [23-26]. However, Academician Wang's work did not achieve the expected results. He just worked out Maxwell's equations that he thought were suitable for the medium motion. The Maxwell equations modified by him are not applicable to the high-speed motion of the field source. In particular, Academician Wang's theory cannot describe the delayed effect of moving charges. Academician Wang's failure is inevitable, because he chose to solve the electrodynamics problem without upgrading the special theory of relativity.

In my opinion, if we want to succeed, we must reform both special relativity and Maxwell's equations. In other words, if you want to completely solve the problems of special relativity and electrodynamics, you must upgrade the special relativity from version 1.0 to version 2.0, and modify the Maxwell equations. That is, "the logical contradiction of special relativity" and "the application scope of relativity effect" must be solved at the same time (some things in special relativity must be sublated).

2. Retarded potential and retarded field: electromagnetic relativistic effect

Before introducing the retarded potential, let's introduce three new concepts: Field wave and retarded coefficient, so as to better understand and apply retarded potential and retarded field. Compared with water waves, the so-called field waves refer to the change of field strength spreading forward like a wave. It is a phenomenon that "due to the limited propagation speed of the field, the field strength on the front field point lags behind the field strength when the field source is stationary for a period of time". A delayed field is an effective field. The effective electric field is the field that actually works. It is a field whose strength can reach the predicted value of electrostatic theory after a period of time. The general theory of relativity predicts that two black holes can circle each other when they are close to a certain distance. If they get closer, they will form a larger black hole. When two black holes rotate at a high speed like a dumbbell, the strength of the gravitational field in the outer space will change in a wavy way. This is the gravitational field wave spreading outward, and people like to call it gravitational wave. When a charge is suddenly born on an electric neutral space point, the electric field of this charge will spread outwards, which also a

wave of field is spreading outwards. Another situation is that when a charged particle approaches a stationary space point at a high speed, the space point can also feel the electric field strength is getting stronger and stronger, that is, it can feel that there are waves of higher and higher field waves attacking it. The third new concept is "retarded coefficient". This coefficient is a function of velocity and angle. Under the Galilean transformation, the difference between the retarded potential and the electrostatic potential is only one coefficient. The angle is the angle between the moving direction of the electric charge and the connecting line between the charge and the target space point (see reference [27] for details http://www.doc88.com/p-195579116838.html).

The motion of charge will cause the retardance of electric potential and electric field, whether we admit the existence of absolute static system or absolute motion or not. However, when the absolute static system exists, the propagation of the field wave generated by the charge movement in the absolute space has nothing to do with the slowing down of the time on the charge caused by the charge movement. Therefore, we can completely deduce the delayed potential and delayed field under Galileo transformation. We have completed this work in 2008 [27-29], the derivation of the slightly improved delay potential is as follows.

Under the premise of "the existence of an absolute stationary system and the slowing of the clock of motion", space has nothing to do with the volume of matter. Therefore, the coordinate transformation corresponding to the special relativity in version 2.0 is different from the volume transformation of the object. Since the special theory of relativity in version 2.0 does not recognize that space can move, but acknowledges that the clock of motion slows down, the coordinate transformation corresponding to it can be obtained by modifying the time transformation in Galileo transformation. The time transformation is based on the experimental facts. The coordinate transformation between the absolute stationary system K_0 and an arbitrary inertial system K_1 is as follows:

$$\begin{cases} x_0 = x_1 - \upsilon_1 t_1 \\ y_0 = y_1 \\ z_0 = z_1 \\ t_0 = \gamma_1 t_1 \end{cases} . \qquad (1)$$

We can also say that the whole equation (1) is based on experimental facts. Formula (2) can be obtained by replacing the subscript "1" in formula (1) with "2", and then combine with each equation in formula (1). It is the coordinate transformation between any two inertial systems (K_1 and K_2) on the premise of the existence of an absolute stationary system.

$$\begin{cases} x_1 = x_2 + (\dfrac{\gamma_2}{\gamma_1}\upsilon_1 - \upsilon_2)t_2 \\ y_1 = y_2 \\ z_1 = z_2 \\ t_1 = (\gamma_2 / \gamma_1)t_2 \end{cases} . \qquad (2)$$

where, $\gamma_1 = 1/\sqrt{1-\upsilon_1^2/c^2}$, $\gamma_2 = 1/\sqrt{1-\upsilon_2^2/c^2}$.

According to reference (22), the volume relationship between the absolute stationary system K_0 and an inertial system K_1 is

$$\begin{cases} l_{x0} = \gamma_1 l_{x1} \\ l_{y0} = \gamma_1 l_{y1} \\ l_{z0} = \gamma_1 l_{z1} \\ t_0 = \gamma_1 t_1 \end{cases}, \qquad (3)$$

where, "l" is the length of the object, and x, y, z are the number of the coordinate axis. The time relationship in equation (3) has not been deleted.

In view of the vast number of logical contradictions of special relativity in version 1.0 and the principle of special relativity, we have to sublate the principle of special relativity (only admit that it is approximately applicable under certain conditions). To sublate the principle of special relativity is to recognize the existence of absolute stationary system and absolute motion. To sublate the principle of special relativity is to recognize the existence of absolute stationary system and absolute motion. On the premise that the absolute stationary system exists and the inference that "space shrinks in the direction of motion due to motion" is abandoned, if the clock slows down due to motion is avoided, Galileo transformation can be used [When the third equation in equation (1) does not work, the conditions for Galileo transformation are satisfied]. In the absolute stationary system, the retardance of electric field and electric potential is only related to the "propagation speed of electric field in the absolute stationary system", and has nothing to do with the slowing down of time due to absolute motion.

When A charge moves along the AB direction, the retarding potential felt by point C is shown in Figure 1.

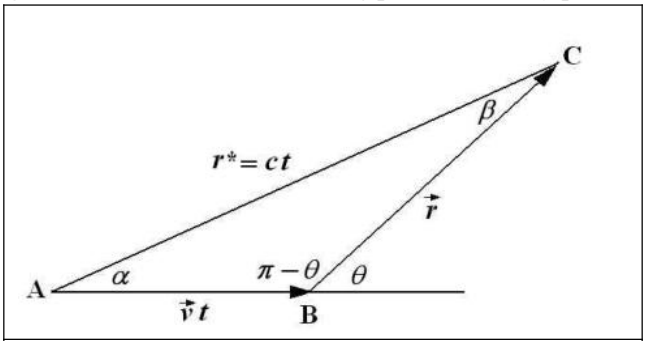

图 1. 电荷从 *A* 向 *B* 运动而接近 C。**Figure 1.** The charge moves from *A* to *B* and approaches *C*.

According to the cosine theorem of trigonometric function relation, the retardation coefficient of retarded potential η or:

$$\eta = \left[1 + \frac{\upsilon^2 \sin^2\theta}{c^2 \sin^2\alpha} + \frac{2\upsilon \sin\theta con\theta}{c \sin\alpha}\right]^{-1/2}. \qquad (4)$$

This is the form that the retarded potential under the Galilean transformation is reduced to the retarded coefficient. See reference [1] for the detailed derivation process.

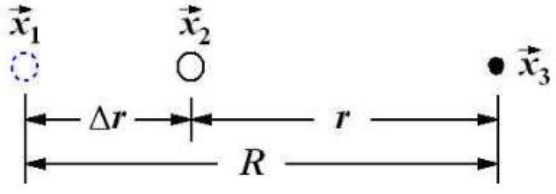

Fig. 2. The charge moves from x_1 to x_3 at high

speed.

When the movement path of the charge is direct to the field point, equation (5) can be easily obtained. When the Q at the point x_2, the potential at the point x_3 predicted by the electrostatic theory is Q/r (As shown in Figure 2) . Delay potential is $Q/(r+\Delta r)$. in consideration of $\Delta r=(r/c)\upsilon$, $Q/[r+r(\upsilon/c)]=Q/r[1+\upsilon/c]$. The quotient between the retarded potential and the potential predicted by the electrostatic theory is the retarded coefficient η. So we have

$$\eta = \left[1+\frac{\upsilon}{c}\right]^{-1}. \qquad (5)$$

Equation (6) can also be obtained by simplifying Equation (4).

$$\eta = \left[1\pm\frac{\upsilon}{c}\right]^{-1}. \qquad (6)$$

In equation (6), "the minus sign in the previous speed υ" indicates that the direction of motion of the field source is away from the field point x_3 or point C.

The retardation coefficient of electric field is the square of the retardation coefficient of potential (η^2). The expression of the effective field E^* is

$$E^* = \frac{\eta^2 Q}{4\pi\varepsilon_0 r^2}. \qquad (7)$$

Equation (7) is the expression of the effective field of the moving charge moving toward the field point.

3. Maxwell equations suitable for describing high-speed motion field sources

It is easier to see from Equations (5)-(7) that the relativistic effect with charge participating in the interaction is very strong (stronger than the relativistic effect of time and quality, which can be a first-order effect). Under the Galilean transformation, the base number of the retardation coefficient of the retarded field is exactly the same as that of the retarded potential. In this way, it is convenient to consider the relativistic effect (that is, the motion effect of charges) in electrodynamics. Maxwell's equations are

$$\begin{cases} \nabla\cdot D=\rho \\ \nabla\cdot B=0 \\ \nabla\times E=-\dfrac{\partial B}{\partial t} \\ \nabla\times H=J+\dfrac{\partial D}{\partial t} \end{cases}. \qquad (8)$$

The derivation of the first equation uses Coulomb's law $E=Q/4\pi\varepsilon_0 r^2$. For the effective field, $E=Q/4\pi\varepsilon_0 r^2$ must be replaced by equation (7). Considering the electric displacement vector $D=\varepsilon E$. The effective electric displacement vector should also be $\eta^2 D$. When speed υ When unchanged (including the same size and direction), $\nabla\cdot\eta^2 D$ equals $\eta^2\rho=\rho^*$. Similarly, $\nabla\times\eta^2 D=\eta^2$ ($\nabla\times D$). Using the same method to deal with Maxwell's equations, we can get

$$\begin{cases} \nabla\cdot\eta^2 D=\rho^* \\ \nabla\cdot\eta^x B=0 \\ \nabla\times\eta^2 E=-\eta^x\dfrac{\partial B}{\partial t} \\ \nabla\times\eta^x H=\eta^2 J+\eta^2\dfrac{\partial D}{\partial t} \end{cases}. \qquad (9)$$

Equation (9) is a Maxwell equation set in which the retardation effect is considered when the field source is moving at high speed (the field in the equation set is an effective field), and is also a basic electrodynamic equation in which the relativistic effect is considered (the effect generated by the motion of the field source is considered). Once the speed of the field source is low, the Maxwell equations shall be resumed immediately. If the exponent x is close to 2, equation (9) can be simplified as

$$\begin{cases} \nabla\cdot\eta^2 D=\rho^* \\ \nabla\cdot\eta^x B=0 \\ \nabla\times E=-\dfrac{\partial B}{\partial t} \\ \nabla\times H=J+\dfrac{\partial D}{\partial t} \end{cases}. \qquad (10)$$

Even to the extent that

$$\begin{cases} \nabla\cdot\eta^2 D=\rho^* \\ \nabla\cdot\eta^2 B=0 \\ \nabla\times E=-\dfrac{\partial B}{\partial t} \\ \nabla\times H=J+\dfrac{\partial D}{\partial t} \end{cases}. \qquad (11)$$

If the medium moves but the field source does not move, the potential and field will also be delayed. The reason is that the retardance of potential and field is a relative motion effect. As long as there is a relative motion between the field emitted by Nissan and the field points or space points of the field source and the receiving field except for the propagation motion, the retardance of field will inevitably occur. For example, if the medium between the field source and the field point moves in the direction of the field source, it is equivalent to that the field source moves in the direction of the field point, and the retardance of the field is also equivalent to the retardance of the field in this case. The effect of the medium moving in the opposite direction is similar to that of the field source moving in the opposite direction. If the included angle between the velocity of the medium and the line between the field source and the field point is ϕ， The electric field retardation coefficient has the following form:

$$\eta^2=\left[1+\frac{\upsilon}{c}\cos\varphi\right]^{-2}. \qquad (12)$$

The retardation coefficient of the magnetic field has the following approximate form (it is related to the orientation of the magnet and is best determined by experiment. Taking x_3=2 is a good approximation).

$$\eta^x=\left[1+\frac{\upsilon}{c}\cos\varphi\right]^{-x}. \qquad (13)$$

4. Characteristics of the theory of relative-absolutism (special relativity version 2.0)

The main content of special relativity in version 2.0 is Newton's view of space and time plus the effect of relativity. The principle of relativity and the principle of invariance of the speed of light in the special theory of relativity in version 1.0 have been abandoned, but it is recognized that the principle of relativity and the principle of invariance of the speed of light are approximately applicable under certain conditions. The inference that space shrinks in the direction of motion due to motion is abandoned, but the inference that objects shrink in all directions due to motion is drawn (See reference [22] for reasons). The new relativistic effect of "the effective field is related to the velocity of the field source or medium" is applied to electrodynamics. The reserved and newly added effects of special relativity are: the clock of absolute motion slows down; the mass of absolute motion increases; the object in absolute motion shrinks in all directions; the effective field is related to the state of the motion of the field source. Since we recognize the existence of absolute stationary systems or absolute motion, we must logically deny the principle of relativity. However, the principle of relativity is allowed to hold approximately.

Lorenz transformation can be used safely in electrodynamics. However, in electrodynamics, the x and t are no longer space-time coordinates in the transformation. They are used more frequently to represent wavelengths, frequencies, distances, and times. The reason is that the interpretation of the Lorenz transformation is necessarily influenced by the existence of an absolute stationary system.

At first glance, the 2.0 version of special relativity is a compromise between Newton's view of absolute space-time and Einstein's view of relative space-time, which can also be called "theory of relativity-absolutism". However, from a philosophical point of view, it seems that this is the case. From the perspective of physics, the 2.0 version of special relativity is the result of the in-depth development of a scientific theory (for example, the scope of application of the relativistic effect has been expanded to make the relative space-time view and the absolute space-time view coexists peacefully). The 2.0 version of special relativity is not a complete denial of the 1.0 version of special relativity (we can't deny Lorentz transformation in experiment), but rather a limitation of the scope of application of the principle of relativity and the principle of invariance of the speed of light. The principle of relativity can only be approximately established when the absolute velocity of the system is low and the relative velocity of the target is high. The principle of constant speed of light can only be that the absolute speed of photons in vacuum is independent of the motion state of the light source. We give examples to explain the difference and relationship between "absolute velocity of the system" and "relative velocity of the target". Two small balls collide in an absolutely moving carriage. The absolute speed of the train is the absolute speed of the system, and the speed of the two small balls in the carriage relative to the carriage is the relative speed of the target. The so-called target is the object being observed or studied.

5. Gravitational field equation considering the motion effect of field source

As mentioned above, the Einstein gravitational field equation is also a field equation in the case of stationary distribution of matter. Unfortunately, the motion of matter can produce two motion effects that affect the interaction of gravity (or the instantaneous curvature of space-time). Einstein's gravitational field equation does not meet the requirements. As mentioned above, version 2.0 of special relativity considers the effect of relativistic motion effects on electromagnetic interactions. Therefore, the way in which version 2.0 of special relativity deals with the relativistic effects of a moving field source can be extended to general relativity.

The concept of gravitational field waves was mentioned earlier. When two small black holes synthesize a large black hole at 1.3 billion light years from the earth, the field waves generated by the

two small black holes spinning around each other delay 1.3 billion light years before reaching the earth (Several scientists have won Nobel prizes for detecting gravitational waves in this event). The gravitational interaction between the earth and those two black holes was also delayed by 1.3 billion light years. Immediate gravitational interactions are clearly affected by negligible effects. That is, for a gravitational field source moving at high speed, the delayed effect of the gravitational field must be considered. Formula (7) shows that the effective field caused by the delay of the electric field can be described by incorporating the delay factor into the electric interaction coefficient $\frac{1}{4\pi\varepsilon_0}$. In Newtonian mechanics, the form of gravitational interaction and electric interaction is extremely symmetrical. In this way, the delayed effect of the gravitational field can also incorporate the retarded factor into the gravitational constant G (we can also multiply the gravitational constant G by a factor η^2). In addition, special relativity recognizes that quality increases with movement. The coefficient of mass increase is γ . "Coefficient of generalization γ Merging it into G works exactly the same as "using it as a multiplier before mass M". Thus, for a substance moving at high speed, the gravitational field equation is

$$R^{\mu\nu} - \frac{1}{2} g^{\mu\nu} R = -(\eta^2\gamma)\frac{8\pi G}{c^4} T^{\mu\nu}_{(M)} . \qquad (14)$$

Einstein's gravitational theory believes that the mass distribution of matter affects the curvature of space-time. Is the physical mechanism that the mass directly affects space-time, or does the mass of matter first send out the gravitational field, and then the gravitational field affects the curvature of space-time? The first is actually an unknown mechanism. If we choose the second mechanism, we will recognize the existence of gravitational field. As long as a gravitational field exists, gravitational interactions can occur by exchanging gravitons. Einstein's theory of gravity states that the effect of curvature of space-time is represented by gravitation. Thus, under the second space-time bending mechanism, the gravitational interaction of one celestial substance with other celestial substances is twofold (one caused by gravitational field, the other by space-time bending). If you don't want to admit this double gravitational interaction, you must either find a mechanism to shield it from gravitational interaction caused by graviton exchange or deny that space-time can be bent. The first mechanism is mathematical rather than physical (or physically unknown) and has no advantages. Theoretically, the geometrization of gravity or the bending of space-time can be used as a mathematical way to describe gravity, regardless of whether space-time is actually bent by mass or not. That is, geometrization of gravity does not require that space really be bendable. In other words, gravitational geometry can be used regardless of whether space-time really bends.

Existing textbooks and network information explain gravitational waves in this way. Changes in mass distribution result in changes in space-time curvature. This space-time ripple of space-time curvature change is also called space-time oscillation or gravitational wave. When the mass in a space disappears or leaves it, the space must be able to restore its flat condition. Space-time oscillations propagate outward, requiring "the space-time oscillations conform to the law of kinetic-potential energy conservation" and "the space-time has complete elasticity" to maintain (this is how water waves move forward). There's a problem! Does space without solid matter carry kinetic and potential energy? If it can be carried, what is the way to carry it? Can space be elastic without matter? If these problems cannot be clearly addressed, space-time curvature ripples (or curvatures) cannot be considered true. In the measurement results of gravitational waves using LIGO, the intensity of noise is far greater than the reported measurement results. According to the general

provisions of experimental theory and method, this measurement result is extremely unreliable. If it is firmly believed that noise can be eliminated theoretically and the measurement results are reliable, the role of subjective factors can not be ignored and the measurement results become theoretical results.

The above two natural paragraphs discuss the puzzlement of the formation mechanism and propagation mechanism of space-time curvature oscillation. One way to eliminate this confusion is to abandon the idea that time and space can be curved. As long as the curvature of space-time is not real, the contraction of space-time is not real.

6. Conclusion

As mentioned above, relativity version 2.0 can solve all problems that relativity version 1.0 can solve. It no longer has the logical contradictions of special relativity in version 1.0, and can overcome the shortcomings of "relativity in version 1.0 does not apply the relativistic effect (the motion effect of field source) to electrodynamics and general relativity". We complete the task in the following way. We sublate the principle of special relativity and change the principle of constant speed of light. We have been deleted the corollary of relativity of simultaneously. The new relativistic effect of "the effective field of moving charge is related to the moving speed of electric field source" is applied to electrodynamics. Transform the inference that "space shrinks due to motion" into "object shrinks in all directions due to motion". We also apply the relativistic effect of the motion of the field source to the general relativity, and obtain a gravitational field equation of the motion field source. These research results and whether the gravitational geometry must require the space-time to bend due to mass are worth further discussion.

We hope that readers can compare the advantages and disadvantages of the 1.0 version of Relativity and the 2.0 version of Relativity from two aspects of practicality and logical contradictions and judge the value of this article.

Refocuses

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