

A NEW PRINCIPLE FOR ELIMINATION OF APPLIED DEFECTS IN THE RELATIVITY THEORY

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ABSTRACT: *This paper puts forward the force equilibrium invariance axiom and derives the force transformation formula of the special relativity; puts forward the correlation analysis law and eliminates some problems resulted from the improper application of relativity; puts forward the principle of absolute velocity, determines the running speed of any moving object in real time, and solves the problem of twin paradox; puts forward the corresponding principle and determines the relationship between the rest mass and the reference frame; puts forward the concept of absolute transformation and relative transformation and clarifies two different natures of Lorentz transformation; puts forward the field similarity principle and determines the gravitational mass as a constant that has nothing to do with the velocity; infers that the equivalence principle is false and that the general relativity is only applicable to low speed moving objects; puts forward the gravity double equilibrium principle and concludes that Black Hole could not exist. It also analyzes the limiting speed of manned spaceship, and concludes that human beings cannot realize time travel of practical significance.*

KEYWORDS: Special Relativity, General Relativity, Lorentz Transformation, Relative Velocity, Absolute Velocity, Time Running Speed, Relative Transformation, Absolute Transformation, Electric Field, Gravitational Field, Principle of Equivalence, Universal Gravitation, Black Hole, Time Travel.

INTRODUCTION

Since the Theory of Relativity (including special relativity and general relativity) was proposed more than one hundred years ago, there are still some basic problems without scientific explanation or even with no explanation.

Many people don't understand the time transformation. Due to special relativity, A and B relatively move at the speed v , then A determines that the time of B t_B (the running speed of time, namely the speed of the clock) is smaller than the time of A t_A , that is,

$t_B = t_A \sqrt{1 - v^2/c^2}$. However, B also determines $t_A = t_B \sqrt{1 - v^2/c^2}$, namely t_A is smaller than t_B . Obviously, the judgment of A and B are contradictory, so we do not know which one

is smaller.

There are many objects $m_1, m_2, m_3 \dots$, whose respective time is expressed as $t_1, t_2, t_3 \dots$,

whose velocity relative to the object m is respectively expressed as $v_1, v_2, v_3 \dots$

According to special relativity, m_1 deduces the time of m as $t_{m1} = t_1 \sqrt{1 - v_1^2/c^2}$, m_2

deduces the time of m as $t_{m2} = t_2 \sqrt{1 - v_2^2/c^2}$, m_3 deduces the time of m as

$t_{m3} = t_3 \sqrt{1 - v_3^2/c^2}$. Obviously, $t_{m1} \neq t_{m2} \neq t_{m3}$, that the real time of m is impossible to be

equal to $t_{m1}, t_{m2}, t_{m3} \dots$ at the same time. This example shows that, according to special

relativity, it is not possible for arbitrary object to deduce the real time of another object from the relative velocity.

Through an imaginary experiment, it is proved that the real time of arbitrary object is independent of the relative motion of the other object. Launch a spacecraft A in a place on the Earth to revolve around the Earth in elliptical orbit, whose rotation cycle is T. After a period

of $T/2$, launch spacecraft B in the same place to revolve around the Earth in elliptical orbit,

whose rotation cycle is also T. If the people on Earth see the movement velocity of A and B at

the speed v , spacecraft A or B both see the opposite spacecraft moving at the speed $2v$.

According to special relativity, A and B both confirm that the time B and A is shortened. A

concludes $t_B = t_A \sqrt{1 - 4v^2/c^2}$ while B concludes $t_A = t_B \sqrt{1 - 4v^2/c^2}$. After a period of time,

A and B will return to the Earth at $T/2$ intervals. As A and B have exactly the same flight

process, if there is a reduction process for t_A and t_B , the reduction extent of A and B must

be the same. After return to the Earth, the time difference of A and B must be exactly the same as that before they were launched. This shows that based on special relativity, A and B in relative motion to deduce the conclusion that the time of the other one is shortened than its own time is wrong.

From the above analysis, let's discuss the twin paradox. In this problem, the twin A escapes from the Earth by spaceship. In the view of twin B, A moves relatively to B, and the time of A must be decreased, therefore B deduces that A must be younger than B when A returns to the Earth. However, A also sees that B moves relatively to A, A also deduces that the time of B is decreased, and finds out that B is younger than A when A returns to the Earth. Obviously, the judgment of A and B are contradictory.

Our previous analysis shows that for the two objects in relative motion, the conclusion of the

time decrease of each other is not realistic, that is to say, the twin A and B could not determine whether the other is younger according to the relative velocity, namely there is no twin paradox. However, satellite time experiments show that the satellite clock is indeed slower than the Earth's clock, that is, t is decreased. This shows that, according to special relativity, it can deduce by the relative velocity that the time decrease in the satellite is in accord with the actual situation; on the other hand it also shows that it is wrong for people on the satellite to deduce the time decrease on Earth by the relative velocity. How to explain this phenomenon? The popular explanation currently is that the starting and accelerating process for the satellite to escape from the Earth leads to the time decrease of the satellite, that is, it makes twin A younger than twin B. Through the analysis, this explanation is not scientific, because for a satellite returning to Earth in one day, and a satellite returning to Earth after ten years, the starting and accelerating process is exactly the same. Does the satellite flying one day and flying ten years have the same effect? So, this explanation is not scientific, not to mention the following notes that the time of the clock on the flying aircraft can not only be decreased, but also increased (the clock goes faster). This can completely negate the explanation that the starting and accelerating causes the time decrease.

From the above analysis, we can see that the time transformation of special relativity has two basic problems that could not be explained: 1) the logical reasoning can draw the conclusion that it is not correct for an arbitrary object to deduce the real time of another object according to the relative velocity. If the conclusion is true, does it mean that the time transformation of special relativity does not fully meet the actual?, and 2) since people on Earth and people in the satellite have the same relative velocity, then, why it is realistic for the people on Earth to deduce the time decrease of satellite according to the relative velocity, while it is not consistent with the actual for the people in the satellite to deduce the time decrease of the Earth according to the same relative velocity (actually the time is relatively increased)?

Special relativity points out that there is a constant rest mass for any object. The rest mass is the mass of the object when the object is stationary relative to the Earth. However, the Earth is different from Mars, Saturn and the Moon and other celestial bodies. It may well be asked that whether the rest mass of the same object detected on Mars, Saturn and the Moon is different from the rest mass detected on the Earth. If the rest mass detected on each celestial body is different, then how to deduce the difference?

The mechanism has four basic physical quantities as length, quality, time and force. Now special relativity has identified transformation formula of the relation between the object's length, quality, time and movement velocity, but whether there is a relationship between the acting force and movement velocity is uncertain. If there is a relationship, how to transform has not been clearly explained, therefore, to determine the relationship between the acting force and movement velocity of the object is very necessary.

When analyzing some physical phenomena based on special relativity, we often get some wrong analysis results, for example:

The elliptical orbit of the planets revolving around the Sun basically is constant. An observer

moving at high velocity relatively to the Sun sees that the Sun and the planets move at the same velocity relatively to him (without considering the slow movement of planets relative to the sun), but it does not change the motion of planetary orbits. However, according to special relativity, the mass of the Sun and planets at high speed should have obvious changes, for instance the mass of the Sun represented by M , the mass of the planet represented by m . According to the principle of equivalence, gravitational mass is equal to inertial mass. The inertial mass and gravitational mass of the Sun and planets in high-speed motion will be transformed to $M' = M/\sqrt{1-v^2/c^2}$ and $m' = m/\sqrt{1-v^2/c^2}$. Because the universal gravitation between the Sun and the planets is proportional to $M' m'$, that is, proportional to $1/(1-v^2/c^2)$, while the centrifugal force of the planets to the Sun is only proportional to inertial mass m' , that is, proportional to $1/\sqrt{1-v^2/c^2}$. Obviously, $1/(1-v^2/c^2) > 1/\sqrt{1-v^2/c^2}$, the universal gravitation of the Sun to the planets is larger than the planets' centrifugal force, then the planets will be attracted to the sun. Apparently it does not conform to the fact that special relativity's judgment seems to be wrong code. If the equivalence principle is false that gravitational mass has nothing to do with the movement velocity, the observer should deduce that the gravitation of the Sun to the planets is independent of the velocity. However, the inertial mass of planets must be $m' = m/\sqrt{1-v^2/c^2}$, so the centrifugal force of the planets to the Sun is larger than the universal gravitation of the Sun to the planets, then the planets will fly away from the sun, which is also inconsistent with the facts. From the above analysis, we conclude that according to special relativity, the universal gravitation of the Sun to the planets and the centrifugal force of the planets to the Sun in high-speed motion relatively to the Sun are not correct.

For another example, the fact shows that the displacement distance of object A with mass m , force F , through the time of t on object B must be $S = Ft^2/2m$. However, according to special relativity, in the view of the observer in motion at the velocity v parallel to F relative to B, m of A should be transformed to $m' = m/\sqrt{1-v^2/c^2}$, t should be transformed to $t' = t\sqrt{1-v^2/c^2}$, so the displacement distance of A on B should be $S' = Ft'^2(1-v^2/c^2)^{3/2}/2m$. But according to the length transformation formula of special relativity, the actual distance on B S should be transformed to $S'' = S\sqrt{1-v^2/c^2} = Ft^2\sqrt{1-v^2/c^2}/2m$, obviously, $S' \neq S''$. That is to say, the inference of special relativity is self contradictory.

The above analysis shows that, according to the general analysis method of special relativity,

the deduction of some basic physical phenomena does not accord with the actual conclusion.

The equivalence principle of general relativity assumes that gravitational mass is equal to inertial mass. For hundreds of years, in order to determine the relationship between gravitational mass and inertial mass, Galileo, Newton et al made a lot of experiments which show that, in general, the gravitational mass and inertial mass of an object have a constant ratio. Therefore, as long as select the appropriate proportion units, it can conclude that gravitational mass of the object is equal to inertial mass. But through the analysis of their experiments, it can be seen that all experiments obtained the results under the condition of low movement velocity of the object. No one has made the experiments about the ratio of gravitational mass and inertial mass under the condition of high movement velocity. Under the condition of high movement velocity, the object's inertial mass is obviously increased.

According to special relativity, the inertial mass m_1 of the object in motion at high speed

v increases to $m'_1 = m_1 / \sqrt{1 - v^2/c^2}$. Numerous experiments have confirmed the conclusion

undoubtedly. Set the object's gravitational mass as m_2 . If gravitational mass and inertial

mass are equal, there must be $m'_2 = m_2 / \sqrt{1 - v^2/c^2}$. So far, no experiment has confirmed this conclusion, on the contrary, based on the simple logic analysis, it can prove

$m'_2 \neq m_2 / \sqrt{1 - v^2/c^2}$.

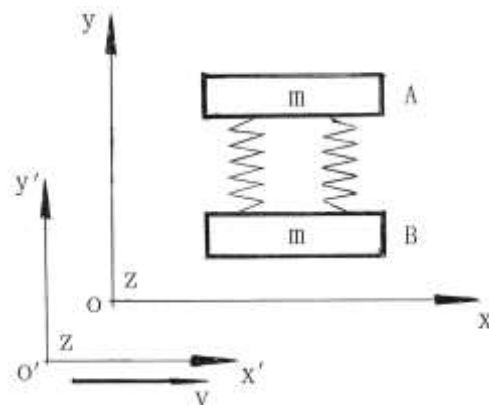


Fig. 1 Spring compressed neither in Z nor in Z'

According to Fig 1, the object is composed of the cube A and B with the same mass m up and down, which is connected together with two springs. In our view of the inertial system Z , the shape of this object is constant. But in the view of people in motion at high speed V of the inertial system Z' relatively to Z , regarding the movement at high speed $-V$, the mass and length of the object are both changed. We do not discuss the changes of the length

of the object, but only analyze the changes of the mass which is divided into two aspects of inertial mass and gravitational mass. According to special relativity, the inertial mass $2m_1$ of the object (without considering the spring mass) should be increased to $2m'_1 = 2m_1/\sqrt{1-v^2/c^2}$. Its momentum is transformed to $2m'_1V$. The experiments show that such inference is consistent with the actual. The equivalence principle points out that gravitational mass and inertial mass are equal, therefore, gravitational mass should also be increased to $2m_2/\sqrt{1-v^2/c^2}$. Gravitational mass of object A and B must be increased to $m'_2 = m_2/\sqrt{1-v^2/c^2}$ respectively. Since there is universal gravitation between A and B, which is in direct proportion to the product of gravitational mass of A and B, $m'_2m'_1/m_2m_1$ is equal to $1/(1-v^2/c^2)$, therefore, the people in Z' must deduce that the universal gravitation between A and B is increased by $1/(1-v^2/c^2)$. When V is very large, there will be significant compression for the spring. When V is approaching the speed of light, A and B should fit in one piece. Z sees that the spring cannot be deformed, Z' also cannot see the same spring deformation (the length vertical to V does not change), therefore, according to special relativity Z' can deduce that, gravitational mass cannot be in direct proportion to $1/\sqrt{1-v^2/c^2}$ when the object moves at the velocity V . That is to say, gravitational mass and inertial mass are not equal, so, it can be judged that the equivalence principle is false. As we all know, if the equivalence principle is not true, does general relativity also have problems?

The above part discussed from several aspects about some problems and defects may arise in the analysis of problems based on the relativity theory. Do these defects indicate that the theory of relativity is wrong? I don't think the relativity is wrong, but the deviations arise when use the relativity theory to analyze problems. The reasons for these deviations are the wrong analysis methods. Therefore I think that, in order to use the correct methods to apply the relativity theory, it is necessary to add some new analytical principles. Below I will describe some basic principles which should be added.

Invariance axiom of force equilibrium

Place an object of 1 kilogram on the spring scale, the pointer of the spring scale will fix on the position of 1kg. The position of 1kg is not only the position of 1kg for the people who are relatively static to the spring scale, but also for other people in any motion. This fact shows that for a group of force in equilibrium in a reference frame, the observer of any other reference frames can also observe the group of force in equilibrium. In other words, a group of force in equilibrium will never change the state of equilibrium along with the different

reference frames where the observer stays. This is the fact recognized by people in daily life. I call this fact as equilibrium invariance axiom. We can derive the formula of force transformation according to the force equilibrium invariance axiom.

Deduction of force transformation formula

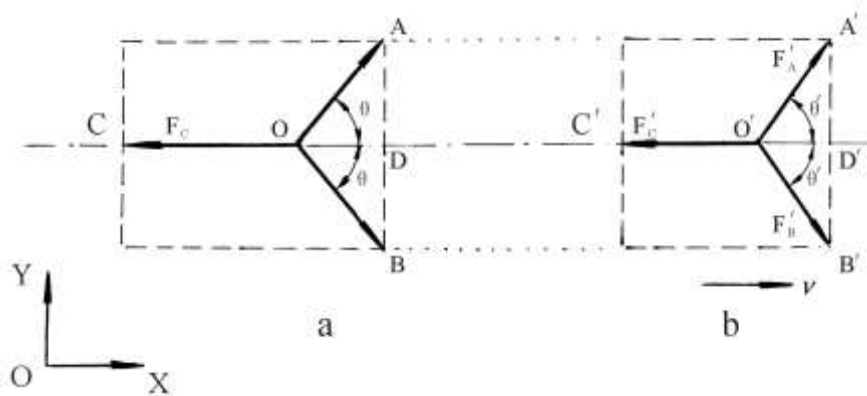


Fig. 2 Changes of force in motion

Fig. 2a represents three forces F_A , F_B , F_C in a state of equilibrium. These three forces can be the electric field force, also the universal gravitation or the spring force and so on. In the figure, the length of OA, OB, OC respectively represents the size of F_A , F_B , F_C , F_C is parallel to the X axis, F_A is equal to F_B , the angle between them and X axis are θ (not considering the positive or negative of θ). Due to the three forces in equilibrium, there will be $F_A \cos \theta + F_B \cos \theta = F_C$. Because of the equal size of F_A and F_B , to make the derivation simple, let $F_A = F_B = F$, there will be $2F \cos \theta = F_C$.

Fig. 2b represents the three forces in fig. 1a to move parallel to X axis at the velocity v . According to special relativity, the length of direction v (direction X) should be shortened, while F_C in fig. 1a should be shortened to F'_C , F_A and F_B should be shortened to F'_A , F'_B respectively. According to the force equilibrium invariance axiom, F'_C and F'_A , F'_B

are still in a state of equilibrium, F'_A and F'_B are naturally equal. Let $F' = F'_A = F'_B$, similarly there will be $2F' \cos \theta' = F'_C$.

We infer the relationship between F_C and F'_C according to the changes of the electric field force in motion.

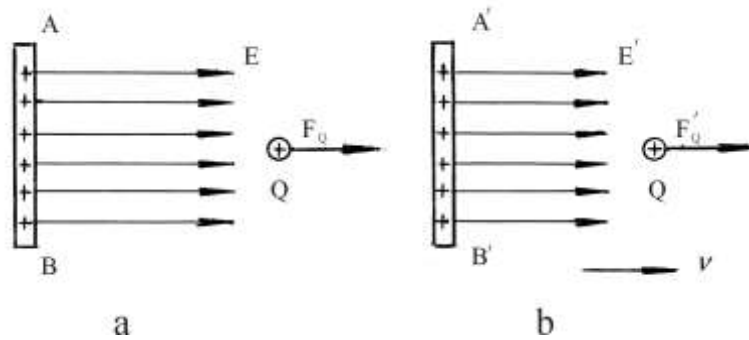


Fig. 3 the electric field in motion parallel to the electric field strength line E

Fig. 3a indicates that the charge Q is in a uniform electric field generated by the "infinite" charged flat plate; E indicates the electric field strength, AB represents a section of the charged plate. Obviously, the force of Q is $F_Q = EQ$.

Fig. 3 indicates that after AB moves parallel to E at the velocity v , AB becomes $A'B'$. According to special relativity, the length vertical to direction v maintains the same size after movement, therefore there will be $A'B' = AB$, naturally there will be the electric field strength of $A'B'$ $E' = E$. Therefore, the force of $A'B'$ in the electric field Q is $F'_Q = E'Q = EQ = F_Q$. From this fact, it is

known that the force F_Q will not change after the movement in the direction parallel to

() . For the force of fig. 2, there must be $F'_C = F_C$. Due to $F'_C = 2F' \cos \theta'$,

$F_C = 2F \cos \theta$, there must be $F' \cos \theta' = F \cos \theta$.

$$F' = F \frac{\cos \theta}{\cos \theta'}$$

It can be seen in figure 1 that

$$\cos \theta = \frac{OD}{\sqrt{OD^2 + AD^2}} \quad \cos \theta' = \frac{O'D'}{\sqrt{O'D'^2 + A'D'^2}}$$

Because the length vertical to direction v maintains the same size, there will be $A'D' = AD$. While the length $O'D'$ in the direction v has $O'D' = OD\sqrt{1-v^2/c^2}$ according to the length transformation formula of special relativity, based on the equation of $A'D'$ and $O'D'$, $\cos\theta'$ can be transformed to

$$\begin{aligned}\cos\theta' &= \frac{OD\sqrt{1-v^2/c^2}}{\sqrt{OD^2(1-v^2/c^2)+AD^2}} \\ F' &= F \frac{\cos\theta}{\cos\theta'} = F \frac{OD}{\sqrt{OD^2+AD^2}} \cdot \frac{\sqrt{OD^2(1-v^2/c^2)+AD^2}}{OD\sqrt{1-v^2/c^2}} \\ &= F \sqrt{\frac{(OD^2+AD^2)-OD^2v^2/c^2}{(OD^2+AD^2)(1-v^2/c^2)}}\end{aligned}$$

Substitute $\cos\theta' = OD/\sqrt{OD^2+AD^2}$ to the above formula and conclude that

$$F' = F \sqrt{\frac{1-\cos^2\theta v^2/c^2}{1-v^2/c^2}} \quad (1)$$

Due to $F' = F \cos\theta/\cos\theta'$; $\cos\theta' = F \cos\theta/F'$ concludes

$$\begin{aligned}\cos\theta' &= \cos\theta \sqrt{\frac{1-v^2/c^2}{1-\cos^2\theta v^2/c^2}} \\ \theta' &= \cos\theta^{-1} \cos\theta \sqrt{\frac{1-v^2/c^2}{1-\cos^2\theta v^2/c^2}}\end{aligned} \quad (2)$$

The above formula (1) and (2) are the transformation formula of force in motion at the

speed v . The formula, like the transformation formula of length, time, mass, should be the basic transformation formula of special relativity.

Electric field distribution of charged particles in motion deduced by force transformation formula

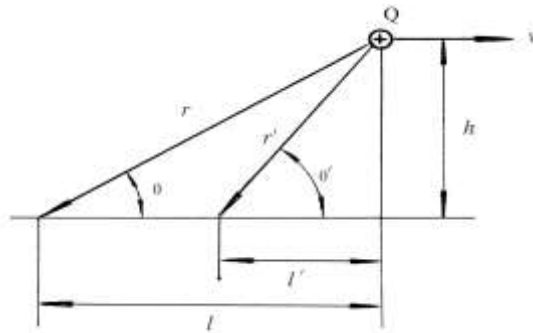


Fig. 4 When the charged particles move with the velocity v , r becomes r'

The positively charged particle Q in fig. 4 moves at the velocity v , the length l in static state will be contracted to $l' = l\sqrt{1-v^2/c^2}$ after movement. The height h vertical to direction v maintains the same before and after movement. r in static state will be contracted to r' after movement. It can be known by the figure that $l = r \cos \theta$, $l' = l\sqrt{1-v^2/c^2} = r \cos \theta \sqrt{1-v^2/c^2}$, $h = r \sin \theta$ have

$$\begin{aligned} r' &= \sqrt{l'^2 + h^2} = \sqrt{r^2 \cos^2 \theta (1-v^2/c^2) + r^2 \sin^2 \theta} \\ &= r \sqrt{1 - \cos^2 \theta v^2/c^2} \end{aligned} \quad (3)$$

Due to $h = r \sin \theta = r' \sin \theta'$ with $\sin \theta' = \sin \theta r/r'$, substitute formula (3) and conclude that

$$\sin \theta' = \sin \theta / \sqrt{1 - \cos^2 \theta v^2/c^2} \quad (4)$$

The acting force of Q in the electric field with the electric field strength E is $F=EQ$, that is, the electric field strength E and the acting force F is directly proportional, so the force transformation type (1) can also be written as the electric field strength transformation type:

$$E' = E \sqrt{\frac{1 - \cos^2 \theta v^2 / c^2}{1 - v^2 / c^2}} \quad (5)$$

Transform formula (5) to

$$\begin{aligned} E' &= E \sqrt{\frac{1 - \cos^2 \theta v^2 / c^2}{1 - v^2 / c^2}} \cdot \frac{(1 - \cos^2 \theta v^2 / c^2)(1 - v^2 / c^2)}{(1 - \cos^2 \theta v^2 / c^2)(1 - v^2 / c^2)} E \\ &= \frac{(1 - \cos^2 \theta v^2 / c^2)^{3/2}}{(1 - v^2 / c^2)^{3/2}} \cdot \frac{1 - v^2 / c^2}{1 - \cos^2 \theta v^2 / c^2} E \\ &= \frac{1 - v^2 / c^2}{\left(\frac{1 - v^2 / c^2}{1 - \cos^2 \theta v^2 / c^2} \right)^{3/2}} \cdot \frac{E}{1 - \cos^2 \theta v^2 / c^2} \end{aligned}$$

Due to $1 - v^2 / c^2 = 1 - (\sin^2 \theta + \cos^2 \theta) v^2 / c^2$, the above formula can be transformed to

$$E' = \frac{1 - v^2 / c^2}{\left(1 - \frac{\sin^2 \theta v^2 / c^2}{1 - \cos^2 \theta v^2 / c^2} \right)^{3/2}} \cdot \frac{E}{1 - \cos^2 \theta v^2 / c^2}$$

Substitute formula (3) $\sqrt{1 - \cos^2 \theta v^2 / c^2} = r' / r$ and formula (4)

$\sin \theta' = \sin \theta / \sqrt{1 - \cos^2 \theta v^2 / c^2}$ to this formula and conclude

$$E' = \frac{1 - v^2 / c^2}{(1 - \sin^2 \theta' v^2 / c^2)^{3/2}} \cdot \frac{r^2}{r'^2} E$$

Due to $E = kQ / r^2$, substitute to the this formula and conclude

$$E' = K \frac{1 - v^2 / c^2}{(1 - \sin^2 \theta' v^2 / c^2)^{3/2}} \cdot \frac{Q}{r'^2} \quad (6)$$

Formula (6) is the electric field distribution formula of the charged particles in motion at the speed v . By comparison, this formula is the same as the formula deduced by electrodynamics.

When the object moves, the force should be transformed with the length, time and mass. For example, when the charged particles move in a magnetic field, the Lorentz force of particles will be transformed. Detailed analysis is shown in references 3.

Correlation Analysis Law

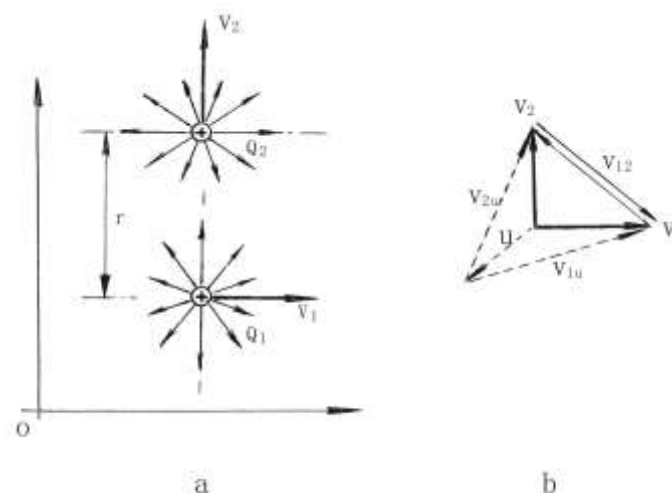


Fig. 5 Interaction force of two moving charges

Fig. 5a, in the reference frame Z , the movement speed and the carrying capacity of the two positive charges are V_1 , V_2 and Q_1 , Q_2 respectively. According to the former formula (6), the electric field strength of Q_2 generated in Q_1 is (in the following formulas Y_0 represents the unit vector of direction Y).

$$E'_2 = k \frac{(1 - V_2^2/C^2)Q_2}{(1 - V_2^2 \sin^2 \theta / c^2)^{3/2} \cdot r^2} (-Y_0) \quad (7)$$

Therefore, the force of Q_1 will be

$$F_1 = E'_2 Q_1 = \frac{(1 - V_2^2/C^2)Q_1 Q_2}{r^2} (-Y_0)$$

The electric field strength of Q_1 generated in Q_2 will be:

$$E'_2 = k \frac{(1 - V_1^2/c^2)Q_1}{(1 - V_1^2 \sin^2 90^\circ/c^2)^{3/2} \cdot r^2} (Y_0) \quad (8)$$

The force of Q_2 will be:

$$F_2 = E'_2 Q_2 = \frac{Q_1 Q_2}{\sqrt{1 - V_1^2/c^2} \cdot r^2} (Y_0)$$

Obviously, the action and reaction force between $F_2 \neq F_1$, Q_1 and Q_2 are different, that is, the law of reaction is false.

If there is another observer in motion at the speed u relative to Z , in fig. 4b he will observe that the velocity of Q_1 is $V_{1v} = V_1 - u$, the velocity of Q_2 is transformed to $V_{2v} = V_2 - u$. It can be seen in fig. 5b that V_{1v} and V_{2v} are different and opposite, obviously the result is still $F_2 \neq F_1$, namely the law of reaction is false.

Because the law of reaction is recognized by the law, the law is also interrelated with the law of conservation of energy and other laws, its correctness is undoubted, and therefore, we can be sure that the analysis method above is wrong. Under the conditions not in violation of the law of reaction, how to analyze the interaction of Q_1 and Q_2 in fig. 5? Firstly, we should take the law of reaction as the inevitable result, that the action and reaction are constant to be equal and opposite. Another form of equilibrium state of the force must be independent of the observer of any reference frames according to the force equilibrium invariance axiom, namely the interaction between Q_1 and Q_2 is independent of any observers. Q_1 is only related to Q_2 , while Q_2 is only related to Q_1 , that is to say, the physical function of Q_1 by Q_2 is only related to the physical quantities related to Q_2 , which has nothing to do with any other observers. Of course, the physical function of Q_2 by Q_1 is only related to the physical quantities related to Q_1 . Regarding fig. 5a, the force of Q_1 by Q_2 is only related to the movement velocity, distance of Q_2 relative to it, and the amount of electricity of Q_2 . Q_1

observes that the movement velocity of Q_2 relative to it is $V_{21} = V_2 - V_1$, while Q_2 observes that the movement velocity of Q_1 relative to it is $V_{12} = V_1 - V_2$. Obviously, $V_{12} = -V_{21}$ [see fig. 5b]. Q_1 observes that the electric field direction of Q_2 is in the direction $-Y_0$ (unit vector in $Y_0 - Y_0$ -direction), the distance from Q_2 to it is r .

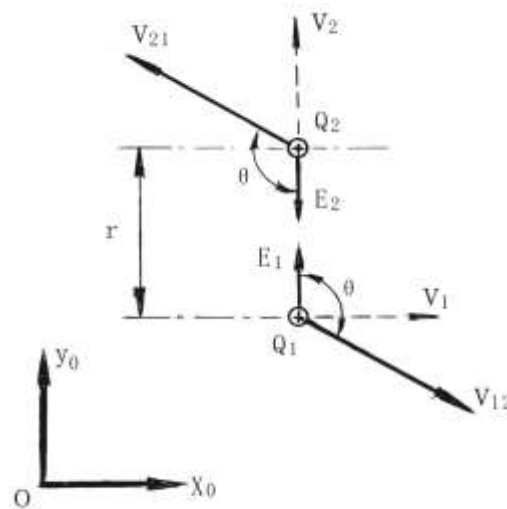


Fig. 6 Respective physical parameters of Q_1 and Q_2

Q_1 observes the electric field strength of Q_2 to it as:

$$E'_{21} = k \frac{(1 - V_{21}^2/c^2)Q_2}{(1 - V_{21}^2 \sin^2 \theta_1^2/c^2)^{3/2} \cdot r^2} (-Y_0) \quad (\theta_1 \text{—see fig. 6})$$

Q_1 force

$$F_1 = E'_{21}Q_1 = k \frac{(1 - V_{21}^2/c^2)Q_1Q_2}{(1 - V_{21}^2 \sin^2 \theta_1^2/c^2)^{3/2} \cdot r^2} (-Y_0) \quad (9)$$

Similarly, Q_2 observes the electric field strength of Q_1 to it as:

$$\mathbf{E}'_{12} = k \frac{(1 - V_{12}^2/C^2) Q_1}{(1 - V_{12}^2 \sin^2 \theta_2 / c^2)^{3/2} \cdot r^2} (\mathbf{Y}_0) \quad (\theta_2 \text{ — see fig. 6})$$

Q_2 所受的力

Q_2 force

$$\mathbf{F}_2 = \mathbf{E}'_{12} Q_2 = k \frac{(1 - V_{12}^2/C^2) Q_1 Q_2}{(1 - V_{12}^2 \sin^2 \theta_2 / c^2)^{3/2} \cdot r^2} (\mathbf{Y}_0) \quad (10)$$

Since the direction of $\mathbf{V}_{12} = -\mathbf{V}_{21}$ (\mathbf{E}'_{12} direction $-\mathbf{Y}_0$) and \mathbf{E}'_{21} (direction \mathbf{Y}_0) is opposite,

there must be $\theta_2 = \theta_1$ and $\mathbf{V}_{12}^2 = -\mathbf{V}_{21}^2$ must have

$$\mathbf{F}_2 = -\mathbf{F}_1$$

That is to say, the acting force and reactive force of Q_1 and Q_2 are the same in the opposite direction, conforming to the law of reaction.

The former explains that, for an arbitrary observer moving at the velocity u relatively to Z , the movement velocity of Q_1 is $\mathbf{V}_{1u} = \mathbf{V}_1 - \mathbf{u}$, the velocity of Q_2 is $\mathbf{V}_{2u} = \mathbf{V}_2 - \mathbf{u}$. Q_1 observed the movement velocity of Q_2 as $\mathbf{V}_{21u} = \mathbf{V}_{2u} - \mathbf{V}_{1u} = \mathbf{V}_{21}$ [see fig. 5b] while Q_2 observed the movement velocity of Q_1 as $\mathbf{V}_{12u} = \mathbf{V}_{1u} - \mathbf{V}_{2u} = \mathbf{V}_{12}$. The relative velocity of Q_1 and Q_2 are still \mathbf{V}_{21} and \mathbf{V}_{12} , the interaction force of Q_1 and Q_2 \mathbf{F}_1 and \mathbf{F}_2 are still expressed by formula (9) and (10), namely still $\mathbf{F}_2 = -\mathbf{F}_1$.

The above analysis shows that when the observer of any reference frame in accordance with the relevant physical quantity of Q_1 and Q_2 deduce the action and reaction between each other, the results are exactly the same, which is consistent with the law of reaction.

Generalize the reaction analysis results above to all physical phenomena, the conclusion is that the physical interactions of any two objects can only be analyzed by the physical quantity of two objects related to each other, which have nothing to do with any object outside the two objects. Define this conclusion as the correlation analysis law.

It should be pointed out that the former formula (7) and (8) are not the wrong formulas. According to the correlation analysis law, formula (7) is the correlation analysis between the observer in Z and the two related objects in Q_2 , which is the real electric field distribution of Q_2 observed by the observer in Z . But this observation is not the observation of Q_1 , the two cannot be confused. Similarly, formula (8) is the real electric field distribution of Q_1 observed by the observer in Z .

According to the correlation analysis law, it is easy to make explanation to the incorrect inferences on planetary orbits by the observer in motion at high speed relative to the Sun in the example in 1.4. According to this law, the observer's deduction of mass increase to the Sun and planets is just the relevant deduction result of the observer to the Sun and planets. Although this is a correct deduction, it has nothing to do with the deduction of the Sun to the planets or the planets to the sun. The interaction between the Sun and planets is only related to the physics quantities related to each other. The rotation velocity, distance of the planets to the sun, the centrifugal force generated by its mass are equal to the universal gravitation of the Sun mass to the planets, therefore, the two are in a state of equilibrium.

For the example in 1.4, it is easy to explain the incorrect inferences on the displacement distance of A on B by the observer in motion at the speed V relatively to AB. According to the correlation analysis law, the observer's deduction of $S'' = S\sqrt{1-v^2/C^2}$ is correct, but this deduction is just the correlation analysis between the observer and B, which is independent of the analysis of A to B. Similarly the observer's deduction of $m' = m/\sqrt{1-v^2/c^2}$ and $t' = t\sqrt{1-v^2/c^2}$ is also correct, but this is just the correlation analysis between the observer and A, which is independent of the analysis of B to A. The displacement distance of A on B is only related to the relevant physical quantities of the two.

The correlation analysis law can not only deduce the problem correctly, but also simplify the problem.

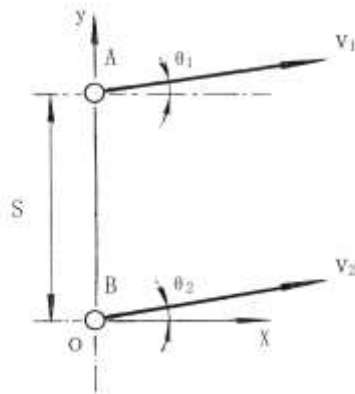


Fig. 7, the collision results of the analysis of A and B

For example, in fig. 7, ball A moves at high speed V_1 , through the analysis of ball B's movement velocity $V_2 = V_1 \cos \theta_1 / \cos \theta_2$, it can be known that, the displacement distance of ball A and B in direction X are the same within the limited time (without considering the gravity of the Earth). For the time $t = s / (V_2 \sin \theta_2 - V_1 \sin \theta_1)$, the two balls will definitely collide. In order to deduce the collision results of the two balls in accordance with the general analysis methods, it needs to deduce ball A's $m'_A = m_A / \sqrt{1 - v_1^2 / c^2}$ and ball B's $m'_B = m_B / \sqrt{1 - v_2^2 / c^2}$, the momentum of ball A and B, the angle for the two to be equal etc.. The problem is complicated, and the result is not consistent with the actual. But to analyze this problem according to the correlation analysis law is very simple. It is easy to see that the relative velocity of AB is $V = V_2 \sin \theta_2 - V_1 \sin \theta_1$. Then this problem is reduced to the head-on collision of AB at the relative speed V , and due to the relatively small V , there is no need to calculate m'_A and m'_B .

ABSOLUTE VELOCITY PRINCIPLE

Relative velocity and absolute velocity

In daily life, we often observe some relative motions; for example, we catch sight of another train in motion outside the window of our train, and this train may be in motion or may not be in motion, the reason for which is that our train is moving along the opposite direction; this is referred to as relative motion. Relative motion velocity is related to observer; if we sit in a motionless train and the motion velocity of the opposite train we get a sight of is V , then our

train is moving at a velocity of $-V$ along the opposite direction; therefore, the motion velocity of the opposite train within our sight is $2V$; if our train and the opposite train keep pace with each other at V , then the opposite train we saw is motionless.

It is observed from the above mentioned example that relative motion velocity is the motion velocity of both parties in relative motion; however, a person in motion at a different velocity is to have a different result of measurement for the motion velocity of the same object; accordingly, it is impossible for us to deduce true motion velocity of any object based on relative motion velocity. Since there is only relative velocity between straight-line motions, we are unable to properly deduce the true velocity of any object in straight-line motion.

In addition to straight-line motion, objects may also be in curvilinear motion and any curve has radius of curvature; consequently, long-time curvilinear motion may certainly be circular motion that takes radius of curvature as a circle; the circular motion is the most common motion; the most familiar and obvious circular motion includes rotation of cabins around the ferris wheel center in amusement park and rotation of artificial satellite and Moon around the Earth. It is observed from in-depth analysis that all objects in universe are in circular motion (the ellipse is also taken as circle), with the exception of fixed stars likely to be motionless, e.g. the motion of the Earth around the Sun. Any object on the Earth is in motion around the Earth axis (motion of object relative to the ground is transitory, being additional motion to circular motion), which is to say that circular motion is the only form of motion of lasting object. Straight-line motion is impossible to be a type of lasting motion but a motion gone forever; as time goes on, all objects in straight-line motion will eventually fall into an infinite abyss.

Other than straight-line motion, circular motion velocity is an acknowledged motion velocity; for example, persons at ferris wheel center and persons motionless relative to ferris wheel center consider that the cabins of Ferris Wheel are rotating around the ferris wheel center, and persons inside the cabins of ferris wheel also think that they are rotating around the ferris wheel center, so the circular motion of the cabins of ferris wheel is an acknowledged motion rather than a relative motion. In addition, the motions including the Earth's rotation around the Sun and artificial satellite and Moon rotation around the Earth are also acknowledged motions. The analysis shows that any object has only one circular motion velocity, without a second different circular motion velocity; thereby we can determine the only circular motion velocity of object in order to express absolute velocity of object in true motion; the circular motion velocity of object is defined as true motion velocity of object, being absolute velocity principle.

Calculation of absolute velocity

Since there is no difference in top, bottom, left, right, front and back in universe, we may suppose that the fixed stars with their mutual positions unchanged by and large are motionless; namely the motion velocity of fixed stars is zero. In the solar system, the Sun's motion velocity is zero (since the Sun is in rotation and in fact the Sun's rotation axis motion velocity is zero) and the average rotational velocity of the Earth around the Sun is 29.78km/s,

then the absolute velocity of the Earth axis is 29.78km/s; similarly, the absolute velocities of the planets including Venus, Mars, Mercury and Saturn can be obtained. However, the ground in every position on the Earth is rotating around the center of the Earth. The Moon and artificial satellite are also rotating around the center of the Earth; if the Moon has satellites rotating around the Moon, these objects do not rotate around the Sun in a direct way, then how to figure out their absolute velocity?

Let the motion velocity of Earth axis be V , the rotational velocity of artificial satellite and Moon or certain place on the Earth surface around the center of the Earth be V_m and the rotational velocity of the Moon's satellite around the Moon be V_n , we are able to determine the absolute velocity relevant to V_m and V_n based on time change formula given in the special relativity.

Let the time motion velocity of the Sun clock be t_0 , then, according to time change formula given in the special relativity, the rotational velocity of the Earth axis around the Sun is V and its time t is $t = t_0 \sqrt{1 - V^2/c^2}$; if the rotational velocity of the Moon relative to the Earth is V_m , then the Moon's time $t_m = t \sqrt{1 - V_m^2/c^2} = t_0 \sqrt{1 - V^2/c^2} \sqrt{1 - V_m^2/c^2}$. Let the Moon's absolute velocity be V'_m , then there will be $t_m = t_0 \sqrt{1 - V_m'^2/c^2}$. It is observed from comparison between the two t_m formulae that

$$\sqrt{1 - V_m'^2/c^2} = \sqrt{1 - V^2/c^2} \sqrt{1 - V_m^2/c^2} = \sqrt{1 - V^2/c^2 - V_m^2/c^2 + V^2 V_m^2/c^4}$$

Since V and V_m are very small relative to C , $v^2 v_m^2 / c^4$ is extremely small and can be ignored; accordingly, it is observed from the above mentioned formula that

$$V'_m = V^2 + V_m^2 \quad V'_m = \sqrt{V^2 + V_m^2} \quad (11)$$

The rotational velocity of the Moon's satellite around the Moon is V_n , and the time for the Moon's satellite is:

$$t_n = t_m \sqrt{1 - V_n^2/c^2} = t_0 \sqrt{1 - V_m'^2/c^2} \sqrt{1 - V_n^2/c^2} = t_0 \sqrt{1 - (V_m'^2 + V_n^2)/c^2}$$

Let the absolute velocity of the Moon's satellite be V'_n , then, there will be

$t_n = \sqrt{1 - V_n'^2 / C^2}$ and the following expressions can be obtained:

$$V_n'^2 = V_m'^2 + V_n^2 = V^2 + V_m^2 + V_n^2$$

$$V_n'^2 = \sqrt{V^2 + V_m^2 + V_n^2} \quad (12)$$

We are able to calculate the absolute velocity of any object in universe based on above mentioned expressions.

Absolute time

Length, mass, time and force are fundamental physical quantities for analysis of object motion and interaction. On the premise of invariable position, the length, mass, force and time motion velocity have constant values. However, since the clock for time measurement is not only used to measure time motion velocity but also to record total amount of time accumulated as time goes on, this total amount is to increase as time goes on, being an increasing physical quantity. Accordingly, if an object moves from certain point on the Earth to other position (such as Mars) and then returns to this original point on the Earth after a period of time, although the object remains unchanged in length, mass, force and time motion velocity before and after moving, the total amount of time recorded by clock has increased substantially; we draw a comparison between increment of the total amount of time recorded by the clock and the increment of total amount of time recorded by other clock without moving at the point so as to calculate the time motion velocity of the object in other position (such as Mars) based on the difference between the two increments, and figure out the absolute velocity of the other position. It can be seen that time is the only physical quantity available for us to determine change in position and motion velocity of object, given such a key role time plays, so we need to explain it in detail.

Since every point in universe is different in time and clock motion velocity, we need a standard clock as a reference for comparison of clock motion velocity. The Sun's absolute velocity is zero, so the Sun clock should be a standard clock, but as the Sun's temperature is too high, it cannot serve as a standard clock; therefore, for the sake of convenient comparison and analysis and consideration, the Earth clock should be the most suitable standard clock.

It is observed from the motion velocities V , V_m and V_n of the above mentioned Earth, Moon and Moon's satellite that if we let the Earth's pole (Earth axis) clock time t be standard time, then the Moon's time:

$$t_m = t \sqrt{1 - V_m^2 / C^2} \quad (13)$$

The Moon's satellite time:

$$t_n = t_m \sqrt{1 - V_n^2 / C^2} = t \sqrt{1 - V_m^2 / C^2} \sqrt{1 - V_n^2 / C^2} \approx t \sqrt{1 - (V_m^2 + V_n^2) / C^2} \quad (14)$$

Given that the rotational velocity of terrestrial equator ground relative to Earth axis is 0.464km/s, the rotational velocity of the ground with any latitude θ on Earth is $V_\theta = 0.464 \cos \theta$ km/s. V_θ is the velocity of any point on Earth's surface relative to V_m .

$$t_\theta = t \sqrt{1 - 0.2156 \cos^2 \theta / C^2} \quad (15)$$

Given that the Sun's time is t_0 , the Earth's rotational velocity is V and $t = t_0 \sqrt{1 - V^2 / C^2}$, then there is

$$t_0 = t / \sqrt{1 - V^2 / C^2} \quad (16)$$

Let the rotational velocity of any planet around the Sun be V_x , then the planet's time:

$$t_x = t_0 \sqrt{1 - V_x^2 / C^2} = t \sqrt{1 - V_x^2 / C^2} / \sqrt{1 - V^2 / C^2} \quad (17)$$

As mentioned above, the absolute velocities of the Moon and its satellite are not V_m and V_n but V'_m and V'_n , then are t_m and t_n in expressions (13) (14) also true times relative to the true absolute velocities V'_m and V'_n of the Moon and its satellite? As long as we substitute $t = t_0 \sqrt{1 - V^2 / C^2}$ into expressions (13) and (14), there will be:

$$t_m = t_0 \sqrt{1 - V^2 / C^2} \sqrt{1 - V_m^2 / C^2} = t_0 \sqrt{1 - V_m'^2 / C^2} \quad (18)$$

$$\begin{aligned} t_n &= t_m \sqrt{1 - V_n^2 / C^2} = t \sqrt{1 - V_m^2 / C^2} \sqrt{1 - V_n^2 / C^2} = t_0 \sqrt{1 - V^2 / C^2} \sqrt{1 - V_m^2 / C^2} \sqrt{1 - V_n^2 / C^2} \\ &= t_0 \sqrt{1 - (V^2 + V_m^2 + V_n^2) / C^2} = t_0 \sqrt{1 - V_n'^2 / C^2} \end{aligned} \quad (19)$$

It is observed from comparison between expressions (13) (14) and expressions (18) (19) that t_m and t_n obtained by calculation based on true absolute velocities V'_m and V'_n of object are t_m and t_n obtained by calculation based on V_m and V_n of object and Earth

clock standard. It can be seen that the times t, t_m, t_n and t_x are the intrinsic and true times of object. Relative to absolute velocity, we define true time of object as absolute time.

Given absolute time, we may take all places with same absolute time as one equal time zone; for example, all places with the same latitude are taken as one equal time zone.

According to the above mentioned analysis results, we can figure out the due absolute time process of an object having experienced various motions. For example, take h representing 1 hour of time on Earth axis as reference, put a clock in a place with latitude 45° on Earth for $n_1 h$, and then put it on the Moon for $n_2 h$, and then put it on a certain X planet of the Sun for $n_3 h$; if the time spent in traveling from the Earth to the Moon and then from the Moon to X planet is not taken into consideration, then the absolute time of the accumulative motion of the clock (where $\cos^2 45^\circ = 1/2$) is:

$$\left(n_1 \sqrt{1 - 0.2153/2C^2} + n_2 \sqrt{1 - V_m^2/C^2} + n_3 \sqrt{1 - V_x^2/C^2} / \sqrt{1 - V^2/C^2} \right) h$$

Experimental verification of absolute velocity

J·C·Hafele and R·E·Keating made an experiment on relation between time change and object motion velocity in 1971. They put four caesium atomic clocks on plane over equator; when the plane flies around the Earth from east to west along equator, it is found that the four caesium atomic clocks on the plane gained 273×10^{-9} second in terms of average counting as compared with the caesium atomic clocks on the ground; namely the absolute time of atomic clock increased; when the plane flies around the Earth from west to east along equator, it is found that the four caesium atomic clocks on the plane ran 59×10^{-9} second behind in terms of average counting as compared with the caesium atomic clocks on the ground; namely the absolute time of atomic clock decreased (as shown in reference document 1). The reference document 1 points out that it is universally accepted that based on special relativity theory, the clock on the object flying above the Earth is certain to run slower than the clock on the ground; namely, the absolute time is short. However, the above mentioned experiment shows that the clocks on the plane flying towards west did not only run behind but also gain time; namely the absolute time increased. Of course, the experiment also shows that the clock on the plane flying toward east runs behind in deed and the absolute time has decreased. The question is why the absolute time of clock on the plane flying toward west increased and why the absolute time of clock on the plane flying toward east decreased.

The above mentioned experiment result can be explained by absolute velocity principle. The foregoing indicates that the rotational velocity of object and any point on the ground relative to Earth axis is V_m given in expression (13), suppose the rotational velocity of the ground

along equator is v and the travel velocity of plane is u , when plane flies toward east, the flying direction of the plane is identical to the rotational direction of equatorial ground around Earth axis; thus, the actual rotational velocity of the plane around Earth axis is $V'_m = v + u$. When the plane flies toward west, the flying direction of the plane is opposite to direction of rotation of the Earth; accordingly, the actual velocity of the plane is $V''_m = v - u$. It is observed from the above mentioned expression (13) $t_m = t\sqrt{1 - V_m^2/C^2}$ that the absolute time of equatorial ground is $t_v = t\sqrt{1 - v^2/C^2}$, the absolute time when plane flies towards east is $t' = t\sqrt{1 - (v + u)^2/C^2}$ and the absolute time when plane flies toward west is $t'' = t\sqrt{1 - (v - u)^2/C^2}$. It is obvious that when t'' is larger than t_v , the clock on the plane flying toward west gains time, and when t' is smaller than t_v , the clock on the plane flying toward east runs behind, with time dilated.

J.C.Hafele and R.E.Keating figured out that the caesium atomic clock on the plane flying toward west should be 275×10^{-9} seconds faster than the caesium atomic clock on the ground along equator based on such difference, being consistent with actual reading by and large. They calculated that the caesium atomic clock on the plane flying toward west should be 40×10^{-9} seconds slower than the caesium atomic clock on the ground along equator, although the result seems to be different from actual reading of 59×10^{-9} seconds to a greater extent. But this is only the difference in comparison rather than true error in calculation; for example, the wall height is 300cm, tree height is 301cm and the tree is 1cm higher than wall, but the calculated tree height is 304cm, resulting in that tree is 4cm higher than wall, big difference between 4 and 1. However, this is the difference in comparison rather than error of calculation. The error in calculation is error between 304 and 301, within 1%. In a similar way, the difference between 59×10^{-9} and 40×10^{-9} in comparison is 19×10^{-9} seconds; if this difference is compared with the flight time of plane for more than 10^5 seconds, the error should be tiny; therefore, we may consider that the result of experiment by J.C.Hafele and R.E.Keating is consistent with the result of analysis of absolute velocity principle by and large.

Only one test result is not adequate to confirm that absolute velocity principle is correct, so we also need to carry out some other tests to further verify the principle. There are two simple and practicable tests available as follows:

1. We selected caesium atomic clocks with the same time operation velocity by and large in Singapore at $1^\circ 09'$ north latitude: one clock is kept motionless in Singapore and the other

one clock is transported to Reykjavik, the capital of Iceland at $64^{\circ}09'$ north latitude. Since the absolute velocity of Reykjavik is much smaller than absolute velocity of Singapore, the caesium atomic clock in Reykjavik is much faster than the caesium atomic clock in Singapore according to absolute velocity principle. When these two caesium atomic clocks are brought into comparison in terms of reading by internet, the longer time will result in bigger difference between them according to absolute velocity principle.

2. Synchronous satellite is motionless relative to the Earth. Synchronous satellite is about 36000km away from the ground in height, and the Earth radius is about 6370 km. According to absolute velocity principle, the absolute velocity of synchronous satellite's rotation around the center of the Earth is 6 times larger than that of the ground's rotation around the center of the Earth; therefore, the clock on synchronous satellite should be slower than that on the ground; namely the absolute time is short, which can be verified by testing without difficulty.

And now, we can explain twin paradox in a simple way. The foregoing indicates that whether clock gains time or runs behind is dependent on absolute velocity of clock; therefore, if twin A is higher than twin B in absolute velocity, the t_m of twin A should be short, indicating that it is younger than twin B; otherwise, twin B is younger than twin A. For example, twin A taking the plane flying toward east is younger than twin B on the ground, and it is not when taking the plane flying toward west.

Correspondence Principle

Special relativity indicates that for an object moving at a velocity of V , its length l should be shortened to be $l' = l\sqrt{1 - V^2/C^2}$, its mass m should be increased to be $m' = m\sqrt{1 - V^2/C^2}$, its time t should be shortened to be $t' = t\sqrt{1 - V^2/C^2}$.

Namely l, m and t of object in motion be transformed to l', m' and t' at the same time; in other words, for every velocity V of an object in motion, l will transform to a unique l' , will transform to an unique m' , and t will transform to an unique t' . According to foregoing absolute velocity, as every absolute velocity has one unique absolute time, they are certain to have corresponding absolute mass and absolute length. It is obvious that the absolute mass is rest mass, and the absolute length is rest length. Accordingly, our conclusion is that the rest mass, rest length, rest time and rest force of every object in universe are in one-to-one correspondence with absolute velocity of such object. The conclusion is defined as the correspondence principle.

According to the correspondence principle, for an object with rest mass of m in the South Pole or North Pole of the Earth, the absolute velocity of its rotation around the Sun is 30km/s; if it is moved to the Mars whose absolute velocity of rotation around the Sun is about 24km/s, as the mass is directly proportional to $1/\sqrt{1 - V^2/C^2}$, its rest mass on the Mars is to decrease

to $m_x = m_0 \sqrt{1 - (30)^2 / C^2} / \sqrt{1 - (24)^2 / C^2}$. If it is moved to the moon, given that the rotational velocity of the Moon's rotation around the Earth is about 1km/s, it is observed from the previous expression (11) that the absolute velocity of the Moon is $V'_m = \sqrt{V_m^2 + V^2} = \sqrt{1 + (30)^2} = \sqrt{901}$, and the rest mass of the object is to increase to $m_m = m \sqrt{1 - (30)^2 / C^2} / \sqrt{1 - 901 / C^2}$.

Relative Transformation and Absolute Transformation

Regarding to above mentioned flight experiment by J·C·Hafele and R·E·Keating, the experiment proved that t as clock time on the plane flying toward west along equator increased, which means the clock gained time, and that t as clock time on the plane flying toward east along equator decreased, which means the clock ran behind. We explained this experiment result by absolute velocity principle. However, the result observed by person on the ground along equator is different from the result of experiment; in his or her view, the flight velocity of the plane should be the same velocity u , no matter whether the plane flies to east or to west. According to Lorentz transformation in special relativity theory, one and the same velocity u should have identical length transformation $l' = l \sqrt{1 - u^2 / C^2}$, time transformation $t' = t \sqrt{1 - u^2 / C^2}$, mass transformation $m' = m / \sqrt{1 - u^2 / C^2}$ and vertical force transformation $F' = F / \sqrt{1 - u^2 / C^2}$.

This indicates that for the result observed by person on the equatorial ground, time t of the clock on the plane flying toward east and time t of the clock on the plane flying toward west are one t ; it is different from the true time t of plane, so we wonder whether special relativity theory is wrong. Of course not, it is certain that special relativity theory is correct, and many experiments including μ particle life experiment, high velocity particle mass increase experiment, contraction experiment on electric field with electron in motion at high velocity have verified l' , m' and t' deduced by special relativity theory. The only conclusion we drew based on these experimental results is that l' , m' and t' of object in motion observed by person on the ground are different from the true l , m and t of object in motion.

It is observed from analysis that the result is inevitable. For example, we observe that length of an object in motion is reduced, with its mass increased and time shortened; however, the true length, mass and time of an object remain unchanged, just like a train in motion at a velocity of V on the ground, its velocity observed by a motionless person relative to the ground is V ; its velocity observed by a person in motion at a velocity of V relative to the ground is 0; its velocity observed by a person in motion at a velocity of $-V$ relative to the

ground is $2V$. These results of observation are true, but they are not true absolute velocity of the train.

According to the above mentioned analysis, an inevitable conclusion we draw is that the transformed values of time, mass, length and force of the object deduced based on special relativity theory and absolute velocity of the object are true values of the object itself, being the result of observation by a motionless person relative to the object, and the transformed values of time, mass, length and force of the object deduced by relative velocity between observer and object according to special relativity theory are a reference system and the true result of observation of time, mass, length and force in another reference system in relative motion; one of them is observation at rest and another one is observation in motion; therefore, it is inevitable that results of observation are different.

We define Lorentz transformation deduced according to absolute velocity of the object as absolute transformation and Lorentz transformation deduced according to relative velocity of the object as relative transformation. The result of absolute transformation expresses true physical quantity of the object itself, and the result of relative transformation expresses true result of observation of the object in motion.

Field Similarity Principle

According to Coulomb's law, the acting force between two point charges in vacuum is in direct proportion to product of their electric quantities Q_1 and Q_2 and in reverse proportion to square of r as the range between them, with direction of acting force along their connecting line. The law's expression is as follows:

$$F = k \frac{Q_1 Q_2}{r^2}$$

(a)

Where, k is proportional constant, also referred to as electrostatic force constant

According to the law of universal gravitation, all objects in university are in mutual attraction and the magnitude of gravitation between two objects is in direct proportional to product of m_1 and m_2 as their mass and in reverse proportional to square of the range between them.

The law's expression is as follows:

$$F = G \frac{m_1 m_2}{r^2}$$

(b)

Where, G is constant of universal gravitation

Obviously, G and K are also proportional constants; therefore, expression (a) and expression (b) are completely similar.

Electricity points out that F as force of Coulomb's law is electric field force, the electric field strength at Q_1 and Q_2 is $E = kQ_1/r^2$, the electric field is source to exert force on Q_2 . And so, the force of universal gravitation is gravitational field force, the gravitational field strength at m_1 and m_2 is expressed by D , $D = Gm_1/r^2$ gravitational field is the source to exert a force on m_2 .

Given that the generation of electric field is due to electric quantity of electric charge, in fact, it is as a result of electric quantity of negative electron or positive electron. An electric charge or a charged body has constant number of negative electrons or positive electrons, a charge or charge body will have constant number of electrons (negative or positive) regardless of motion and velocity, since electron is constant in electric quantity, therefore, the electric quantity of charge or charged body is unrelated to velocity.

Electric field is matter, gravitational field is certain to be matter. Electric field is due to negative electron or positive electron, it is certain that gravitational field is also as a result of source, it is obvious that the source is certain to be in atom of object, since there is only repulsion between negative electrons or between positive electrons, accordingly, it is impossible that there is repulsion and attraction between them at the same time, therefore, we suppose that gravitational field of object is unrelated to negative electron and positive electron in object, this gravitational field is only related to proton with negative electron removed and neutron with positive and negative electrons eliminated, according to existing noun, we define proton free of electron and neutron free of positive and negative electrons as graviton, graviton is source of gravitational field. Since negative electron and positive electron have mass, therefore, the mass of graviton in object is about millesimal smaller than total mass of object.

Since object in any motion and at any velocity has constant number of gravitons inside, namely object is unchanged in gravitational capacity, the gravitational mass of universal gravitation is derivable from gravitational capacity. Therefore, our conclusion is that the gravitational mass of object is unrelated to motion of object and gravitational mass is constant.

To say the least, supposing that there is attraction between negative electrons as well as between positive electrons, namely the entire atoms are graviton and object motion cannot change number of atoms, namely it cannot change gravitational capacity by and large, the conclusion is that gravitational mass of object is unrelated to motion of object, gravitational mass is constant.

The above mentioned analysis indicates that gravitational field and electric field have completely similar action pattern, the two fields are also derivable from certain field source matter. When electric field is in motion, the number of negative electrons or positive electrons in its field source matter keeps unchanged, namely, electric quantity is unchanged; when gravitational field is in motion, the number of gravitons in its field source matter is also unchanged, namely gravitational capacity is unchanged; by further deduction, when electron is in accelerated motion, its form of motion is to propagate from the near to the distant at light velocity and form electric wave in its electric field, quite as much, when graviton is in accelerated motion, its form of motion is also to propagate from the near to the distant at light velocity and form gravitational wave in its gravitational field; electric field has energy, gravitational field should also have energy, in other words, gravitational field and electric field are completely similar in physical property, which is referred to as field similarity principle.

Field similarity principle determines that gravitational mass of object is a constant unrelated to motion of object; however, experiment verifies that inertia mass of object is on the increase with the increase of its motion velocity; therefore, gravitational mass (in fact it is gravitational capacity) and inertial mass are two different physical quantities in terms of property, they are different in property and there is no comparison between them, just as there is no comparison between velocity and displacement; therefore, the supposition that gravitational mass is equal to inertial mass is unscientific; in other words, strictly speaking, the equivalence principle is invalid.

We may also further explain that gravitational mass and inertial mass are different physical quantities in terms of property in the following respects:

Gravitational mass and inertial mass are equally derivable from elevator effect, when elevator suddenly goes up, person therein will feel that his or her weight is increased. It seems that there is no difference between such weight increase and gravity increase; namely there is no essential difference between inertial force and universal gravitation, and then the deduction that gravitational mass is equal to inertial mass came into being; however, it is observed from further analysis that inertial force is energy transfer force, and universal gravitation is unrelated to energy transfer; because; if A exerts force F to move object B whose mass is m for a space S within time t , the energy output from A is FS , while object B is in motion at an acceleration of a under the action of F . Its motion space: **Error! Not a valid link.**

As a result, $FS = Fat^2/2$. B is to get velocity $V = at$ within time t , the energy it gets is $mV^2/2 = m(at)^2/2$, it is certain that the energy outputted from A and energy B gets is identical, therefore, $Fat^2/2 = ma^2t^2/2$ with **Error! Not a valid link.** eliminated on both sides at the same time will be inertial force equation $F = ma$, indicating there is inertial force,

with energy obtained by object, which is to say that inertial force is a type of energy transfer force, whereas, universal gravitation may act on motionless object forever, in other words, universal gravitation is not energy transfer force. It is obvious that energy transfer force and non energy transfer force are different in terms of property, namely, inertial force as energy transfer force is impossible to equal to universal gravitation as non energy transfer force, namely, inertial mass is impossible to equal to gravitational mass.

In addition, inertial force is force to move object, namely inertial force is in motion state forever, and universal gravitation may in stationary state forever, inertial force in motion may remain unchanged; since there is no absolutely uniform gravitational field for universal gravitation, universal gravitation in motion is certain to change all the time, the essential difference between inertial force and universal gravitation also indicates that inertial mass is not equal to gravitational mass.

In addition, if inertial mass is equal to gravitational mass and when object whose mass is m in motion at a velocity of V , according to special relativity theory, m is certain to increase to $m' = m/\sqrt{1-v^2/c^2}$. Gravitational mass is to increase from m to m' , its gravitational field strength is certain to increase accordingly. However, the gravitational field is a matter and it is impossible to generate or vanish matter by any means in universe; accordingly, total capacity of gravitational field is impossible to increase, the source of gravitational field namely gravitational mass is also impossible to change, indicating that $m' = m/\sqrt{1-v^2/c^2}$ is not applicable to gravitational mass, namely gravitational mass is not equal to inertial mass.

In addition, the foregoing article 1.5 points out that if gravitational mass is equal to inertial mass of object, just like the object in motion at high velocity as shown in fig.1. The spring will be compressed substantially, and it is obvious that this is not the fact, proving that gravitational mass is not equal to inertial mass.

The above mentioned analysis shows that gravitational mass is impossible to equal to inertial mass, namely equivalence principle fails to hold water in principle. We know that equivalence principle is theoretical basis for general relativity theory; equivalence principle is invalid in principle, naturally, general relativity theory is impossible to be a perfect truth.

When object is in motion at a velocity of V , being a tiny velocity compared with light velocity C , for example $V < 1000\text{km/s}$, there is $\sqrt{1-v^2/c^2} \approx 1$, under such condition, there will be $m' \approx m$, namely inertial mass of object is approximately equal to rest mass of object, indicating that inertial mass is constant, since gravitational mass is also constant; therefore, if we select suitable constant of proportionality to make inertial mass equal to gravitational mass, which are two different physical quantities in terms of property, just like a proportional constant may make length equal to pressure.

When the motion velocity of object is tiny compared with light velocity, inertial mass may be considered to be equal to gravitational mass, namely equivalent principle may be considered to hold water; therefore, when the motion velocity of object is tiny compared with light velocity, the deduction by general relativity theory is supposed to be correct. Since the motion velocity of every celestial body is tiny compared with light velocity, the general relativity theory is applicable to all celestial bodies in universe.

NO BLACK HOLE

Double equilibrium principle of universal gravitation

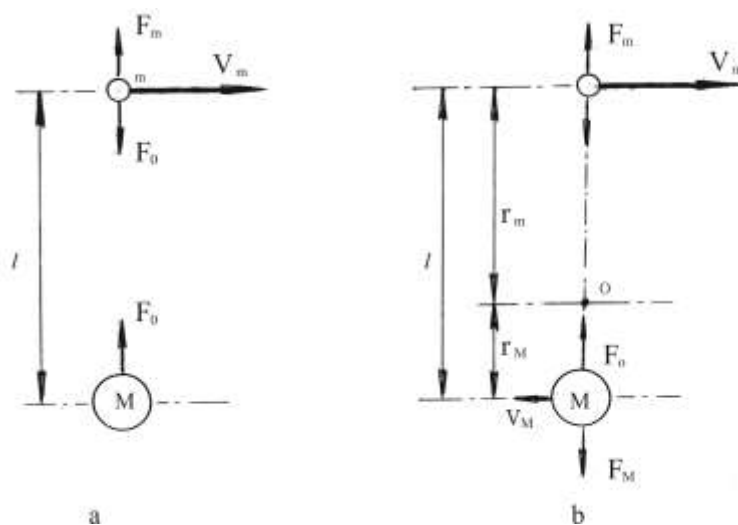


Fig.8 m and M are in force balance state

Fig 8a shows a planet whose mass is m is rotating around a fixed star M at a velocity of V , the range between m and M is l , physics points out universal gravitation between m and M is $F_0 = GMm/l^2$, centrifugal force generated by planet's rotation around M is

$F_m = mV^2/l$, for ; since its centrifugal force F_m and its universal gravitation F_0 from M are equal and they are contrary in direction, m is in equilibrium state, whether M is also in equilibrium state?

The physics fails to analyze it. It is observed from fig. 8a that universal gravitation F_0 to M is the only force on M , according to Newton second law, there will be $F_0 = Ma$, namely there will be M which is to dash against m at an accelerated velocity of a , obviously, such

phenomenon has not occurred, therefore, it is certain that M will have a force F_M identical to F_0 in magnitude but opposite to F_0 in direction, reaching equilibrium with universal gravitation F_0 of m . It is certain that this force is not external; it must be generated by M, in addition to universal gravitation, and M is also to generate centrifugal force F_M by rotational motion; therefore, centrifugal force F_M by M through rotational motion is the only possibility for M to reach equilibrium. Our conclusion: for a fixed star M, it is certain to generate centrifugal force F_M to reach equilibrium.

Supposing that rotational velocity of M is V_M , since l as connecting line between m and M is constant; therefore, the only motion direction of V_M is contrary to direction of V_m ; otherwise, V_M and V_m along the same direction will turn into M and m in parallel motion.

Fig. 8b shows motion of M and m , since V_m and V_M are normal to l ; therefore, centers of rotation of m and M are on l as connecting line between m and M. Since l is an invariable straight line, therefore, when motion of M and m rotates l to an angle θ , this θ will be rotation angle of m and M, if center of rotation of m and that of M are not on one point, then m and M cannot keep moving in a straight line at the same rotation angle, therefore; it is certain that m and M will have one center of rotation and that the center of rotation will be on l as connecting line between m and M, point O shown in fig.8b indicates center of rotation of V_m and V_M , the range from point O to m is r_m , the range between point O and M is r_M , supposing that rotation angle of l is ω , there will be $V_m = r_m\omega$; $V_M = r_M\omega$.

Since universal gravitation for m and M is one force, mV_m^2/r_m as centrifugal force of m will be identical to M MV_M^2/r_M as centrifugal force of M in terms of magnitude but they are contrary in terms of direction. Therefore, there will be:

$$\frac{m(r_m\omega)^2}{r_m} = \frac{M(r_M\omega)^2}{r_M}$$

The equation is simplified as follows:

$$mr_m = Mr_M \quad (18)$$

It is observed from equation (18) that $r_M = r_m m/M$, since $r_m + r_M = l$, therefore, there is:

$$r_m + r_M = r_m + r_m m/M = r_m (1 + m/M) = l$$

$$r_m = \frac{l}{1 + m/M} = \frac{Ml}{M + m} \quad (19)$$

$$r_M = l - r_m = \frac{ml}{M + m} \quad (20)$$

Centrifugal force generated by m in motion at a velocity of V_m

$$F_m = \frac{mV_m^2}{r_m} = \frac{m(M + m)V_m^2}{Ml} \quad (21)$$

Given that motion velocity of M is $V_M = r_M \omega$, and $V_m = r_m \omega$, therefore,

$$V_M = r_M V_m / r_m = \frac{r_M}{r_m} V_m = \frac{m}{M} V_m \quad (22)$$

Centrifugal force generated by M in motion at a velocity of V_M

$$F_M = \frac{MV_M^2}{r_M} = \frac{M(V_m m/M)^2}{ml/(M + m)} = \frac{(M + m)mV_m^2}{Ml}$$

It is obvious that centrifugal force of M is certain to equal to that of m , namely $F_M = F_m$.

Since centrifugal force of m and M is certain to equal to universal gravitation of m and M, therefore, there is

$$G \frac{Mm}{l^2} = \frac{(M + m)mV_m^2}{Ml} \tag{23}$$

Equation (23) expresses acting force of both parties related to universal gravitation, being equilibrium equation in equilibrium state. We call such acting force of both parties related to universal gravitation in equilibrium state as double equilibrium principle for universal gravitation.

It is observed from comparison that there is obvious difference between equation (23) and $GMm/l^2 = mV_m^2/l$ given in physical text book. It is observed from equation (23) that the actual velocity of planet m 's rotation around fixed star M is as follows:

$$V_m = \sqrt{\frac{GM^2}{l(M + m)}} \tag{24}$$

It is observed from equation (22) and equation (24) that actual velocity of fixed star M is as follows:

$$V_M = \frac{m}{M} V_m = \sqrt{\frac{Gm^2}{l(M + m)}} \tag{25}$$

It is worth mentioning that the previous equation (19) $r_m = Ml/(M + m)$ and equation (20)

$r_M = ml/(M + m)$ are one equation in fact; one is to indicate the range from m to center of rotation of M and m and the other is to indicate the range from M to O ; they are equation to calculate position of O . According to these two equations, we may estimate motional orbit of m and M based on their size proportion.

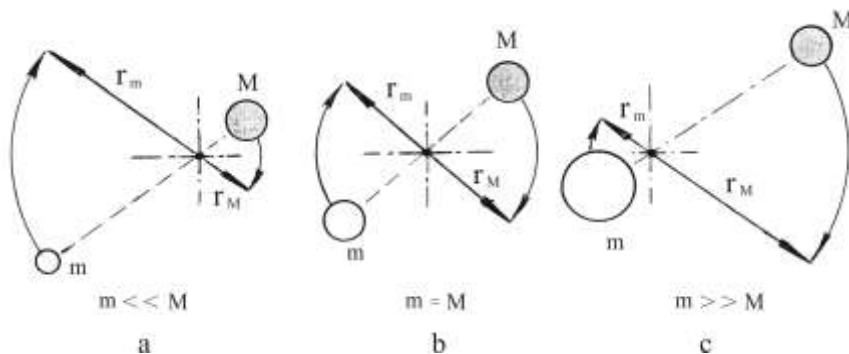


Fig.9 Relation between size proportion and motion of M and m

Fig. 9 shows relation between size proportion and motion orbit of M and m . According to fig.9a, when $m \ll M$, it may be taken as m 's rotation around M ; according to fig. 9b, when $m = M$, $r_m = r_M$, M and m have same radius of rotation; according to fig. 9c, when $m \gg$

M , r_M is much larger than r_n , it may be taken as fixed star's rotation around planet.

The above mentioned analysis is carried out on the premise that fixed star M has only one planet m , if M has two m , with two m located on both sides of M symmetrically, then the universal gravitation of two m to M will cancel out, therefore M is in equilibrium state; if two m is asymmetrical to M , or just like the Sun has many planets, it is necessary to analyze the result of composition of all universal gravitations of all planets to fixed star.

The foregoing equation (20) $r_M = ml/(M + m)$ indicates radius of circle of fixed star M in circular motion. It is observed from the equation that when the Sun has only one planet namely the Earth, the radius of rotation of the Sun is about 448.7km, this radius is tiny as compared with 695000km as the radius of the Sun but the radius of rotation of the Earth is large relative to the moon, the Earth 81times the Moon in terms of mass, by calculation, the Earth's $r_M \approx 4687.8$ km, compared with 6371km as the radius of the Earth, the r_M is about 73.6% of the radius of the Earth, namely the center of rotation for the Moon and Earth is only 1683.3km away from the Earth's surface, therefore, the Earth's circular motion relative the Moon will substantially influence the orbit of the Earth's rotation around the Sun (it is necessary to take the change in universal gravitation from the Sun to the Earth into consideration when we calculate the change of the Earth orbit, the orbit change should not be considerate as simple composition of small circle and great circle), making the orbit of the Earth's rotation around the Sun cease to be a smooth elliptical curve.

Taking rotational velocity of the Moon as an example to explain why there is difference between our feeling and actual condition, the actual length from the Moon to the Earth $l = 384402$ km, the actual angular velocity of the Moon is ω , the rotational velocity of the Moon we observed is $V = l\omega = 1020$ m/s, however, according to the previous equation (20), the actual radius of rotation of the Moon is $r_m = ML/(M + m) = 379714$ km, the actual rotational velocity of the Moon should be $V_m = r_m\omega = 1008$ m/s. Why is the actual V_m different from V we observed? Because the Earth has a V_M opposite to V_m in direction, the Earth radius of rotation $r_M = 4687.8$ km, $V_M = r_M\omega = 12$ m/s. V as the rotational velocity of the Moon we observed is certain to be the sum of V_m and V_M , namely

$$V = V_m + V_M = 1008\text{m/s} + 12\text{m/s} = 1020\text{m/s}.$$

Black hole is impossible to be object in motion

Supposing that there is black hole and that black is an object in motion, and then what kind of motion the black hole is likely to go through? It is obvious that the motion is not a straight line motion, since straight line motion is to go forward and never go backward, it will go into the infinite abyss, therefore, black hole will only go through motion in cycles, supposing that the black hole's mass is m and that the radius of circular motion is r and that the rotational velocity is v , it is certain that black hole will generate centrifugal force $F_m = mv^2/r$. In order to balance the force, black hole will need a force identical to F_m in

magnitude but contrary to F_m in direction, this force will only be universal gravitation.

Supposing that there is a fixed star with a mass of M to balance the centrifugal force of black hole, the length from M to m is l , and then the universal gravitation generated by M to black hole is $F = GMm/l^2$, the equilibrium between M and m is expressed by the previous equation (23).

Given that the largest fixed star A_1 in universe is 150 times the Sun in terms of mass, supposing that there is a fixed star whose mass is identical to that of A_1 to balance the centrifugal force of black hole. The existing data show that the smallest diameter of black hole is 24km, but the black hole theory points out that the mass of a black hole whose size is similar to that of a football court (to calculate based on sphere whose diameter is 120m) is about the mass of 4 suns. It is observed from the calculation that m as the mass of the minimum black hole is 213000 times the M as the mass of the largest fixed star, namely $m=213000M$. It is observed from the foregoing equation (19) $r_M = Ml/(M+m)$ and equation (20) $r_m = ml/(M+m)$ that the radius of rotation of fixed star M is $r_M \approx l$.

However, the radius of rotation of black hole is $r_m = 4.6 \times 10^{-6}l$, indicating that if we adopt the universal gravitation from largest fixed star M to the smallest black hole m to balance centrifugal force generated by rotational velocity of black hole, the only possibility is that the fixed star is to rotate around the black hole and that the black hole is motionless by and large. It is obvious that there will be no such fixed star rotating around the black hole, and there will be no black hole in rotary motion. Therefore, our conclusion is that black hole is impossible to be an object in motion, namely the motion velocity of black hole is 0. It is observed from the conclusion that even if equivalence principle is valid, on the premise that the motion velocity of black hole is on, no one could make a deduction that black hole is existent, namely, under the condition of $V=0$, black hole theory is invalid, we will verify that black

hole is not an actual matter in terms of matter structure of black hole as follows:

Black hole is impossible to be matter composed of atom

Black hole theory points out that a spherical black hole with a diameter of 120m is equal to four suns in terms of mass, being equivalent to the mass of 1.32 million Earths, and the volume of the Earth is 10^{15} times larger than the sphere with a diameter of 120m, indicating that the density of black hole is 10^{21} times larger than that of the Earth, according to calculation based on such proportion, the one thousand times of the total mass of 7 billion people (according to 50kg per person) on Earth is also smaller than the mass of a black hole whose size is equivalent to a grain of rice.

It is known that every matter in universe is composed of several elements in 118 elements. Up to now, there has been no exception in celestial bodies. However, according to the above mentioned calculation of black hole matter density, the size of atom of black hole is only 10^{21} that of the Earth. Obviously, this is impossible, the reason for which is that if we suppose that black hole is composed of atom, as black hole theory says that the black hole atoms have collapsed, with electrons around atom falling onto protons and turning into neutrons. These neutrons box up to become a large neutron; it is observed from calculation that such large neutron is also one million times larger than theoretical volume of black hole; if atoms of black hole do not collapse, it will be ten trillion times larger than theoretical volume of black hole, so it is impossible for actual atom; therefore, we conclude that black hole is impossible to be composed of actual atoms, namely, black hole is not an actual matter.

Why did black hole theory make such an impractical deduction? It is observed from analysis that black hole theory is derivable from general relativity theory, and the theoretical basis for general relativity theory is equivalence principle. The foregoing has shown that equivalence principle is invalid in principle; only if object's motion velocity is tiny as compared with light velocity, the equivalence principle may be considered to be approximately valid. Black hole theory takes equivalence principle as absolute truth; misunderstanding of equivalence principle resulted in the improper conclusion that it is applicable to any velocity and that visional black hole is existent.

The above mentioned shows that black hole is impossible to be actual matter, and black hole theory is invalid under the condition of $V=0$, indicating that the black hole is not only visionary but also inexistent in theory.

It is impossible for human to realize significant time travel

The foregoing indicates that time is significant, being the time operation velocity. The higher time operation velocity means clock gains time; to be specific, the time quickens. The low time operation velocity means clock runs behind, to be specific, the time dilates. It is obvious that time dilation is more vivid to express low time operation velocity compared with that time decreases, but it is improper to say that increase in time operation velocity is time dilation. We will only discuss the issue about time decrease, and we will use time dilation to

express the issue as follows:

Human is able to accelerate the absolute velocity of particle to the velocity approximate to light velocity by synchrocyclotron so as to prolong the life of particle by tens of times; however, for an object with certain mass, even if the mass is only 1g, up to now, human cannot accelerate its velocity to the velocity approximate to light velocity. It is observed from calculation that it is more difficult to accelerate the velocity of an object of 1g in mass to 0.1C than to send a heavy of 1000kg into the moon. However, we cannot eliminate the possibility that human can accelerate the velocity of heavy to the velocity approximate to light velocity by advanced technology; it is possible for human to take spaceship at a velocity of being approximate to light velocity to achieve time travel to prolong human life by several times, but the in-depth analysis shows that it is impossible for human to achieve time travel to prolong human life by several times.

The foregoing shows that only the object in circular motion will have absolute velocity and absolute time, and only circular motion will have motion state in cycles, such as planets of the Moon and the sun, whose motions are eternal. Straight-line motion is transient motion, having relative velocity and relative dilation, being the motion to go forward and never to return; in other words, straight line motion is unrelated to human's time travel, accordingly. We discuss time dilation only by analysis of circular motion.

Synchrocyclotron is able to accelerate the motion velocity of particle to the velocity approximate to light velocity, but the spaceship for human cannot achieve motion at high velocity by similar synchrocyclotron, the reason for which is that human cannot bear the centrifugal force due to circulation motion at high velocity other than difficulty in production of great accelerator for spaceship. It is observed from calculation that if human is in motion at a velocity of ten thousandth of light velocity in cyclotron, namely velocity is $V=30\text{km/s}$, given that human mass is 50kg and supposing that radius of cyclotron is 50km, the centrifugal force human bear is up to 900000 Newton, being about 1800 times the gravity of human (about 500 Newton), and such huge centrifugal force cannot be borne by human, let alone velocity further accelerated by 10000 times.

Since universal gravitation of celestial bodies in universe (their mass is expressed by M) can balance out the centrifugal force in circular motion, human in spaceship's rotation around celestial body in universe means that human obtain absolute velocity, absolute time, being an practical approach to achieve actual time dilation. Suppose human's mass is m , and radius of rotation of m around M is r , rotation velocity is V , then, when m 's rotation around M is in stable state, there will be centrifugal force mV^2/r equal to universal gravitation

GMm/r^2 , as shown in foregoing modified equilibrium equation between universal gravitation and centrifugal force;

$$G \frac{Mm}{r^2} = \frac{(M+m)mV^2}{Mr}$$

m at the left end of the above mentioned equation is gravitational mass, being a constant and m at the right end thereof is inertial mass; in case of high V , m is to become $m' = m/\sqrt{1-V^2/C^2}$, accordingly, the above mentioned equation will become:

$$G \frac{Mm}{r^2} = \frac{\left(M + m/\sqrt{1-V^2/C^2}\right)m/\sqrt{1-V^2/C^2}}{Mr} V^2$$

Since the m of spaceship is tiny compared with M of celestial body, even if $m' = 100m$, m' is still tiny as compared with M ; therefore, there will be $\left(M + m/\sqrt{1-V^2/C^2}\right)/M$ approximate to 1, and the above mentioned equation can be simplified as:

$$G \frac{Mm}{r^2} = \frac{mV^2}{r\sqrt{1-V^2/C^2}}$$

After elimination of m/r from both ends of equation, there will be

$GM/r = V^2/\sqrt{1-V^2/C^2}$, $V^2 = GM\sqrt{1-V^2/C^2}/r$, to solve the equation to obtain:

$$V = \frac{1}{\sqrt{2}} \left[\frac{G^2 M^2}{C^2 r^2} + \left(\frac{G^4 M^4}{C^4 r^4} + 4 \frac{G^2 M^2}{r^2} \right)^{1/2} \right]^{1/2} \quad (26)$$

It is observed from the equation (26) that the solution to select large M and small r as radius of rotation will be adopted to improve velocity of spaceship's rotation around celestial body.

The above mentioned analysis is based on the premise that black hole with super huge mass is eliminated. Therefore, the only way is to look for a celestial body with huge mass and medium radius (large radius will lead to large r) in universe. celestial observation only found fixed star A_1 is huge in mass and medium in radius; its mass is 150 times that of the sun and its diameter is 114 times that of the Sun, (reference documents 6); suppose there is human living on the planet adjacent to it and that spaceship can rotate around the fixed star surface, according to calculation by equation (26), the spaceship velocity is up to 510km/s. It is obvious that 510km/s is limit flight velocity for human and human flight for one year at this limiting velocity will prolong life for 271seconds. It is observed that the life prolonged by spaceship is limited, falling short of the goal to prolong life for several times; therefore, it is insignificant travel.

CONCLUSION

The analysis in the paper shows that up to now, there has been no comprehensive elucidation about special relativity theory and general relativity theory in books and data. As they ignored some key and necessary explanation, the relative velocity and absolute velocity have not been properly understood, and there has been no clear understanding about actual time operation velocity of object and observed time operation velocity of object, nor has there been idea about whether there is relation between rest mass, rest length and reference system, failure to understand that Lorentz transformation should be differentiated based on relative velocity and absolute velocity. In addition, human is accustomed to analysis based on subjective standpoint, making a false deduction in analysis of physical phenomena unrelated to observation according to relativity theory; general relativity theory takes energy transfer force and acting force of various fields as one type of force, so it puts forward unscientific equivalence principle.

In order to solve the above mentioned problems, the paper puts forward axiom of equilibrium and invariability to deduce Lorentz transformation equation and proposes the correlation analysis method, stating that analysis on physical interaction between two objects will only be carried out according to physical quantities related to the two objects to avoid problem as a result of subjective analysis based on special relativity theory, that every object in universe will have unique circular motion velocity unrelated to reference system, that circular motion velocity is absolute velocity and presenting calculation method for absolute velocity, that the time of Lorentz time transformation deduced based on absolute velocity is absolute time, and that experiment on relation between velocity and time conducted by J·C·Hafele and R·E·Keating can verify the absolute velocity is valid.

This paper puts forward correspondence principle, determines that rest mass and rest length is associated with reference system, presents relevant calculation methods as well as concept about relative transformation and absolute transformation, points out that Lorentz transformation based on absolute velocity is absolute transformation and Lorentz transformation based on relative velocity is relative transformation, raises field similarity principle, points out that gravitational field and electric field are completely similar in terms of physical property and that the electric quantity of electric field is unrelated to velocity, and the gravitational capacity of gravitational field is also unrelated to velocity so as to deduce that gravitational mass is constant unrelated to motion velocity of object and that equivalence principle is invalid in principle.

It makes a deduction that only when the motion velocity of object is tiny as compared to light velocity, may the equivalence principle be approximately valid. The general relativity theory will have proper analysis conclusion, present double equilibrium principle of universal gravitation, and point out that two celestial bodies having universal gravitation will be in equilibrium state. According to the principle, in case that black hole is existing, it will not be in motion state; namely, the motion velocity of black hole is zero, and $V = 0$, indicating that black hole theory is invalid.

The density of black hole is calculated in detail, pointing out that if all atoms of black hole collapsed and became neutrons, the density of these neutrons will still be one million times smaller than theoretical density of black hole. A deduction is made that black hole is not composed of atoms; namely, black hole is not existent as an actual matter. In the end, the issue on time travel is discussed, pointing out only circular motion may have actual time dilation and spaceship for human is only to rotate around fixed star to eliminate centrifugal force to be borne by human. The calculated limiting velocity of spaceship for human is 510km/s; this limiting velocity is much smaller than light velocity; therefore, it is impossible for human to achieve significant time travel.

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