

# On the errors of Relativity and Quantum Mechanics\*

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## Abstract

Physics is also known as a science of observation and experiment. In this paper, the most representative experimental verification of general relativity, "Mercury perihelion precession", is used for mathematical derivation and analysis, and the serious errors in the experimental verification are expounded deeply. Furthermore, the Lorentz transformation, the core formula of special relativity, is mathematically deduced and analyzed, and the contradictions and errors existing in the Lorentz transformation are profoundly revealed. These contradictions and errors involve the deep relationship between physics and mathematics, and are also the core problems faced by theoretical physics. Minkowski's four-dimensional space-time contradicts the "principle of constant speed of light", and there are serious errors in the "relativity of simultaneity". The so-called experimental verification of the theory of relativity is false, and there is a fundamental error in the theory of relativity, which will lead to the collapse of the whole theoretical building, including general relativity.

The basic formula of quantum mechanics, "matter wave" wavelength  $\lambda = h/p$ , is also based on the wrong Einstein "mass-energy equation". Therefore, the wave function of "matter wave" established on the wavelength  $\lambda = h/p$  of "de Broglie wave" and the Schrodinger equation are all pseudo-formulas without any physical significance. Schrodinger equation is the core formula of quantum mechanics. This is enough to cause the collapse of quantum mechanics. The mathematical derivation of the Compton effect was completely based on the pseudo-concepts of special relativity such as "mass-energy

equation" and "moving mass", while Einstein's explanation of the photoelectric effect was limited by the scientific and technological level at that time. The Compton effect and the photoelectric effect, as the two most important experimental verifications of the "wave-particle duality" of light, were not valid. "Wave-particle duality" is another misdirection of Einstein to human beings, which "inspired" de Broglie to put forward the famous "matter wave" hypothesis, and the "matter wave" concept is the root that led theoretical physics to fall into the abyss of quantum mechanics. In addition, there are serious errors in the basic concept of quantum mechanics. "Monochromatic radiant energy" is an incomplete definition of physics, which is also the root cause of the "ultraviolet disaster" problem. The defective physics concept of "monochromatic radiant energy" is also an important reason for theoretical physics to fall into the "quantization" quagmire. The "ultraviolet catastrophe" problem of blackbody radiation is a physical accident caused by the artificially defined defect concept of "monochromatic radiant energy". Bohr's hydrogen atom theory is the foundation theory of quantum mechanics. Like relativity theory, this theory also has the problem that the same mathematical symbol expresses two contradictory physical meanings at the same time. Quantum tunneling has the problem of different physical interpretations of mathematical formulas. No matter the premise or the core formula, there are serious contradictions and errors in quantum mechanics, and quantum mechanics is also a wrong theory.

The theory of relativity and quantum mechanics is a lost on the journey of human truth exploration. The fundamental errors of relativity and quantum mechanics will lead to the comprehensive collapse of the theoretical physics system including relativistic quantum mechanics, quantum field theory (quantum electrodynamics, quantum chromodynamics, unified theory of weak interactions, standard model of elementary particle physics), Yang-Mills theory and so on. Fortunately, in the course of nearly a century of exploration[1], human beings have accumulated a large number of empirical results. Although the theory of relativity is completely wrong, it does not affect the real existence of such an objective thing as the atomic bomb. Laser, transistor, tunnel microscope and so on have nothing to do with quantum mechanics, because quantum mechanics is also a fundamentally wrong theory, but this does not hinder the validity of the existing experimental results, the so-called experimental verification of relativity and quantum mechanics are forced to

incorporate experimental results and physical phenomena into their own theoretical system. Special thanks to Academician Chen Jia-er for his theoretical guidance and help.

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## 1 Introduction

Relativity and Quantum mechanics are the two pillars of theoretical physics. However, more than 100 years have passed, relativity and quantum mechanics have not been integrated, and there are still many irreconcilable contradictions between them<sup>[1]</sup>. For a century, no breakthroughs have been made in theoretical physics, and we no longer hear theories that will lead to a new physical revolution. There are three reasons why relativity and quantum mechanics cannot be reconciled: 1. One of the two theories is incorrect; 2. Neither theory is correct; 3. Both theories are correct, but no way to reconcile them has been found yet. In this paper, the experimental verification of general relativity and the mathematical derivation and analysis of the core formula of special relativity will deeply reveal the errors of the theory of relativity, but also reveal the contradiction between Minkowski's four-dimensional space-time and the "principle of the invariable speed of light", Einstein's proposed "relativity of simultaneity" also exist serious errors, Finally, we find that special relativity is a wrong theory without any physical significance, and the "Riemann curved space-time" based on the four-dimensional space-time of special relativity Minkowski and general relativity are wrong theories.

The wavelength of "matter wave"  $\lambda = h / p$  , the basic formula of quantum mechanics, is also based on the wrong "mass-energy equation" of special relativity. The wavelength of matter wave  $\lambda = h / p$  is the premise and basis of the wave function of "matter wave" and the Schrodinger equation. Therefore, Schrodinger equation is also a

wrong formula without practical physical significance. Schrodinger equation as the core mathematical expression of quantum mechanics is enough to cause the collapse of the entire theoretical edifice. In addition, Einstein's explanation of "photoelectric effect" and Compton effect cannot explain that light has particle property, and "wave-particle duality" is also not valid. "wave-particle duality" is another misdirection of Einstein to human beings. It "inspired" de Broglie to put forward the concept of "matter wave", which makes theoretical physics fall into the "quantum" abyss. The problem of "ultraviolet disaster" of blackbody radiation is a man-made physical accident, "quantum" is a false concept, and quantum mechanics is also a wrong theory. Like the theory of relativity, quantum mechanics also has the problem that the same mathematical symbol expresses two contradictory physical meanings at the same time. These problems involve the deep relationship between physics and mathematics, and are also the core problems faced by theoretical physics.

Overturing the theory of relativity and quantum mechanics is not the goal. We must construct a new and correct theory in order to lead human science to the right path. The theoretical framework of the new physical theory has been built, and the new physical theory can perfectly explain almost all the physical and chemical phenomena. It also systematically discusses the advanced theories and practical paths of normal temperature superconductivity, normal temperature nuclear fusion, anti-gravity flight, "theoretical output machine system engineering" and so on. "Theoretical output machine system engineering" is inspired by the process of identifying the problems and contradictions between relativity and quantum mechanics. This system engineering is a "semi-artificial and semi-intelligent" system, which has the infinite explorativeness of physical theory and mathematical edifice. The difference between this system and pure mathematical system is that it needs to take into account the reality of objective physics. This system can help us explore the laws of physics and the mysteries of nature in the most accurate way possible.

## 2 Experimental verification of the existence of errors in General Relativity

Physics is also known as a science of experiment and observation. Experimental verification is the most effective way to test whether a physical theory is correct. General relativity, as a very important pillar of theoretical physics, has naturally received so-called experimental verification. They are gravitational redshift, gravitational lensing, and

Mercury's perihelion precession. Experimental verification of gravitational redshift and gravitational lensing can still be explained using Newtonian classical mechanics, which, according to general relativity, is not as "precise" as the theory of relativity. The precession of Mercury perihelion is regarded as the experiment that most verifies the theory of general relativity. It is also called the most representative experimental test of general relativity, because the precession of Mercury perihelion cannot be explained by Newton's classical theory. According to the explanation of Newton's classical mechanics, the orbit of Mercury should be a closed ellipse, and there will be no precession. Einstein claimed that general relativity could explain the precession of Mercury's perihelion, but did it? If we carefully analyze the mathematical derivation process of general relativity about the precession of Mercury perihelion, we will find that there are serious mathematical errors in this mathematical derivation process. The most representative experimental verification of "Mercury perihelion precession" of general relativity is completely the result of "making up" the experimental data.

## 2.1 Mathematical derivation and explanation of "perihelion precession of Mercury" in general relativity theory

### 2.1.1 The derivation of planetary orbits by Newtonian mechanics

In theoretical mechanics, the motion trajectory of a planet under the action of universal gravity mainly involves two conserved quantities, one is the conservation of angular momentum and the other is the conservation of energy. The main formula is as follows <sup>[2]</sup>

$$\frac{d\varphi}{dt} = \frac{L}{r^2} \quad (1) \text{ Conservation of angular momentum}$$

$$\frac{1}{2} \left( \frac{dr}{dt} \right)^2 = E + \frac{GM}{r} - \frac{L^2}{2r^2} \quad (2) \text{ Conservation of energy}$$

Where the conserved quantities  $E$  and  $L$  are the planet's energy and angular momentum, respectively. By eliminating  $t$  in equation two, the orbital equation of planetary motion can be obtained:

$$\frac{1}{2} \left[ \frac{d}{d\varphi} \left( \frac{1}{r} \right) \right]^2 = \frac{E}{L^2} - \frac{1}{2r^2} + \frac{GM}{rL^2} \quad (3)$$

If we derivative  $\varphi$  on both sides, we can get:

$$\frac{d^2}{d\varphi^2} \left( \frac{1}{r} \right) + \frac{1}{r} = \frac{GM}{L^2} \quad (4)$$

Let  $u = \frac{GM}{r}$ , the above equation can be turned into:

$$\frac{d^2 u}{d\varphi^2} + u = \left( \frac{GM}{L} \right)^2 \quad (5)$$

The solution of this equation is the curve equation of the orbit of the planet, which is:

$$u = \left( \frac{GM}{L} \right)^2 (1 + e \cos \varphi) \quad (6)$$

or: 
$$r = \frac{L^2}{GM} \frac{1}{1 + e \cos \varphi} \quad (7)$$

The above equation represents a closed ellipse, where  $e$  is the eccentricity. Therefore, the orbit of the planet is closed according to Newton's theory. However, astronomical observation shows that the planetary orbit is not closed, its orbit will produce precession phenomenon, in the eight planets of the solar system with Mercury perihelion precession effect is the most obvious.

### 2.1.2 The derivation of planetary orbits in General relativity

According to the conservation of energy, conservation of angular momentum and four-speed contraction, let the parameter  $\lambda$  take the proper time  $\tau$ , and have the following relation:

$$\frac{dt}{d\tau} = E \left( 1 - \frac{2M}{r} \right)^{-1} \quad (8) \text{ Conservation of energy}$$

$$\frac{d\varphi}{d\tau} = \frac{L}{r^2} \quad (9) \text{ Conservation of angular momentum}$$

$$\left( \frac{dr}{d\tau} \right)^2 = E^2 - \left( 1 - \frac{2M}{r} \right) \left( 1 + \frac{L^2}{r^2} \right) \quad (10) \text{ Four-speed contraction}$$

You get rid of the proper time  $\tau$ , and you get the orbital equation

$$\frac{1}{2} \left[ \frac{d}{d\varphi} \left( \frac{1}{r} \right) \right]^2 = \frac{E^2 - 1}{2L} - \frac{1}{2r^2} + \frac{M}{r^3} + \frac{M}{rL} \quad (11)$$

To simplify the calculation, we can take the natural system of units, which is  $G = c = 1$ .

By taking the derivative of  $\varphi$  from both sides, we can get:

$$\frac{d^2}{d\varphi^2} \left( \frac{1}{r} \right) + \frac{1}{r} = \frac{M}{L^2} + \frac{3M}{r^2} \quad (12)$$

Let  $u = \frac{GM}{r}$ , the above equation can be turned into:

$$\frac{d^2 u}{d\varphi^2} + u = \left( \frac{M}{L} \right)^2 + 3u^2 \quad (13)$$

As can be seen from the above equation, compared with the orbital equation

$$\frac{d^2 u}{d\varphi^2} + u = \left( \frac{M}{L} \right)^2$$

derived from Newton's theory, the equation derived from general

relativity has only  $3u^2$  more terms, which general relativity calls the correction term. By

substituting the solar mass  $M$  and the mean radius  $r$  of Mercury's orbit into  $u = \frac{GM}{r}$ ,

$u \approx 10^{-7}$  can be obtained. According to this result, the magnitude of the correction term

$3u^2$  is  $10^{-14}$ . Therefore, Einstein believed that Newton's solution could be taken as the zero-order approximate solution of general relativity, because it is very difficult to solve the second-order differential equation with  $3u^2$  term directly. By substituting the solution

$u = \left( \frac{GM}{L} \right)^2 (1 + e \cos \varphi)$  obtained from Newton's theory into  $3u^2$  term, this square

term would not exist, which can greatly reduce the difficulty of solving. According to the

curve equation of planetary orbit obtained by Newton theory:  $u = \left( \frac{GM}{L} \right)^2 (1 + e \cos \varphi)$ .

General relativity thinks that the value of  $e$  is very small, so  $\left( \frac{GM}{L} \right)^2$  and  $u$  are also of

the same order of magnitude. Substitute the solution obtained by Newton theory into the equation of general relativity about planetary

$$\text{orbit: } \frac{d^2 u}{d\varphi^2} + u = \left( \frac{M}{L} \right)^2 + 3u^2 = \left( \frac{M}{L} \right)^2 + 3 \left[ \left( \frac{M}{L} \right)^2 (1 + e \cos \varphi) \right]^2 \quad (14)$$

That is:

$$\frac{d^2 u}{d\varphi^2} + u = \left( \frac{M}{L} \right)^2 + 3 \left( \frac{M}{L} \right)^4 (1 + e \cos \varphi)^2 = \left( \frac{M}{L} \right)^2 + 3 \left( \frac{M}{L} \right)^4 (1 + 2e \cos \varphi + e^2 \cos^2 \varphi) \quad (15)$$

After sorting out:

$$\frac{d^2u}{d\varphi^2} + u = \left(\frac{M}{L}\right)^2 + 3\left(\frac{M}{L}\right)^4 + 6\left(\frac{M}{L}\right)^4 e \cos \varphi + 3\left(\frac{M}{L}\right)^4 e^2 \cos^2 \varphi \quad (16)$$

For that, General relativity says that Mercury's orbit has a very small eccentricity, that is  $e \ll 1$ , so the right-hand  $e^2$  term can be omitted. The second term on the right hand side of the equation, which general relativity says is a higher order small quantity compared to the first term on the right can also be omitted. Therefore, the final equation of general relativity becomes:

$$\frac{d^2u}{d\varphi^2} + u \approx \left(\frac{M}{L}\right)^2 + 6\left(\frac{M}{L}\right)^4 e \cos \varphi \quad (17)$$

Since this equation is a linear equation, the solution of this equation can be divided into two parts:

$$u = u_1 + u_2$$

Substituting into the above formula, we can get:

$$\frac{d^2u_1}{d\varphi^2} + u_1 = \left(\frac{M}{L}\right)^2 \quad (18)$$

$$\frac{d^2u_2}{d\varphi^2} + u_2 = 6\left(\frac{M}{L}\right)^4 e \cos \varphi \quad (19)$$

We can get the solutions for  $u_1$  and  $u_2$ , which are:

$$u_1 = \left(\frac{M}{L}\right)^2 (1 + e \cos \varphi) \quad (20)$$

$$u_2 = 3\left(\frac{M}{L}\right)^4 e \varphi \sin \varphi \quad (21)$$

$u_1$  is exactly the same as the curve equation of planetary orbit derived from Newton theory

$$u = u_1 + u_2 = \left(\frac{M}{L}\right)^2 \left[ 1 + e \cos \varphi + 3\left(\frac{M}{L}\right)^2 e \varphi \sin \varphi \right] \quad (22)$$

By ignoring terms higher than  $\left(\frac{M}{L}\right)^4$ , the general relativistic equation of Mercury's orbit is

obtained:

$$u \approx \left(\frac{M}{L}\right)^2 \left\{ 1 + e \cos \left[ 1 - 3\left(\frac{M}{L}\right)^2 \right] \varphi \right\} \quad (23)$$

As can be seen from the above equation, any point in the orbit of the planet cannot return to the corresponding "original position" after rotating  $\varphi = 2\pi$ , but must be rotated another small Angle, because the period  $T$  of  $u$  is no longer  $\varphi = 2\pi$ , but

$$T = \frac{2\pi}{1 - 3\left(\frac{M}{L}\right)^2} \quad (24)$$

That is to say, for a planet in continuous motion, every point in its orbit must be rotated by the Angle of  $\varphi_n$  to return to the corresponding "original position".

$$\text{Among them: } \varphi_n = \frac{2n\pi}{1 - 3\left(\frac{M}{L}\right)^2} \approx 2n\pi \left(1 + \frac{3M^2}{L^2}\right) \quad (25)$$

This formula indicates that "precession phenomenon" will occur in planetary orbit. In terms of observation accuracy, precession of perihelion is easier to observe, and precession of adjacent perihelion is:

$$\Delta\varphi = \varphi_{n+1} - \varphi_n - 2\pi = 6\pi \left(\frac{M}{L}\right)^2 \quad (26)$$

$$\text{The return to the usual units is } \Delta\varphi = 6\pi \left(\frac{GM}{cL}\right)^2 \quad (27)$$

For Mercury,  $\Delta\varphi = 0.1''$ , that is, the precession of orbit perihelion is  $0.1''$  every one week of Mercury's movement, which accumulates to  $43''$  precession every 100 years.

Experimentally observed precession Angle

$$(5600.73 \pm 0.41'') - (5557.62 \pm 0.20'') = 43.11 \pm 0.45'' \text{ cannot be explained,}$$

and the effect of general relativity is exactly consistent with it. The verification of Mercury perihelion precession is known as the most powerful experimental evidence of general relativity.

2.2 There are serious errors in the mathematical derivation of "perihelion precession of Mercury" in General relativity

The "precession of Mercury perihelion" has been called the most powerful

experimental proof of general relativity, because the planetary orbit equation derived from Newton's theory is a closed ellipse, a closed ellipse will not have any precession, and the planetary orbit equation derived from general relativity satisfies this precession, and "completely agrees with the experiment". However, through the mathematical derivation of general relativity on "Mercury perihelion precession", we find that this is completely the result of general relativity to the experimental results "pieced together", has lost the most basic scientific principle.

General relativity's explanation of the "precession of Mercury perihelion" is essentially the derivation of the planetary orbit equation. In the derivation process, a key step is the substitution of the equation. The specific method is to substitute the Newtonian solution

of the planetary orbit equation  $u = \frac{(\frac{M}{\sim})^2}{L}(1 + e \cos \varphi)$  into

$\frac{d^2u}{d\varphi^2} + u = \frac{(\frac{M}{\sim})^2}{L} + 3u^2$ , in order to expand the  $3u^2$  on the right side of the equation.

The nonlinear equation is converted into a linear equation to facilitate the solution. Let's take a look at how general relativity makes substitutions and approximations:

The orbital equation obtained by general relativity is:

$$\frac{d^2u}{d\varphi^2} + u = \frac{(\frac{M}{\sim})^2}{L} + 3u^2 \quad (28)$$

Substitute  $u = \frac{(\frac{M}{\sim})^2}{L}(1 + e \cos \varphi)$  into the  $3u^2$  term on the right, and the orbital equation becomes:

$$\frac{d^2u}{d\varphi^2} + u = \frac{(\frac{M}{\sim})^2}{L} + 3u^2 = \frac{(\frac{M}{\sim})^2}{L} + 3 \left[ \frac{(\frac{M}{\sim})^2}{L}(1 + e \cos \varphi) \right]^2 \quad (29)$$

That is:

$$\frac{d^2u}{d\varphi^2} + u = \frac{(\frac{M}{\sim})^2}{L} + 3\frac{(\frac{M}{\sim})^4}{L}(1 + e \cos \varphi)^2 = \frac{(\frac{M}{\sim})^2}{L} + 3\frac{(\frac{M}{\sim})^4}{L}(1 + 2e \cos \varphi + e^2 \cos^2 \varphi) \quad (30)$$

Then comes the most ridiculous operation of General relativity. General relativity simply omits the numbers 1 and  $e^2 \cos^2 \varphi$  from the  $(1 + 2e \cos \varphi + e^2 \cos^2 \varphi)$  term on the right-hand side of the equation, leaving  $2e \cos \varphi$  to do the rest of the calculation, leaving only two terms on the right-hand side of the equation:

$$\frac{d^2u}{d\varphi^2} + u = \left(\frac{M}{L}\right)^2 + 3\left(\frac{M}{L}\right)^4(2e \cos \varphi) \quad (31)$$

The formula above is the one that general relativity uses to solve planetary orbital curves. We all know a simple mathematical relationship, when  $a$  is not equal to  $b$ ,  $a^2 + b^2$  must be greater than  $2ab$ . Mercury's orbital eccentricity  $e$  is a number less than 1, and  $\cos \varphi$  is a variable, so  $e \cos \varphi$  must not equal 1, so  $1 + e^2 \cos^2 \varphi$  must be greater than  $2e \cos \varphi$ . General relativity, on the other hand, dismisses

$1 + e^2 \cos^2 \varphi$ , leaving the smaller  $2e \cos \varphi$  for subsequent operations, which violates the most basic mathematical rules and is a serious mathematical error. Moreover, the eccentricity of Mercury's orbit  $e$  is 0.2056, and  $2e \cos \varphi$  is also less than

$1 + e^2 \cos^2 \varphi$  from this point of view, and the two numbers are so different that General

relativity should not discard  $3\left(\frac{M}{L}\right)^4(1 + e^2 \cos^2 \varphi)$  and keep  $3\left(\frac{M}{L}\right)^4(2e \cos \varphi)$  for

subsequent calculations.

As for why Einstein chose  $2e \cos \varphi$  and dropped  $1 + e^2 \cos^2 \varphi$ , there are various physical explanations. For example, some people think that the  $\left(\frac{M}{L}\right)^2$  term in

$$\frac{d^2u}{d\varphi^2} + u = \left(\frac{M}{L}\right)^2 + 3\left(\frac{M}{L}\right)^4(1 + e \cos \varphi)^2 = \left(\frac{M}{L}\right)^2 + 3\left(\frac{M}{L}\right)^4(1 + 2e \cos \varphi + e^2 \cos^2 \varphi)$$

is the same kind of problem as the  $3\left(\frac{M}{L}\right)^4$  term, and their influence on the orbit of

Mercury is the same kind of physical problem. Compared with  $\left(\frac{M}{L}\right)^2$ ,  $3\left(\frac{M}{L}\right)^4$  is a small

quantity of higher order, so  $3\left(\frac{M}{L}\right)^4$  can be discarded. Mercury orbit eccentricity  $e$  is

another kind of problem, and their influence on Mercury orbit is another kind of physics

problem. Because  $e$  is small, the terms with  $e^2$  can be ignored, so  $3\left(\frac{M}{L}\right)^4(2e \cos \varphi)$  is

retained, while  $3\left(\frac{M}{L}\right)^4(e^2 \cos^2 \varphi)$  is abandoned. Some people think  $\left(\frac{M}{L}\right)^2$  is a constant,

so they can discard the high order small quantity  $3\left(\frac{M}{L}\right)^4$ . In addition, there are a variety of

other physical explanations for why Einstein chose  $2e \cos \varphi$  and threw away

$1 + e^2 \cos^2 \varphi$ . This problem actually involves a deep problem, that is, the relationship

between physics and mathematics, which is also a very important problem faced by

theoretical physics. The interpretation of physical formulas must respect mathematical

logic, because mathematics is the logical cognitive framework of human beings. No matter

what kind of physical interpretation we make, we cannot break through the most basic

mathematical logic. If we have to choose between "physical interpretation" and

"mathematical logic", we must choose "mathematical logic" rather than "various different

physical interpretations", because mathematics is the logical cognitive framework of

human beings, which is the red line and cognitive bottom line that we cannot cross! If we

abandon this cognitive baseline, mathematics and the whole system of natural sciences will

cease to exist! If choosing  $2ab$  over  $a^2 + b^2$  means that we abandon the most basic

logical judgment, the reason why Einstein abandoned this basic mathematical logical

cognition and stubbornly chose his so-called physical interpretation has only one purpose,

that is to "piece together" the experimental data. If  $1 + e^2 \cos^2 \varphi$  is chosen instead of

$2e \cos \varphi$ , the mathematical derivation of precession of  $43''$  every 100 years cannot be

obtained. How can we prove the experimental verification of general relativity for the

precession of perihelion of Mercury? Einstein himself was very aware of this, so he can only

be forced to abandon the big items, keep the small items, this is a deceitful practice, has

violated the most basic scientific spirit. The relationship between physics and mathematics

is involved in Lorentz transformation, Lorentz velocity transformation and many aspects of

quantum mechanics. Moreover, this problem is very fundamental and is the most core

problem faced by theoretical physics. We will further discuss the relationship between

physics and mathematics systematically in the following chapters.

From the above discussion, the reason why Einstein chose the operation of

"abandoning the big one and choosing the small one" was completely "oriented" by the experimental results. In order to make the best efforts to make the "theory and practice" consistent and ensure that the theoretical calculation was "consistent" with the observation result of "Mercury perihelion precession", Einstein made many approximations. This is just one of the more outrageous moves.

Einstein also thought that the eccentricity of Mercury's orbit  $e$ , was so small that the term with  $e^2$  could be omitted, meaning that the  $6\left(\frac{M}{L}\right)^4 e \cos \varphi$  term would be kept

and the  $3\left(\frac{M}{L}\right)^4 e^2 \cos^2 \varphi$  term discarded. In fact, the eccentricity  $e$  of Mercury's orbit is

not the number described by General relativity, which is much less than 1. According to astronomical observations, the eccentricity  $e$  of Mercury's orbit is 0.2056, that of Mars is 0.0934, that of Saturn is 0.0560, that of Earth is 0.0167, and that of Venus is 0.0068. The orbital eccentricity of other planets in the solar system is also different. It can be seen that the orbital eccentricity of Mercury has reached more than 0.2, which is the largest planet in the solar system, not much less than 1, and  $e^2$  has reached more than 0.04. When verifying such accurate astronomical data, it is impossible to abandon it at will. You should know that the orbit precession of Mercury is only  $0.1''$  per week of movement calculated by General relativity. This is a very small number, only  $\frac{1}{36000}$  of  $1^\circ$ . Although the value of

orbital eccentricity  $e$  is not equivalent to the precession value, it is the core data for calculating planetary precession. In the case of Mercury, the  $e^2$  term cannot be omitted. Moreover, in the case of Mercury,  $2e \cos \varphi \leq 0.4112 < 1$ , if 1 is omitted,  $2e \cos \varphi$  should not be retained. Since General relativity omits  $1 + e^2 \cos^2 \varphi$ , why kept  $2e \cos \varphi$ ?

What about this item less than 0.4112? It deserves to be discarded more than the sum of the first two. Therefore, no matter what kind of physical interpretation or interpretation of general relativity is actually "confusing the public", general relativity's explanation of "Mercury perihelion precession" has a low-level error, has lost the most basic scientific principles.

In fact, there are many factors that affect the measurement of Mercury's orbit in astronomical observations, such as: Due to the interference of other planets and other factors, the total value of these corrections is as much as 5,100 ", and the remaining 43" is less than 1% of the total value. It is hard to say that we have taken into account all possible factors. In terms of experimental error, this 1% error is within the acceptable range, not exactly the perfect finding of the precession of 43" as Einstein claimed. Because of its mathematical derivation and processing process there are serious mathematical errors.

### 3 Special relativity has fundamental errors

#### 3.1 Minkowski's four-dimensional space-time contradicts the principle of the invariance of the speed of light

In order to explain the contradictions and errors existing in special relativity, we take the way of quoting Einstein's original work to demonstrate, as far as possible to avoid the adverse effects of different interpretations of different versions of relativity works on the problem itself. According to Einstein's explanation of the principle of the invariable speed of light in the opening section of his paper on the Electrodynamics of Moving Bodies published in 1905<sup>[3]</sup>, "Light always travels at a definite speed  $c$  in a vacuum, which is independent of the motion state of the emitter". According to the further explanation of the principle of the invariance of the speed of light in Section 11 of the first part of Einstein's "A Brief Theory of Special and General Relativity" published in 1916<sup>[4]</sup>: "In the  $K$  system, a light signal is sent along the positive direction of the  $x$ -axis, and the light signal travels at speed  $c$ . The speed of the light signal with respect to the frame of reference  $K'$  is also equal to  $c$ , and we get the same result for light rays traveling in any other direction. This is not surprising, of course, because it is from this idea that the Lorentz transformation is derived.

That's Einstein's explanation of the constant speed of light principle, which simply

means that the same light in a vacuum travels at a constant speed  $c$  in different frames of reference. We must clearly explain and interpret the principle of the constancy of the speed of light, and avoid the various or different versions of the principle of the speed of light that may appear in different works of relativity. We must first make clear what Einstein means by the principle of the constancy of the speed of light. In fact, most people's interpretation and understanding of "the principle of the constancy of the speed of light" are correct, and their understanding is completely consistent with Einstein's explanation of "the principle of the constancy of the speed of light". However, there are also a small number of people who have their own "unique" understanding of "the principle of the constancy of the speed of light". For example, some people may interpret Einstein's statement that "light always travels at a definite speed  $c$  in a vacuum, which is independent of the motion state of the emitting body" as meaning that the speed of light travels independent of the motion of the emitting body. This understanding is a primitive error, because all waves have this characteristic, whether the source of the wave is moving or not. The velocity of the wave doesn't change. Einstein's hypothesis of "the constant speed of light principle" clearly does not mean this in physics. Einstein also gave a clear explanation of "the principle of constant speed of light" in his book "A Simple Theory of Special and General Relativity" <sup>[4]</sup> : "In the  $K$  system, an optical signal is sent along the positive direction of the  $x$ -axis, and the optical signal advances at the speed  $c$ . The propagation speed of the optical signal relative to the reference system  $K'$  is also equal to  $c$ . The reason why we have repeated this question is to show what the explicit physical meaning of the principle of the invariance of the speed of light is, which is crucial to proving a theory correct or not.

### 3.1.1 Lorentz transformation and Minkowski four-dimensional spacetime

Lorentz transformation is the core mathematical formula of Special relativity<sup>[1]</sup> The conclusions of special relativity such as "shrinking clock slow", "dynamic mass", "mass-energy equation  $E = mc^2$ " and "Minkowski four-dimensional space-time" are all based on Lorentz transformation. Einstein derived Lorentz transformation on the basis of the two basic assumptions of "relativity principle" and "the principle of the constancy of the speed of light". The mathematical expression of Lorentz transformation is as follows:

$$\begin{cases} x' = \frac{x - vt}{\sqrt{1 - v^2 / c^2}} & \textcircled{1} \\ y' = y & \textcircled{2} \\ z' = z & \textcircled{3} \\ t' = \frac{t - vx / c^2}{\sqrt{1 - v^2 / c^2}} & \textcircled{4} \end{cases} \quad (32)$$

Minkowski four-dimensional space-time referred to as "Min's space-time" or "four-dimensional space-time", by the Russian-born German mathematician Minkowski proposed. The four-dimensional space-time is composed of three dimensional space and one dimensional time, which can be represented by  $p(t, x, y, z)$  with coordinates. Since we cannot draw a four-dimensional space graph, the time dimension is generally represented by the vertical axis, which is represented by  $t$ , and the plane composed by  $xOy$  represents the entire three dimensional space, as shown in the figure below:

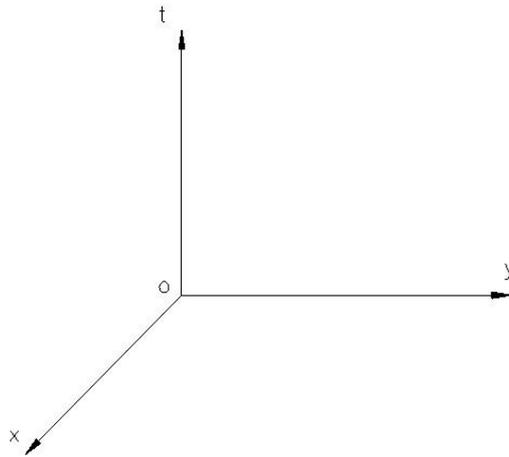


Fig.1. Minkowski four-dimensional space-time diagram

### 1.The relationship between Min space-time and Lorentz transformation

In three-dimensional Euclidean space, the distance between two points can be expressed as  $ds^2 = dx^2 + dy^2 + dz^2$ . In Minkowski four-dimensional space time, the distance between two points can be expressed as  $ds^2 = -c^2 dt^2 + dx^2 + dy^2 + dz^2$ . The reason why it can be written in this form is that the so-called invariance of space time interval satisfies special relativity under the Lorentz transformation. Let's take a look at the derivation. First, the differential form of the Lorentz transformation can be written by the following four formulas:

$$\begin{cases} dx' = \frac{dx - vdt}{\sqrt{1 - v^2 / c^2}} \\ dy' = dy \\ dz' = dz \\ dt' = \frac{dt - vdx / c^2}{\sqrt{1 - v^2 / c^2}} \end{cases} \quad (33)$$

Now we substitute the differential form of the Lorentz transformation into the following formula

$$ds'^2 = -c^2 dt'^2 + dx'^2 + dy'^2 + dz'^2 \quad (34)$$

We can get:

$$\begin{aligned} ds'^2 &= -c^2 dt'^2 + dx'^2 + dy'^2 + dz'^2 \\ &= -c^2 \left( \frac{dt - vdx / c^2}{\sqrt{1 - v^2 / c^2}} \right)^2 + \left( \frac{dx - vdt}{\sqrt{1 - v^2 / c^2}} \right)^2 + dy^2 + dz^2 \\ &= \frac{-c^2 \left( dt^2 - \frac{2dtvdx}{c^2} + \frac{v^2 dx^2}{c^4} \right) + \frac{dx^2 - 2dxvdt + v^2 dt^2}{1 - v^2 / c^2} + dy^2 + dz^2}{1 - v^2 / c^2} \\ &= \frac{-c^2 dt^2 + 2dtvdx - \frac{v^2 dx^2}{c^2} + dx^2 - 2dxvdt + v^2 dt^2}{1 - v^2 / c^2} + dy^2 + dz^2 \\ &= \frac{-c^2 dt^2 - \frac{v^2 dx^2}{c^2} + dx^2 + v^2 dt^2}{1 - v^2 / c^2} + dy^2 + dz^2 \\ &= \frac{-c^4 dt^2 - v^2 dx^2 + c^2 dx^2 + c^2 v^2 dt^2}{c^2 - v^2} + dy^2 + dz^2 \quad (35) \\ &= \frac{-c^2 dt^2 (c^2 - v^2) + (c^2 - v^2) dx^2}{c^2 - v^2} + dy^2 + dz^2 \\ &= -c^2 dt^2 + dx^2 + dy^2 + dz^2 = ds^2 = ds'^2 \end{aligned}$$

This is the invariance of the time space interval of the Minkowski spacetime, which is formally similar to the distance expression  $ds^2 = dx^2 + dy^2 + dz^2$  in the three-dimensional Euclidean space, but the coefficient of the first term of the expression between two points in the Minkowski spacetime is -1,  $ds^2 = -c^2 dt^2 + dx^2 + dy^2 + dz^2$ , This formula becomes very easy to understand if we combine it with a three-dimensional Euclidean space, where  $ds^2 = dx^2 + dy^2 + dz^2 = dx'^2 + dy'^2 + dz'^2 = ds'^2$ , that is to say, in a three-dimensional Euclidean space, when you change the coordinate system,

the distance between the two points does not change, in other words, the distance between the two points does not depend on the choice of coordinate system, that is, the space distance in three-dimensional space does not change. As with the distance between two points in three-dimensional space, the four-dimensional Minkowski space-time also satisfies:

$$ds^2 = -c^2 dt^2 + dx^2 + dy^2 + dz^2 = -c^2 dt'^2 + dx'^2 + dy'^2 + dz'^2 = ds'^2, \text{ That is}$$

to say, when the four-dimensional space-time changes the coordinate system or reference system, the space-time distance between the two points remains unchanged, in other words, the space-time interval between the two points has nothing to do with the selection of the reference system or coordinate system, that is, the space-time interval invariance of the four-dimensional space-time.

The above discussion and formula derivation fully explain the relationship between Lorentz transformation and Minkowski spacetime. Minkowski four-dimensional spacetime can be regarded as another mathematical expression of Lorentz transformation.

## 2. Einstein World Line

The trajectory of particle in the four-dimensional space-time is the world line. The world line is the only path for objects to pass through the four-dimensional space-time, which is different from the mechanical "orbit" or "path" because of the addition of time dimension. The world line is the most intuitive expression of Minkowski's four-dimensional space-time.

The world line can intuitively describe the trajectory of a particle in Minkowski space-time. For convenience, the world line is generally represented by only two dimensional coordinates, with the vertical axis  $t$  representing time coordinates and the horizontal axis  $x$  representing space coordinates. The speed of light  $c$  is represented by the natural unit system, that is,  $c = 1$ . The world line is shown as follows:

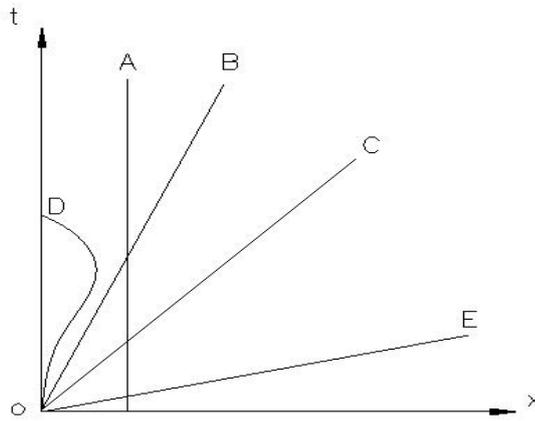


Fig.2. World lines of objects in different states of motion

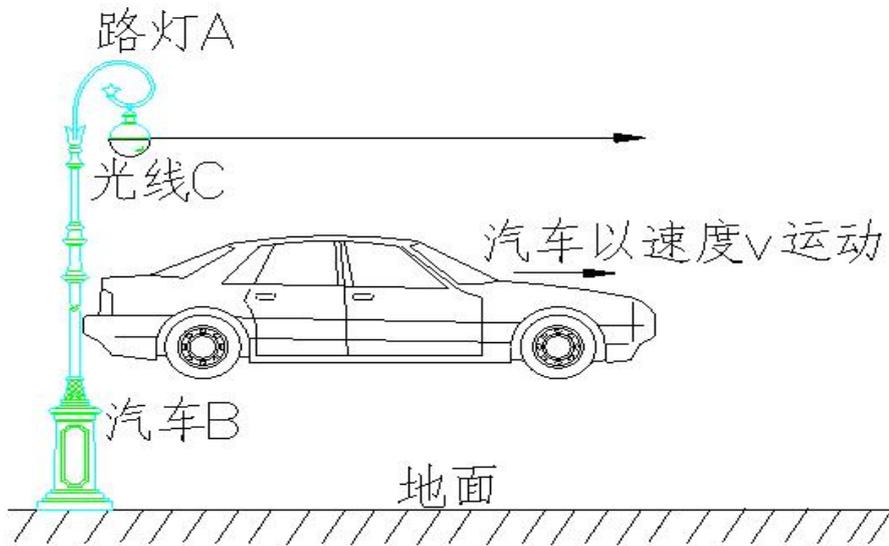
The figure above shows the world lines of five different particles, where:

- 1) Particle  $A$  is at rest, and its spatial position does not change with time.
- 2) Particle  $B$  is in uniform motion, its speed is less than the speed of light, and both  $A$  and  $B$  are called "time-like world lines".
- 3)  $C$  stands for the world line of photons, whose speed is the natural system of units of the speed of light, with a value of 1. The world line of light is called the "light-like world line."
- 4)  $D$  is a particle moving along a curve from the origin and back to the origin.
- 5) The  $E$  particle is also in uniform motion, but its speed is faster than the speed of light. The  $E$  world line is called "space-like world line", but according to special relativity, this situation is not allowed to occur in reality.

### 3.1.2 Minkowski space-time and its world line contradict the principle of the invariance of the speed of light

Both Lorentz transformation and the whole of special relativity and Minkowski spacetime are based on the hypothesis that the speed of light does not change. But to describe Minkowski spacetime intuitively in terms of world lines exposes a contradiction, because moving particles in world lines can also be seen as a frame of reference. By Einstein's world lines, We can obviously observe that the velocity of a moving particle as an inertial system with respect to light will no longer be  $c$ , which is contradictory with the basic postulate of special relativity that "the speed of light in any reference system is  $c$ ". In this respect, it also exposes the profound contradiction and error in the principle of "the constant speed of light" of special relativity.

Let's take a simple example to illustrate this problem. On the ground, there is a stationary street lamp  $A$  and a car  $B$  moving uniformly at speed  $v$ . The light from the street lamp is  $C$ , as shown



below:

Fig. 3. Glowing street lights and car physics scenes

If the above physics scenario were described by Einstein's world line, it would look like the following:

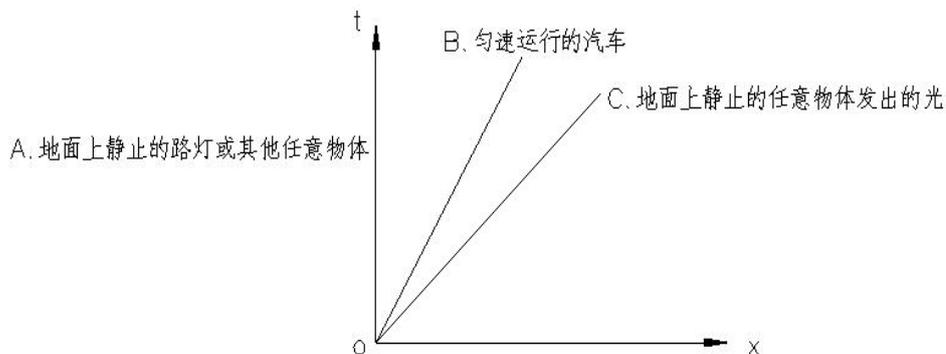


Fig. 4. Street lights, cars, light world line

Axis  $t$  represents the world line of street lamp  $A$ , while  $B$  represents the world line of cars traveling at a constant speed along the positive direction of axis  $x$ .  $C$  represents the world line of light emitted by the street lamp propagating in the positive direction of the  $x$  axis.

It is not difficult to see from the above picture that the propagation speed of the light signal from the street lamp relative to the ground is  $c$ , but relative to the car frame of

reference, the speed of the light beam will no longer be  $c$ , and the Angle between the world line  $B$  of the car and the world line  $C$  of the light will no longer be  $45^\circ$ . If there are other objects moving at different speeds on the ground, The Angle between their world line and the world line  $C$  of the light emitted by the street lamp is also different, which is contrary to Einstein's declared "the principle of constant speed of light", and the world line drawn in Minkowski's space-time is also based on "the principle of constant speed of light". However, through the above picture, we find that Minkowski's space-time world line is obviously contrary to "the principle of constant speed of light". It also deeply reflects the contradiction between "the principle of the invariable speed of light" and its extension theory. The direct expression of Minkowski's space-time world line to street lamps, cars and light directly negates the correctness of the "principle of the invariable speed of light". Unless we consider Minkowski spacetime to be wrong, in which case the general relativity derived from extending Minkowski spacetime to Riemann curved spacetime is also wrong and has no physical meaning.

To be clear: Even with such a simple physics scenario and Einstein's own explicit statement of the invariant speed of light principle, the proponents of relativity would still have their own explanations. Anyway, they would have all sorts of weird reasons why the Minkowski world line contradicted the invariant speed of light principle is wrong. For example, some people think that "the principle of constant speed of light" said by Einstein can be understood as "the speed of light is a kind of limiting speed", which is also not valid. This is also contrary to the world line picture of Minkowski space-time above. The Angle between the world line of the car moving at speed  $v$  and the world line of the light emitted by the stationary street lamp is no longer  $45^\circ$ . The relative velocity between them is not  $c$ , which neither satisfies the principle of the invariance of the speed of light nor satisfies the hypothesis that the speed of light is a kind of limiting speed. There are a lot of other fancier theories about the unchanging speed of light principle, and these people insist that their idea of the unchanging speed of light principle still holds true, as if the cult of Einstein's personality has overtaken their own logical thinking itself, and the greatness and nobility of the unchanging speed of light principle seems to surpass everything else in their mind. No one is allowed to "sully" this, which seems to have become some kind of

religious belief rather than rational logical analysis. This is why we have repeatedly emphasized above what Einstein's "constant speed of light principle" means in physics, and here we reiterate Einstein's own explanation of his hypothesis: a beam of light travels at speed  $c$  in different frames of reference. However, the above description of the world line and its specific case completely negates the correctness of the "principle of constant speed of light". The above case seems so simple, but this is the result of Lorentz transformation, Minkowski space-time and world line derived from the principle of the invariance of speed of light. This result actually overturns the principle of the invariance of speed of light. Therefore, there is irreconcilable contradiction between the Lorentz transformation obtained on the basis of the principle of the invariance of speed of light and Minkowski space-time itself.

The world line is an intuitive geometric expression of Minkowski spacetime. Through the above relationship between Lorentz transformation and Minkowski spacetime, we know that Minkowski spacetime can be regarded as another mathematical expression of Lorentz transformation. Therefore, both Minkowski spacetime and Lorentz transformation are based on the "principle of constant speed of light". Now the world line, an intuitive geometric expression of Minkowski space-time, fully explains that "the principle of the invariance of the speed of light" is not valid, and the so-called hypothesis that "the speed of light is a kind of limit speed" is also not valid, which fully explains the profound contradiction and error between "the principle of the invariance of the speed of light" and Minkowski space-time.

### 3.2 The "relativity of simultaneity" exists a profound contradiction

#### 3.2.1 Einstein's "relativity of simultaneity"

##### 1. Einstein's "relativity of simultaneity"

In classical physics, if two things are simultaneous in one frame of reference, they are also simultaneous in the other frame of reference, which means "simultaneous" is absolute, but Einstein came to the conclusion that "simultaneous" is relative from the principle of relativity and the principle of the constancy of the speed of light, even the order of things is relative.

We still refer to Einstein's 1916 "On the Relativity of Simultaneity, Section 9, Part I of" A Brief Theory of Special and General Relativity<sup>[4]</sup> : Suppose there is a very long train running

on the track at a constant speed  $v$ . For the railway subgrade, two events happen simultaneously (for example, the rear  $A$  and the front  $B$  are struck by lightning at the same time). Is it also the same for the train system? We will prove directly that the answer must be no. When we say that lightning strikes at  $A$  and  $B$  are simultaneous with respect to the roadbed, we mean that the light emitted at  $A$  and  $B$ , where lightning occurs, meets at the midpoint  $M$  of the distance between  $AB$  and roadbed. But events  $A$  and  $B$  also correspond to points  $A'$  and  $B'$  on the train. Let  $M'$  be the midpoint of this distance  $A'B'$  on a moving train. When the lightning flash occurs, point  $M$  naturally coincides with  $M'$ , but  $M'$  is moving to the right at speed  $v$ . The observer on the train travels towards the light from  $B'$ , while the light from  $A'$  pursues him. So this observer will see light from  $B'$  first and light from  $A'$  later. Therefore, an observer taking the train as a reference object must conclude that the lightning flash  $B'$  occurs before the lightning flash  $A'$ . This leads to the following important result: for several events that are simultaneous for the roadbed, they are not simultaneous for the train, and vice versa (relativity of simultaneity). So that's Einstein's famous "lightning train" thought experiment. As shown in the picture below:

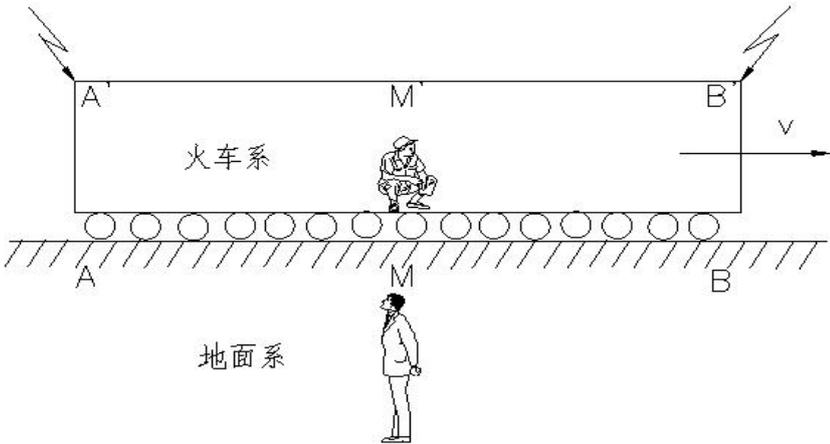


Fig. 5. Lightning-train Thought Experiment (Hit Moment)

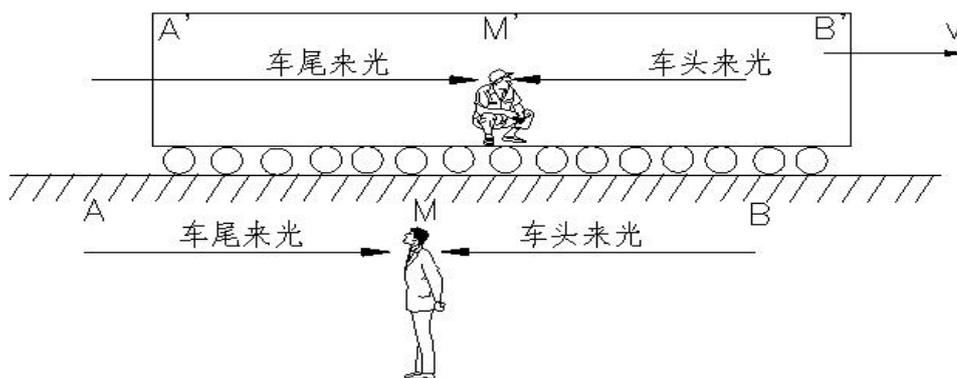


Fig. 6. Lightning-train Thought Experiment (The Path of Light)

From the above two pictures, it is easy to see that the light from the front of the car and the light from the rear of the car appear to the man on the ground to reach his eyes at the same time; But for the person on the train, because he is moving to the right with the train, the caboose light is "chasing" him, and the locomotive light is "facing" him. According to the assumption of constant speed of light in special relativity, the train light still travels at a speed of  $c$ . Eventually, the caboose light will travel farther than the train light, so the person on the train will see the train light first. After seeing the rear light. It can be seen that when the locomotive and rear of a train are struck by lightning at the same time, it is seen as simultaneous by people on the ground, but it is not seen as simultaneous by people on the train. Therefore, the Special relativity theory draws the conclusion of "relativity of simultaneity".

### 3.2.2 The "relativity of simultaneity" exists a profound contradiction

To quote Einstein's summative statement on the relativity of simultaneity in *Electrodynamics of Moving Bodies*<sup>[3]</sup>: "We cannot give any absolute meaning to the concept of simultaneity; Two events that are simultaneous from the point of view of one frame of reference can no longer be considered simultaneous from the point of view of the other frame of reference that moves with respect to that frame of reference." Some people think: Einstein is through the "lightning strike train" thought experiment to illustrate the "relativity of simultaneity", in fact, this is not Einstein's "original intention", need to emphasize is: We should fully respect Einstein's original thesis. Einstein clearly expressed the physical meaning of "relativity of simultaneity" through concrete examples and concluding discussion. Any excessive interpretation and guessing is not an accurate

physical expression of "relativity of simultaneity".

Einstein's error in "relativity of simultaneity" is a philosophical one. Physics is a science of observation and experimentation. We also admit that observation or light entering the eye is the premise and basis of our judgment. But we make a serious mistake when we judge the simultaneity of events by what we observe, or by what light enters our eyes. It is no different from treating a "mirage" as a real being. Whether the phenomenon we observe is the real situation of the objective world, we also need to use the logical framework of thinking to screen, so as to make up for the "observation" this human "congenital defect". Because we're more likely to believe in objective reality than just observation. In the "lightning strikes the train" thought experiment, it's an objective fact whether the front and rear of the train are struck by lightning, either at the same time (there are electrical sparks or electrical charges gathering at the front and rear of the train at the same time) or not at the same time. In other words, Either a large amount of electric charge accumulates in the front and back of the train, causing lightning; Either there is no charge gathering, there is no lightning at this point, we should believe that this is a physical fact, that this is the logical law and the bottom line of our understanding of the world, and that's very important.

In Einstein's "Lightning strikes Train" thought experiment, people on the ground see the front of a train and the rear of a train being struck by lightning at the same time, but people standing on the train see them at different times. The reason why this happens is that two people see the light travel different distances. Special relativity confuses the concept here. When we see something different, it doesn't mean it's really different. It does not follow that the "lightning strike train" events are not simultaneous events.

The "Lightning strikes train" thought experiment has a certain mystification, or whether the speed of light has anything to do with the speed of a train, which makes the "relativity of simultaneity" even more confusing. To illustrate the problem with the "relativity of simultaneity", we can use the "plumbing thought experiment". Suppose there is a pipe standing still on the ground, and there is a valve in the middle of the pipe. When the valve is opened, the water flows at the same speed in two opposite directions to the left and right at the same time. To a person standing still on the ground at the valve position, the water must reach both sides of the pipe at the same time. To the person

moving to the right, however, the water in the tube does not reach both ends at the same time. The person will see the water on the right reach the right end first, and then see the water on the left reach the left end, because the light travels a different distance.

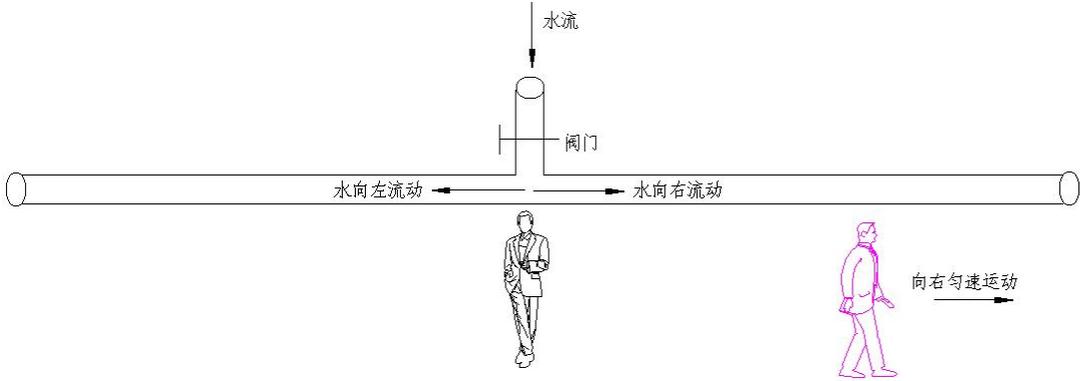


Fig. 7. Water pipe thought experiment

We can even take this example to the extreme, if when the person in motion happens to be at the right end of the pipe, the water in the pipe also happens to be at the right end, and of course the water in the left end also happens to be at the left end of the pipe. The person in motion immediately sees the "event" of water reaching the far right end of the pipe. However, the light from the "event" of water reaching the far left end has to travel the entire length of the pipe to reach the person's eye. To the observer in motion, the two events of water reaching the far left end and the far right end will occur "at different times". But it is an objective physical fact that water reaches both ends. This is a good example of the problem with "relativity of simultaneity". We are limited by our senses to make a false impression of simultaneity. Fortunately, we have logical thinking to correct this "visual illusion". The same is true of the twin paradox. In reality, both parties see the other as young. They see only a light or an image of the other in the past, when in fact both parties are their true ages.

The lightning strike on the train is an objective physical fact. Let's first analyze how lightning is formed, so as to explain if, when and where lightning occurs. According to the general statement: lightning is a kind of atmospheric discharge phenomenon, in the formation of cumulonimbus cloud, some clouds with positive charge, some clouds with negative charge, when the accumulation of charge to a certain extent, the air will be

broken down, produce strong sound, light, electricity is a natural phenomenon. It can be seen that the reason why the locomotive and caboose are struck by lightning at the same time is that at some point the atmosphere of the locomotive and caboose generates electrical discharge. At this moment, there are enough electric charges gathering and discharging at the locomotive and caboose, which is an objective physical fact. The sequence of events does not depend on whether the observer observes it or when the signal of lightning is observed. The "lightning strike train" event is an objective physical event, and the sequence of events does not depend on whether the light from the lightning reaches people's eyes at the same time. The subjective observation result of people cannot represent the objective physical fact. It is essential for physics, and indeed for all natural sciences, to consider the relationship between observations and rational logic in order to determine the actual physical state. The lightning-struck train and its world line are shown below:

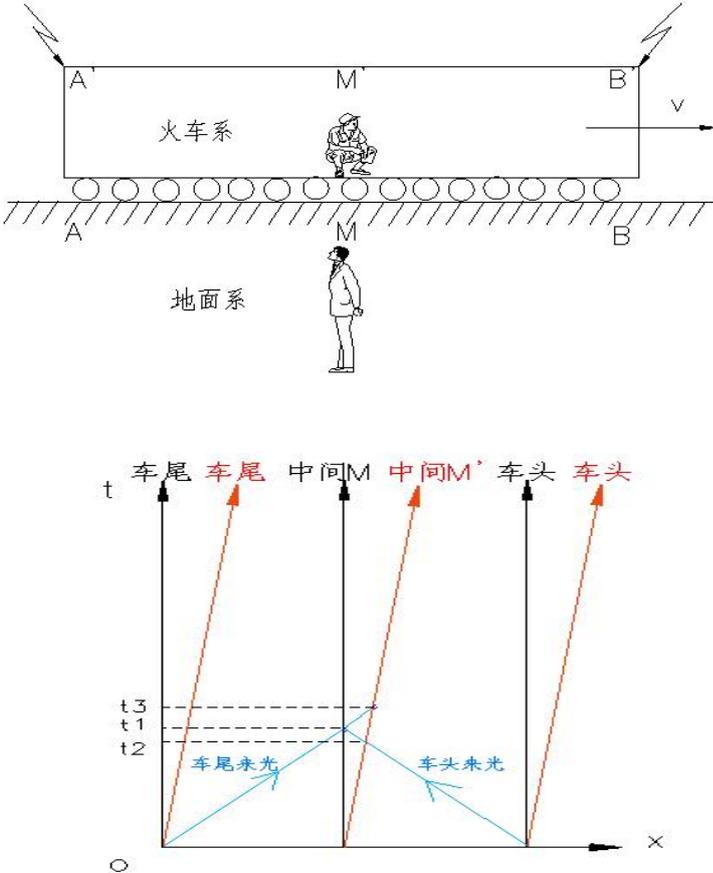


Fig. 8. Lightning-train thought experiment World line

From the above World line, we can see clearly that from the ground system, the light

from the lightning will reach point  $M$  at the same time at  $t_1$ , but for the train system, the person in the middle of the car will see the light from the front of the train at  $t_2$ , and the light from the rear of the train at  $t_3$ . The person on the train will see the lightning from the front of the train first, and then the lightning from the rear. It seems that the Minkowski space-time world line is a very intuitive and perfect explanation for Einstein's "lightning train" thought experiment, but this seemingly perfect graphic tool itself violates the principle of the invariance of the speed of light, which we discussed in detail in the previous section. In the ground system, the relative speed of the light beam with the ground is 1, and the included Angle is  $45^\circ$ . However, in the train system, the relative speed of the light beam with the train will no longer be 1, and the included Angle will no longer be  $45^\circ$ . That is to say, in the view of the train system, the speed of light will no longer be  $c$ , which is obviously contrary to the principle of the constant speed of light. In the world line picture of Minkowski spacetime, the relative speed of particle and light will no longer be constant. Therefore, the proper time of Minkowski spacetime established from the world line picture is meaningless. Both the world line and Minkowski spacetime are in contradiction with the principle of the invariant speed of light. Einstein also used the time

transformation relation of Lorentz transformation  $t' = \frac{t - vx / c^2}{\sqrt{1 - v^2 / c^2}}$  to describe the

time difference caused by the so-called "relativity of simultaneity", which is actually meaningless. Einstein's so-called "relativity of simultaneity" is only a visual time difference

at best. Moreover, the time transformation relation formula  $t' = \frac{t - vx / c^2}{\sqrt{1 - v^2 / c^2}}$  based on

the "principle of constant speed of light" cannot correctly calculate the visual time difference. In the following section, we will systematically explain the visual time difference and spatial position difference caused by moving objects.

### 3.2.3 Light and shadow effects on moving objects

When the object is in a state of high-speed motion, it will indeed cause the difference in visual time, as well as the stretching or compression of visual image. The image we see is no longer the real time and space of the object in time or space. We can use logical and mathematical tools to correct the light and shadow we see. In other words, not only do we

have to know what we saw or what we observed? More importantly, we should know where the moving object really is or what the objective reality is. Relative to the observer, the moving object can be roughly divided into two cases: far away from the observer and close to the observer. In order to quantify and visually describe the light and shadow effect of the moving object, we construct a mathematical model with the simplest one-dimensional case. In order to describe the problem more directly, the related figures or diagrams in the following section take the speed of light as the natural system of units, that is, let the speed of light  $c = 1$ . Suppose there is a stationary observer on the earth and an object moving uniformly away from the observer at velocity  $v$ , and the direction of motion of the object is always in the same line with the observer. Suppose that at time  $t = 0$ , both the observer and the moving object are located at the origin of coordinates, as shown in the figure below:

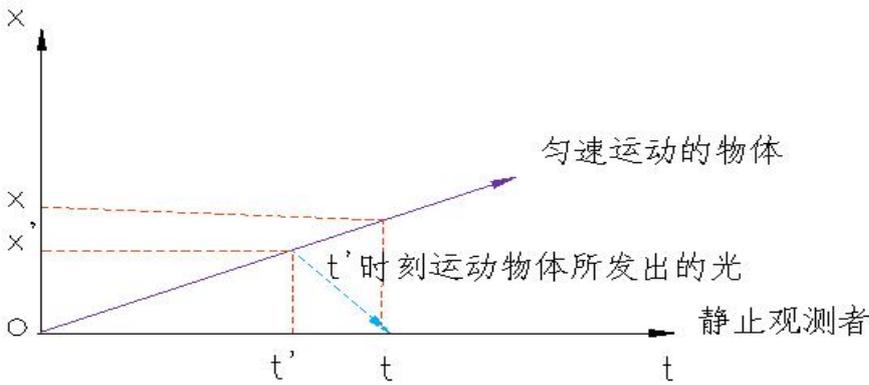


Fig. 9. Spatio-temporal diagram of a moving object

At time  $t$ , although the moving object has reached the distance  $x$  from the origin, what the observer can observe at this time is only the light emitted by the moving object at time  $t'$ , that is to say, what the observer can observe at this time is only the past image of the moving object. The purple ray in the figure represents the object in uniform motion, the time axis represents the stationary observer, and the blue dashed line in the downward direction represents the light directed at the observer emitted by the moving object at time  $t'$ . The Angle between the blue dashed line and the  $t$ -axis is  $45^\circ$ , because the natural unit system is adopted here, and the speed of light  $c = 1$ . It should be noted that the speed of light  $c$  mentioned here does not satisfy the constant speed of light assumed

by Einstein. In fact, the principle of constant speed of light is not valid, nor is it an objective physical fact. We will discuss the question of "the principle of constant speed of light" in detail in the following summary. The above figure can intuitively show the visual time  $t'$ , real time  $t$ , visual position  $x'$  and real position  $x$  of the moving object. The relationship between them can be calculated through the figure above, which can also be called space-time diagram.

When the observer observes the image of the moving object at time  $t$ , what he observes is the appearance of the object at time  $t'$ . Since the light emitted by the moving object forms an isosceles right triangle with the time axis  $t$  and the space axis  $x$ , there is  $t - t' = x'$ , and the speed of light  $c = 1$  is restored to the normal system of units, which can be written as:  $ct - ct' = x' = vt'$ , when properly deformed, has the following relation:  $t' = \frac{c}{c+v} t$ , that is, if the observer observes a moving object at time

$t$ , at that time he observes only the image of the object at time  $\frac{c}{c+v} t$ . For example, if

the object is moving at a speed of  $75,000 \text{ km} / \text{s}$ , what the observer sees at  $t = 10\text{s}$  is the image of the object at  $8\text{s}$ . The calculation process is also simple:

$$t' = \frac{c}{c+v} t = \frac{30}{30+7.5} * 10 = 8. \text{ The real time is } 10\text{s}, \text{ but the visual time is } 8\text{s}.$$

Through the space-time diagram, we can also intuitively obtain the real position  $x$  and visual position  $x'$  of the moving object, in which the real position  $x = vt$  and

visual position  $x' = vt'$ .  $t' = \frac{c}{c+v} t$  can be substituted to obtain

$$x' = vt' = v \frac{c}{c+v} t = \frac{c}{c+v} x, \text{ that is, } x' = \frac{c}{c+v} x. \text{ The example above is also}$$

used to illustrate that when  $t = 10\text{s}$ , the real position of the object  $x = vt = 7.5 * 10 = 75$ , that is, the actual distance of the moving object is 750,000 kilometers away from the observer. However, at  $t = 10\text{s}$ , we can only observe the position or image of the object at 600,000 kilometers away from the observer. The

calculation process is  $x' = \frac{c}{c+v} x = \frac{30}{30+7.5} * 75 = 60$ .

Based on the above process, when the object is far away from the stationary observer at the velocity  $v$  and its direction of motion is always in the same line with the observer, the relationship between the visual time  $t'$  and the real time  $t$  and the visual position  $x'$  and the real position  $x$  can be satisfied as follows:

$$\begin{cases} t' = \frac{c}{c+v} t \\ x' = \frac{c}{c+v} x \end{cases} \quad (36)$$

At the same time, we can further deduce the following conclusions:

$$\begin{cases} \Delta t = t - t' = \frac{v}{c+v} t \\ \Delta x = x - x' = \frac{v}{c+v} x \\ \frac{\Delta t}{t} = \frac{v}{c+v} \\ \frac{\Delta x}{x} = \frac{v}{c+v} \end{cases} \quad (37)$$

Where  $\frac{t}{t'}$  or  $\frac{x}{x'}$  is called the spatio-temporal coefficient, which is generally represented by  $k$ . When the object is moving away from the stationary observer at the velocity  $v$  and the direction of its motion is always in the same straight line with the observer, the spatio-temporal coefficient  $k = \frac{c+v}{c}$ . The greater the velocity  $v$ , the greater the spatio-temporal coefficient  $k$ , the greater the difference between the visual time  $t'$  and the real time  $t$ . The greater the difference between the visual position  $x'$  and the real position  $x$ . From a practical visual perspective, when an object is moving away from the stationary observer at the speed  $v$ , we will see that all the actions taking place on the object are slowed down, just as if we were slowing down a video. For example, when we watch a video, we can slow down the video, or we can call this phenomenon "slowing down" the space-time effect. The quantitative calculation of the difference in visual time and spatial position when a moving object is close to the observer is

systematically discussed in the New Theory of Physics, which we will not discuss in detail here.

### 3.2.4 The philosophical problem facing "Relativity of Simultaneity"

Physics is a science of observation and experimentation, but there are spatial as well as temporal differences when light enters the eye, as described in Einstein's "lightning strike train" incident: people on the ground see lightning striking the head and tail of the train simultaneously; But to the people on the train, lightning strikes the front of the train and lightning strikes the rear of the train at different times. So Einstein came up with the "relativity of simultaneity", the central idea of relativity, but is what we are seeing actually reality itself? The answer is no. Was the front and back of the train struck by lightning? Whether there is the accumulation and discharge of electric charges at the front and back of the train is an objective physical fact. We must believe in this most basic logical cognition, or we should believe that there are objective facts in the world. No matter what we see, we should believe that: The basic belief that "there must be objective facts", although we still need to observe to judge the objective facts, but observation results can not be the only standard or criterion, we also need to further logical judgment and thinking of the things we see, otherwise there is no essential difference with our "mirage" as the real existence. In the previous chapter, we also illustrated the plumbing thought experiment to make the problem easier to understand. Including the "twin paradox" problem, where the reality is that each twin sees the other younger, but only looks younger. In fact, each twin is his or her own age, and all he or she sees is a shadow effect or a past image of the other in motion. The problem of the twin paradox can be expressed visually and quantitatively using the space-time diagram and the space-time coefficient  $k$  mentioned above.

Observation is the most important form of human cognition. We can't deny what we see because of it. Fortunately, we have rational logic or mathematical deduction to make up for the "congenital defects" of human beings caused by "observation" itself.

If we judge a theory only by experimental observations, or take observed phenomena as the starting point or the foundation of a theory, we are actually making a mistake in empiricism philosophy. Eyes and light are the most important things for us to understand the world. However, light enters our eyes at different times and Spaces. We must be careful

when making certain judgments on these appearances. Like Einstein's "relativity of simultaneity" problem, the "lightning strike train" event, people on the ground see the lightning strike on the front and the rear at the same time. But, from the perspective of the people on the train, the lightning strike in front of the train and the lightning strike behind the train did not happen at the same time. This leads to the central concept of special relativity, the relativity of simultaneity. In fact, it is a false judgment made by people who put too much faith in their own senses without further logical thinking to verify the reliability of this sensory experience. Just as we might think of a mirage as a real thing. The same is true of other sciences. We should tie what we gain from experience closely to the logical structure of human thinking and ensure that it has real physical and observational significance. As described in Kantian philosophy: can man acquire knowledge of universal necessity? Kant's answer is yes. We need to combine the multiplicity of experience objects acquired by the senses with the logical judgment or mathematical deduction with universal necessity discussed in the rationalist philosophy. Only by combining the two can we obtain knowledge with universal necessity, which is also the only way for us to pursue truth and obtain correct scientific theory.

### 3.3 Lorentz Transformation and its deep contradiction and error

More than 100 years have passed since Einstein published his Special relativity in 1905<sup>[1]</sup> and his General relativity in 1915, yet doubts about what is considered the greatest theory in human history have never ceased. Lorentz transformation is the core formula of Special relativity. The conclusions of Special relativity such as "ruler becomes shorter and clock becomes slower", "dynamic mass", "mass-energy equation  $E = mc^2$ ", and "Minkowski four-dimensional space-time" are all based on Lorentz transformation. The following is a mathematical derivation and analysis from Lorentz transformation, the core formula of Special relativity, to deeply reveal the contradictions and errors in Special relativity.

#### 3.3.1 Derivation of the Lorentz transformation

The space-time coordinates of any event  $P$  in  $S$  system and  $S'$  system can be expressed as  $(x, y, z, t)$  and  $(x', y', z', t')$ , respectively. Look at the origin  $o$  of the  $S$  system in the  $S'$  system,  $x = 0$ . Observe this point in  $S'$  system, So  $x' = -vt'$ ,

or you could write it as  $x' + vt' = 0$ . The combination of the two formulas gives  $x = x' + vt'$ . At any point in space, We can assume that  $x = k(x' + vt')$ ,  $k$  is a constant of proportionality. The same is true for  $x' = k'(x - vt)$ , By the principle of relativity, Inertial system  $S$  has equal status with  $S'$  system, The form of the two equations above should be the same, So  $k = k'$ .

The constant  $k$  can be obtained according to the principle of constant speed of light, Suppose that the optical signal advances from the coincidence point along the  $x$ -axis instantaneously when the origin of  $S$  system and  $S'$  system coincide, So at any instant  $t$  (or  $t'$ ), The coordinates of the arrival point of optical signal in  $S$  system and  $S'$  system are  $x = ct$ ,  $x' = ct'$  respectively, Thus, the four pre-derivation condition formulas of Lorentz transformation are obtained in the following form:

$$\begin{cases} x' = k'(x - vt) & \textcircled{1} \\ x = k(x' + vt') & \textcircled{2} \\ x = ct & \textcircled{3} \\ x' = ct' & \textcircled{4} \end{cases} \quad (38)$$

Taking the four preconditions of the Lorentz transformation together, we get:

$$\begin{aligned} xx' &= c^2 tt' = k^2(x' + vt')(x - vt) \\ &= k^2(x' + vt')(x - vt) \\ &= k^2(ct' + vt')(ct - vt) \\ &= k^2 tt'(c^2 - v^2) \end{aligned} \quad (39)$$

Cancel out  $tt'$  and find  $k = \frac{1}{\sqrt{1 - v^2 / c^2}}$

By substituting  $k$  into Equation (38), the Lorentz transformation, the core formula of special relativity, can be obtained:

$$\begin{cases} x' = \frac{x - vt}{\sqrt{1 - v^2 / c^2}} & \textcircled{1} \\ y' = y & \textcircled{2} \\ z' = z & \textcircled{3} \\ t' = \frac{t - vx / c^2}{\sqrt{1 - v^2 / c^2}} & \textcircled{4} \end{cases} \quad (40)$$

The above derivation of Lorentz transformation is a mathematical derivation on the basis of Einstein's two physical assumptions: "the invariant principle of the speed of light" and "the principle of relativity". It is one of the most concise mathematical derivation methods of Lorentz transformation. There are many other mathematical derivation ways of Lorentz transformation, such as: Group theory derivation, undetermined coefficient derivation, geometry derivation, Einstein derivation, etc. Different mathematical derivation methods are only different angles and paths, they are essentially the same, which is very important, because these derivation methods essentially express the two basic assumptions put forward by Einstein: "the principle of constant speed of light" and "the principle of relativity", These two principles are also the premise and basis of Special relativity.

According to special relativity, the Lorentz transformation can be approximately equivalent to the Galilean transformation in low speed mode, that is, the Lorentz

transformation factor  $\frac{1}{\sqrt{1 - v^2 / c^2}}$  in the denominator is approximately equal to 1, and

the displacement relation expression  $x' = \frac{x - vt}{\sqrt{1 - v^2 / c^2}}$  in the Lorentz transformation

is approximately equivalent to the displacement relation expression  $x' = x - vt$  in the Galilean transformation. The Galilean transformation is simply a special case of the Lorentz transformation, and thus Newton's space-time is a special case of the slow mode of special relativity, which is also a more universal theory of physics than Newton's space-time, as if the two theories were self-consistent.

### 3.3.2 The deep contradiction and error of Lorentz transformation

The Lorentz transformation is derived from the four preconditions  $x' = k'(x - vt)$ ,  $x = k(x' + vt')$ ,  $x = ct$  and  $x' = ct'$ , Where  $x' = k'(x - vt)$  and  $x = k(x' + vt')$  can be understood as the "relativity principle" in physics (equal weight  $k = k'$  in reference frame).  $x = ct$  and  $x' = ct'$  can be understood as the principle of constant speed of light in physics. Of course, Lorentz transformation can also be understood as the substitution of "light speed invariant principle"  $x = ct$  and

$x' = ct'$  , two "special" physical cases, into "relativity principle"  
 $x' = k'(x - vt)$ ,  $x = k(x' + vt')$ , and through step by step mathematical derivation  
 and simplification. No matter what kind of physical interpretation or understanding is  
 carried out, it is only different in terms of words. As far as mathematical understanding is  
 concerned, Lorentz transformation is essentially obtained by  $x' = k'(x - vt)$  、  
 $x = k(x' + vt')$  、 $x = ct$  、 $x' = ct'$  four precondition formulas associated with each  
 other through gradual mathematical derivation and simplification. The above seemingly  
 meaningless discussion on physical interpretation and mathematical derivation actually  
 contains a profound problem, which involves the relationship between physical  
 interpretation and mathematical derivation, or can be simply described as the relationship  
 between physics and mathematics. This problem will be the core problem of the whole  
 theoretical physics system, and also a deep problem. When we discussed the experimental  
 verification of the so-called "perihelion precession of Mercury" in general relativity, we  
 mentioned the relationship between physical interpretation and mathematics, which is the  
 most core problem facing relativity, quantum mechanics and the whole theoretical physics.  
 The following, we take the specific derivation process of Lorentz transformation as a case  
 to illustrate the deep relationship between physics and mathematics in Lorentz  
 transformation.

If the Lorentz transformation continues to be derived and simplified on the basis of  
 its pre-derivation conditions  $x = ct$  and  $x' = ct'$  , we will get a very simple and  
 elegant looking formula, as follows:

$$\begin{cases} x = ct \\ x' = \frac{x - vt}{\sqrt{1 - v^2 / c^2}} \end{cases} \quad (41)$$

$$\text{That is } x' = \frac{ct - vt}{\sqrt{1 - v^2 / c^2}} = \sqrt{\frac{c - v}{c + v}} ct = \sqrt{\frac{c - v}{c + v}} x \quad (42)$$

$$\text{Then we can get: } t' = \sqrt{\frac{c - v}{c + v}} t \quad (43)$$

So the Lorentz transformation can also be written as follows:

$$\begin{cases} x' = \sqrt{\frac{c-v}{c+v}}x \\ y' = y \\ z' = z \\ t' = \sqrt{\frac{c-v}{c+v}}t \end{cases} \quad (44)$$

This is a set of formulas that look extremely simple and beautiful<sup>[1]</sup>. The relationship between  $x'$  and  $x$  is very simple, and the relationship between  $t'$  and  $t$  becomes very simple, and it turns out that the Lorentz transformation can be so simple and beautiful. However, problems also arise. Since Lorentz transformation is a coordinate transformation formula in a more general sense, it not only satisfies the coordinate transformation relation of two reference frames in high-speed motion mode, but also satisfies the coordinate transformation relation of two reference frames in low-speed motion mode. However,

$x' = \sqrt{\frac{c-v}{c+v}}x$  cannot guide us to calculate the simplest motion transformation relation

of two reference frames at all. This formula has no practical physical significance, which deeply reveals the deep contradiction and error of Lorentz transformation. The formula derived here can preliminarily answer the question of the relationship between physics and

mathematics discussed above. Both  $x' = \frac{x-vt}{\sqrt{1-v^2/c^2}}$  and  $x' = \sqrt{\frac{c-v}{c+v}}x$  are

correct mathematical conclusions obtained from the four prederivation condition formulas of Lorentz transform. No matter what kind of physical or mathematical interpretation of these four prederivation conditions, there are no other prederivation conditions for Lorentz transform except these four prederivation formulas. In terms of physical interpretation,

Lorentz transformation is derived from two sets of physical presuppositions, namely, "relativity principle" and "speed of light invariant principle". So, both physically and

mathematically,  $x' = \frac{x-vt}{\sqrt{1-v^2/c^2}}$  and  $x' = \sqrt{\frac{c-v}{c+v}}x$  are completely equivalent,

there shouldn't be any difference between them. In other words,  $x' = \frac{x-vt}{\sqrt{1-v^2/c^2}}$  is

not more correct than  $x' = \sqrt{\frac{c-v}{c+v}}x$ , or  $x' = \frac{x-vt}{\sqrt{1-v^2/c^2}}$  is not more suitable for

expressing physical motion scenarios than  $x' = \sqrt{\frac{c-v}{c+v}}x$ , because

$x' = \frac{x-vt}{\sqrt{1-v^2/c^2}}$  and  $x' = \sqrt{\frac{c-v}{c+v}}x$  have exactly the same assumptions and

physical assumptions, both  $x' = \frac{x-vt}{\sqrt{1-v^2/c^2}}$  and  $x' = \sqrt{\frac{c-v}{c+v}}x$  must be able to

equally and correctly express physical scenes or physical laws. As long as one of these two

derivation conclusions cannot correctly express the simplest physical motion scenes, then

both formulas will be wrong and do not accord with the objective facts of physics. For

example, we can take a physical motion scene to illustrate: A person walking in a moving

train carriage is a physical scene of the simplest Galilean transformation.  $x' = x - vt$

can be used to express the displacement transformation relationship between the two

different reference systems of the train and the ground, while  $x' = \sqrt{\frac{c-v}{c+v}}x$  cannot

express the displacement transformation relationship, which precisely illustrates the

profound contradiction and error of Lorentz transformation.

Some people think that  $x = ct$  cannot or is not allowed to be further derived and simplified on the original basis<sup>[1]</sup>. For example, some people think that  $x = ct$

represents the speed of light, so it cannot be further derived and simplified. Some people

think that  $x = ct$  presupposition, so you can't simplify; Some people think that Einstein

deduced Lorentz transform not using the "relativity principle", but only using the "speed of

light invariant principle", because Einstein thought the "relativity principle" is flawed; Others

say that you don't allow cyclic simplification and so on. It can be said that there are a lot of

so-called physical interpretations or interpretations that prohibit the further derivation and

simplification of Lorentz transformation, but no physical interpretation or interpretation

can be the reason for prohibiting further derivation. In front of mathematical derivation

and physical interpretation, we must choose mathematical derivation and mathematical

operation rules, rather than a variety of physical interpretations. Each of the so-called

physical explanations that prohibit further derivation and simplification seems to have its

own plausible reasons, which makes it difficult to decide which physical interpretation is more "authoritative." Just like the mathematical derivation and physical interpretation of "Mercury perihelion precession" of general relativity mentioned above, no matter what kind of physical interpretation or explanation is made, it cannot break through the most basic mathematical logic operation law. Therefore, no physical interpretation or explanation can be the reason for prohibiting further mathematical derivation and simplification. This is the most basic principle, and also the red line and the bottom line of logical cognition that cannot be crossed. If mathematical formulas cannot or are not allowed to continue derivation and simplification on the original basis, then the whole system of mathematics and natural science will no longer exist. Mathematics is the cognitive framework of human logical thinking, and any interpretation of physics can not prevent the deduction of mathematical formula.

Among the "reasons" or physical explanations that prohibit further derivation and simplification of the Lorentz transformation, a deceptive physical explanation is: Lorentz transformation is to use the principle of constant speed of light  $x = ct$  and  $x' = ct'$  combined with the relativity principle of Galileo transformation  $x' = k'(x - vt)$  and  $x = k(x' + vt')$  to calculate the Lorentz transformation coefficient  $k$ , and take the special event of transmitting optical signal as the object of study. So special relativity rewrites  $x = ct$  and  $x' = ct'$  in the general case as  $X = cT$  and  $X' = cT'$  for the special event of transmitting light, and  $x' = k'(x - vt)$  and  $x = k(x' + vt')$  in the general case as  $X' = k'(X - vT)$  and  $X = k(X' + vT')$  for the special event of transmitting light, The Lorentz transformation coefficient  $k$  is obtained by connecting the relation between  $X$  and  $X'$ ,  $T$  and  $T'$  corresponding to the transmitted optical signal, from which the coefficient  $k$  can be "very magically" applied to the displacement and time transformation relation of the same particle in any reference system. Finally, the  $X$  and  $X'$  corresponding to the event of the transmitted optical signal are replaced by  $x$  and  $x'$  in the general case. Also,  $T$  and  $T'$  corresponding to the event of transmitting optical signal are replaced by  $t$  and  $t'$  in the general case, and then the

Lorentz transformation displacement expression  $x' = \frac{x - vt}{\sqrt{1 - v^2 / c^2}}$  and the time

expression  $t' = \frac{t - vx / c^2}{\sqrt{1 - v^2 / c^2}}$  in the general case in the special relativity are obtained.

If we follow the events  $X' = k'(X - vT)$  、  $X = k(X' + vT')$  、  $X = cT$  and  $X' = cT'$  of the emitted optical signal, we can get the mathematical expression of the Lorentz transformation of this so-called specific event:

$$\begin{cases} X' = \frac{X - vT}{\sqrt{1 - v^2 / c^2}} & \textcircled{1} \\ Y' = Y & \textcircled{2} \\ Z' = Z & \textcircled{3} \\ T' = \frac{T - vX / c^2}{\sqrt{1 - v^2 / c^2}} & \textcircled{4} \end{cases} \quad (45)$$

If we use  $X = cT$  and we continue to derive and simplify, we also have to get the following result:

$$\begin{cases} X' = \sqrt{\frac{c - v}{c + v}} X \\ Y' = Y \\ Z' = Z \\ T' = \sqrt{\frac{c - v}{c + v}} T \end{cases} \quad (46)$$

But  $\begin{cases} X' = \frac{X - vT}{\sqrt{1 - v^2 / c^2}} \\ Y' = Y \\ Z' = Z \\ T' = \frac{T - vX / c^2}{\sqrt{1 - v^2 / c^2}} \end{cases}$  is not more correct, or more appropriate, than

$\begin{cases} X' = \sqrt{\frac{c - v}{c + v}} X \\ Y' = Y \\ Z' = Z \\ T' = \sqrt{\frac{c - v}{c + v}} T \end{cases}$  for the physical motion scenario, Because they're mathematically

equivalent, they have the same assumptions, they just simplify to different degrees, and no matter how many physical interpretations we go through, It is not possible to say that

$$\left\{ \begin{array}{l} X' = \sqrt{\frac{c-v}{c+v}} X \\ Y' = Y \\ Z' = Z \\ T' = \sqrt{\frac{c-v}{c+v}} T \end{array} \right. \quad \text{with a higher degree of simplification is wrong, while}$$

$$\left\{ \begin{array}{l} X' = \frac{X - vT}{\sqrt{1 - v^2/c^2}} \\ Y' = Y \\ Z' = Z \\ T' = \frac{T - vX/c^2}{\sqrt{1 - v^2/c^2}} \end{array} \right. \quad \text{with a lower degree of simplification is right. Likewise,}$$

$$\left\{ \begin{array}{l} x' = \frac{x - vt}{\sqrt{1 - v^2/c^2}} \\ y' = y \\ z' = z \\ t' = \frac{t - vx/c^2}{\sqrt{1 - v^2/c^2}} \end{array} \right. \quad \text{is no more correct than} \quad \left\{ \begin{array}{l} x' = \sqrt{\frac{c-v}{c+v}} x \\ y' = y \\ z' = z \\ t' = \sqrt{\frac{c-v}{c+v}} t \end{array} \right. \quad , \text{ or}$$

$$\left\{ \begin{array}{l} x' = \frac{x - vt}{\sqrt{1 - v^2/c^2}} \\ y' = y \\ z' = z \\ t' = \frac{t - vx/c^2}{\sqrt{1 - v^2/c^2}} \end{array} \right. \quad \text{is no more suitable for expressing the physical motion scene}$$

$$\text{than} \quad \left\{ \begin{array}{l} x' = \sqrt{\frac{c-v}{c+v}} x \\ y' = y \\ z' = z \\ t' = \sqrt{\frac{c-v}{c+v}} t \end{array} \right. \quad , \text{ because they are derived from the same four preconditions,}$$

only the degree of simplification of the derivation is different, must have a physical sense of unity, if one of the two results of the intermediate derivation and the final derivation is

inconsistent with the objective fact, It shows that no matter the mathematical expression obtained in the intermediate steps or the final mathematical expression with a high simplification degree is wrong, because mathematics is the logical structure of human cognition, mathematics does not listen to various so-called physical interpretation or interpretation, mathematics operates perfectly within its own logical framework, but it is also an effective tool to test the laws of physics. We have to believe this, otherwise the whole system of mathematics and natural sciences will cease to exist. This is very important and the basis of human cognition, because mathematics is a huge system built from a few self-evident axioms through continuous mathematical derivation and deduction. Therefore, mathematics is also called the science of basic sciences. Although there can be a variety of physical explanations in physics, even everyone may have their own different understanding of the same mathematical formula, but mathematics is not open to interpretation, no one has the right to stop mathematical derivation and simplification, if the results of further derivation and simplification can not guide the simplest physical motion scene, It shows that there must be some error or contradiction in the premise of this derivation. Physics cannot be based on different understandings, let alone on different understandings of the same mathematical formula, and we will not be able to define any laws or theories of physics. Therefore, we have to believe in mathematics and its derivation, because mathematics is the logical cognitive framework of human beings, in a sense, mathematics is the only thing that human beings can rely on, the foundation of scientific theory and human cognition must not be based on all kinds of strange physical explanations or interpretations, and this is a deep problem. It is also the most central problem facing theoretical physics.

As mentioned above, some people think that  $x = ct$  cannot be further derived on the basis of the original Lorentz transformation formula<sup>[1]</sup>, and they give a variety of physical explanations that cannot be further derived. We must clearly realize that no one theory is the ultimate theory. If a physical formula or mathematical formula cannot be further derived and simplified under the original assumptions, then mathematics, physics and the whole system of science will cease to exist. The principle of the invariance of the speed of light  $x = ct$  and  $x' = ct'$  are the pre-derivation conditions of the Lorentz transformation. There is no reason why the derivation and simplification can not continue,

otherwise mathematics and the whole human science will not be able to talk about. It would be true "self-deception" to say that the formulas in relativity cannot be simplified, that they are not allowed to be simplified, or that it is only reasonable to be able to piece together mathematical expressions that correspond to Galilean transformations. We cannot submit to it for the sake of preserving the so-called traditional authority and the "godlike worship" of Einstein without thinking deeply about the root causes behind this contradiction. We should keep a calm and humble attitude towards our universe, and we should not attach the shackles of power, desire and personality cult to science. Lorentz transformations can be derived mathematically in a variety of ways, such as: Group theory derivation, undetermined coefficient derivation, geometry derivation, Einstein's "On the Electrodynamics of Moving Bodies" mathematical derivation, but no matter what kind of mathematical derivation, in its essence is the use of the "relativity principle" and "the principle of the speed of light invariant principle" of these two sets of prerequisite formula derivation, because these two physical assumptions are the premise and basis of Lorentz transformation. The Lorentz transformation  $x' = \sqrt{\frac{c-v}{c+v}}x$ , which is derived and simplified by the constant speed of light principle on the original basis, cannot guide the simplest physical motion scenes, so  $x' = \sqrt{\frac{c-v}{c+v}}x$  is a formula without any physical significance. We have deeply revealed the profound contradictions and errors of Lorentz transformation, the core formula of special relativity, with rigorous mathematical demonstration. This involves the deep relationship between physical interpretation and mathematical derivation.

And if those who do not believe that this is enough to convince them are still stubbornly insisting on the correctness of their interpretations of physics and physical interpretations, regardless of the contradictions inherent in mathematical derivation, Then in the following chapters of relativity and quantum mechanics, we will further reveal the profound contradictions and problems caused by the relationship between physics and mathematics in theoretical physics, and some of the contradictions are very "shallow". The relatively "obscure" contradictions existing in Lorentz transformation are generally difficult to be found without careful analysis. Even some people still stubbornly believe that this is

not a problem, but in fact it is not subjectively believe that there is no problem, because mathematical derivation will not "sympathize", "pity" or "understand" seemingly very reasonable physical interpretation, in front of mathematical derivation and deduction, any interpretation or interpretation is "wishful thinking". Since no one has the right to prevent the continued derivation of mathematical formulas, mathematics is the logical cognitive framework of human beings. If it does not conform to objective facts or fails to reveal and express the most intuitive physical phenomena at the end, it fully indicates that there are serious errors or contradictions in the premise assumptions of Lorentz transformation.

From the perspective of logical analysis, if we assume that certain preconditions are true, and then translate these preconditions into mathematical formulas for simultaneous derivation and derivation, if there is no problem in the process of mathematical derivation itself, but the result of derivation violates the objective physical facts, then the preconditions must not be true. It needs to be noted that: The "prerequisite must be false" mentioned here implies two possibilities. One possibility is that the combination of the prerequisite formula is allowed, but the final result derived after the combination violates the objective law or cannot guide the physical motion scene, for example,

$x' = \sqrt{\frac{c-v}{c+v}}x$  obtained by Lorentz transformation cannot guide the simplest physical

motion scenes. If the four prerequisite formulas of Lorentz transformation can be combined together, then there must be one or more assumptions in the prerequisite formulas that do not conform to objective facts. There is also the possibility that the association of prerequisite formulae is not allowed, is illegal, or that the association of such formulae creates a conflict, and by conflict we mean a conflict in a physical sense, for example: In the intermediate result or final result formed after the derivation of mathematical formulas, if there is a mathematical expression or character representing two contradictory physical meanings at the same time, the combination of such formulas will not be allowed, and the combination of such formulas will be illegal. In this case, the "prerequisite must be false" is faced with more serious problems. We still take the Lorentz transformation as an example. If the combination of the four prederivation conditions of Lorentz transformation is not allowed, then the Lorentz transformation should not be named, or the Lorentz transformation should not exist, let alone discuss whether the

Lorentz transformation conform to objective laws.

Let's analyze the first case, assuming that association of the prerequisite formulas is allowed, that there is no conflict after association, in the case of the Lorentz transform, obviously Einstein and Lorentz agreed that association of the prerequisite formulas of the Lorentz transform is allowed, that  $x' = k'(x - vt)$ ,  $x = k(x' + vt')$ ,  $x = ct$ ,  $x' = ct'$  are allowed to be associated, In other words,  $x = ct$  and  $x' = ct'$  are allowed to be substituted into  $x' = k'(x - vt)$  and  $x = k(x' + vt')$ . We also assume that this combination does not produce any contradiction in physical sense, and we carry out analysis on this basis. Einstein assumed that the speed of light remained constant in different inertial systems ( $x = ct$ ,  $x' = ct'$ ), combined with the "relativity principle" ( $x' = k'(x - vt)$ ,  $x = k(x' + vt')$ ), and then carried out mathematical derivation, and finally obtained the simplified form of Lorentz transformation:

$$\begin{cases} x' = \sqrt{\frac{c-v}{c+v}}x \\ y' = y \\ z' = z \\ t' = \sqrt{\frac{c-v}{c+v}}t \end{cases} \quad (47)$$

$x' = \sqrt{\frac{c-v}{c+v}}x$  in Lorentz transformation cannot guide us to correctly express the

displacement transformation relationship between the simplest physical scenes, which is a completely wrong formula without any practical physical significance. It can be seen that even if we assume that the four preconditions of Lorentz transformation are allowed to be combined together, which is legal, contradictions and wrong conclusions will be drawn. If we assume that the four precondition formulas of Lorentz transformation are allowed to be combined without any physical contradiction and conflict, but the final result of the combination and derivation cannot guide the simplest physical motion scene, the fundamental cause of such contradiction and error must come from the error of the premise assumption. The possible reason is that either or both of the "relativity principle" and the "Light speed invariant principle" do not hold. We can suspect that the error of the

Lorentz transformation may be caused by  $x' = k'(x - vt)$  and  $x = k(x' + vt')$ .  $x' = k'(x - vt)$  and  $x = k(x' + vt')$  express that the two inertial reference frames are equal, Where  $k$  and  $k'$  are equal, the two preconditions are actually expressions of the Galilean transformation and the relativity of motion (equal weight). Through a large number of experiments and daily observations, we believe that the relativity of Galilean transformation and motion is correct and a reliable physical law. Therefore, the errors and contradictions in Lorentz transformation can only be caused by the principle of the invariant speed of light, which also proves the error of the principle of the invariant speed of light in reverse. Therefore, we only need to deny the correctness of the premise hypothesis that the speed of light invariable principle through mathematical derivation and theoretical demonstration, rather than necessarily through experimental verification. Many people believe that experiment is the only way to verify whether a physical theory is correct. This kind of thinking is one-sided and narrow, because our thinking logic is the fundamental guarantee to identify and correct the phenomena we have observed. If we only believe the observed phenomena or the so-called experimental results, This is no essential difference from seeing a "mirage" and treating it as a real being. We must use logical thinking to verify the observed phenomena, which is the premise and basis for the guarantee of truth. This is also the fundamental reason why there exists such a great way of truth exploration as "thought experiment", thinking logical structure and "thought experiment" are not subjective assumptions. They are the cognitive basis and logical framework shared by all mankind, just as Euclid started from several of the most intuitive human "experiences" or ideas, such as "the shortest line between two points", "all right angles are equal", "two parallel lines extend indefinitely without intersection". Through continuous mathematical derivation and deduction of the common logical structure of human thinking, the huge Euclidean geometry system is established. The above discussion also profoundly reflects the profound philosophical connotation of Kant's "science is human's legislation of nature".

As we said above, "the precondition must be false" implies two possibilities. The other possibility is that the combination of the precondition formula is not allowed or illegal, or that the combination itself will cause contradiction and conflict. This problem is also an

important problem faced by theoretical physics, and it is also a core problem and contradiction faced by special relativity. This kind of problem also profoundly reflects the relationship between physics and mathematics, which can be briefly described as: in a group of linked formula or its corollary formula, the same mathematical symbol cannot express two different physical meanings at the same time, otherwise it will lead to the confusion of the physical meanings of mathematical symbols. We still use Lorentz velocity transformation, another core concept in special relativity, to illustrate this problem. On the basis of Lorentz transformation, special relativity also gets Lorentz velocity transformation formula. Suppose  $v$  represents the relative motion velocity between two inertial reference frames,  $u$  and  $u'$  respectively represent the velocity of the same moving

particle in two different reference frames, By combining  $x' = \frac{x - vt}{\sqrt{1 - v^2 / c^2}}$  and  $t' = \frac{t - vx / c^2}{\sqrt{1 - v^2 / c^2}}$  in Lorentz transformation, the velocity relation expression of Lorentz

velocity transformation in the direction of motion can be obtained:

$$u' = \frac{x'}{t'} = \frac{x - vt}{t - vx / c^2} = \frac{u - v}{1 - uv / c^2} \quad (48)$$

Like Lorentz transformation, Lorentz velocity transformation is also known as the extension of Galilean velocity transformation under high speed condition. When the velocity  $v$  is far less than the speed of light  $c$ , the Lorentz velocity transformation

relation  $u' = \frac{u - v}{1 - uv / c^2}$  can be approximately equivalent to the Galilean velocity

transformation  $u' = u - v$ . The Galilean velocity transformation is just a special case of

the Lorentz velocity transformation in the slow mode, which seems like a perfect explanation, but is it really the case? Below we make further discussion and analysis. From

the mathematical derivation process of Lorentz velocity transformation, we can find that Lorentz velocity transformation is obtained through the combination of

$x' = \frac{x - vt}{\sqrt{1 - v^2 / c^2}}$  and  $t' = \frac{t - vx / c^2}{\sqrt{1 - v^2 / c^2}}$  in Lorentz transformation, namely

$u' = \frac{x'}{t'} = \frac{u - v}{1 - uv/c^2}$ . Through the discussion in the above chapter, We know that

the Lorentz transformation is obtained through the combination of four preconditions,

$x' = k'(x - vt)$  and  $x = k(x' + vt')$  and  $x = ct$  and  $x' = ct'$ , where

$x' = ct'$  can also be written as  $c = \frac{x'}{t'}$ . Now a very serious problem appears. The

formula  $u' = \frac{x'}{t'}$  and  $c = \frac{x'}{t'}$  appear at the same time, so it is inevitable to draw the

conclusion that  $u' = \frac{x'}{t'} = c$ , which is an extremely absurd conclusion, and the

mathematical expression and physical meaning are seriously confused. The root cause of

this error still relates to the question of the relationship between physics and mathematics,

which we have mentioned above: In a set of linked formulas or its corollary formulas, the

same mathematical symbol cannot express two different physical meanings, otherwise it

will lead to the confusion of the physical meanings of mathematical symbols. In this case,

the association of prerequisite formulas is not allowed, and the association of these

formulas is illegal. The expressions of "relativity principle",  $x' = k'(x - vt)$  and

$x = k(x' + vt')$ , actually contain the relations of  $u' = \frac{x'}{t'}$  and  $u = \frac{x}{t}$ .  $u' = \frac{x'}{t'}$

and  $u = \frac{x}{t}$  can be regarded as the inference formula or extension formula of

$x' = k'(x - vt)$  and  $x = k(x' + vt')$ . In other words,  $\frac{x'}{t'}$  and  $\frac{x}{t}$  respectively

express the velocity of the same moving object in two different reference frames. If

"relativity principle"  $x' = k'(x - vt)$  and  $x = k(x' + vt')$  and "constant speed of

light principle"  $c = \frac{x'}{t'}$  and  $c = \frac{x}{t}$  are joined together, there will be a situation that

$\frac{x'}{t'}$  expresses two completely different physical meanings.  $\frac{x'}{t'}$  represents both the

velocity of a moving particle and the velocity of light, so the combination of the four

preconditions of Lorentz transformation  $x' = k'(x - vt)$  and  $x = k(x' + vt')$ , and  $c = \frac{x'}{t'}$  and  $c = \frac{x}{t}$  is illegal. This profoundly reflects the problem mentioned above that "in a set of linked formulas or their corollary formulas, the same mathematical symbol cannot express two different physical meanings, otherwise, the physical meanings of mathematical symbols will be confused". Such combination has no problem in mathematics, but in physics, it will lead to the confusion of physical meanings. Some people will also put forward their own so-called refutation views on the above conclusions. They think that the "principle of constant speed of light" here,  $c = \frac{x'}{t'}$  and  $c = \frac{x}{t}$ , should be expressed by other mathematical symbols, such as  $c = \frac{X'}{T'}$  and  $c = \frac{X}{T}$ , in order to distinguish the speed of light and the speed of particle, but this refutation or explanation is also not valid. If "Principle of constant speed of light" is expressed by  $c = \frac{X'}{T'}$  and  $c = \frac{X}{T}$ , while "Principle of relativity" is expressed by  $x' = k'(x - vt)$  and  $x = k(x' + vt')$ , in this case, Lorentz transformation cannot be obtained by combining the four preconditions, let alone Lorentz velocity transformation. And above we also systematically discussed the Lorentz transformation of the so-called "emitted light signal" the final result of the special event still can not guide the simplest physical motion scenario, is of no physical significance. Therefore, changing  $c = \frac{x'}{t'}$  and  $c = \frac{x}{t}$  into  $c = \frac{X'}{T'}$  and  $c = \frac{X}{T}$  does not solve or explain the paradoxical problem that the same mathematical symbol cannot express two different physical meanings. To sum up, the association of the four pre-condition formulas of the Lorentz transformation is illegal and not allowed, because it will result in  $\frac{x'}{t'}$  representing both the velocity of the particle and the velocity of light, which will lead to confusion of sign inclusion. Therefore, Lorentz transforms should never have been named, and Lorentz transforms should never have

existed. The pre-condition formulas  $x' = k'(x - vt)$  and  $x = k(x' + vt')$  of Lorentz transformation actually "implies" the velocity expression of the same particle in two different inertial frames  $u = \frac{x}{t}$  and  $u' = \frac{x'}{t'}$ , which can also be regarded as the two inferential formulas implied by "relativity principle". If these two inferences  $u = \frac{x}{t}$  and  $u' = \frac{x'}{t'}$  are combined with the principle of constant speed of light  $c = \frac{x}{t}$  and  $c = \frac{x'}{t'}$ , they will inevitably lead to contradictory conclusions, which is also the source of contradiction and error of Lorentz transformation. Therefore, Lorentz transformation should not exist or be named, let alone discuss the physical significance of Lorentz transformation.

To sum up, the "prerequisite must be false" mentioned above contains two possibilities. One possibility is that the combination of prerequisite formulas is allowed, but the final result derived after the combination violates the objective law, or cannot guide the physical motion scene. Another possibility is that the association of prerequisite formulas is not allowed, is illegal, or that the association creates a conflict of physical meanings. Through the derivation process of Lorentz transformation and Lorentz velocity transformation as an example, we find that the latter possibility is more fundamental. In other words, whether the association of preconditions formula used to construct a certain physical theory is allowed is something that needs in-depth thinking and logical analysis. It is by no means to force the association and derivation of mathematical formula without considering the physical significance. Because it involves deep questions about the relationship between physics and mathematics. This is also the root cause of the profound contradiction and error between special relativity and Lorentz transformation.

It should be noted that the relationship between physics and mathematics between Lorentz transformation and Lorentz velocity transformation is still "not easy to find", because  $x' = k'(x - vt)$  and  $x = k(x' + vt')$  "contain" the velocity formula

$u = \frac{x}{t}$  and  $u' = \frac{x'}{t'}$  of the same object, this problem is easy to be ignored. This also

leads to the problem of symbolic meaning confusion caused by the Lorentz velocity transformation itself, but this contradiction and error is relatively less easily noticed, because it involves the deep relationship between physics and mathematics.

### 3.4 The relationship between physics and mathematics

Through the mathematical derivation of Lorentz transformation and Lorentz velocity transformation, we find that there are two kinds of deep problems in special relativity. The first kind of problem is whether the mathematical formula can be further derived. The answer is that no physical interpretation can prevent further mathematical derivation and simplification, or mathematics and the whole system of natural sciences will cease to exist. No matter what method is adopted for mathematical derivation of Lorentz transformation, the "principle of constant speed of light" is the premise assumption or precondition formula of these derivation methods. If the combination of precondition formula is allowed and legal, then the conclusion obtained by mathematical derivation after the combination, no matter the mathematical expression form of the intermediate process, Or the final mathematical expression form with a higher degree of simplification, they should be able to correctly express and guide the physical scene, because they have the same premise and basis, and also have the essential unity of physical meaning. No matter the mathematical expression form of the intermediate process or the final mathematical expression form with a higher degree of simplification, as long as there is one which cannot guide the physical movement scene, It shows that the premise assumption condition is not valid, because the derivation under the wrong premise formula will get the formula that does not conform to the objective physical scene, which inversely falsifies the correctness of the premise formula. This is the "less wrong" category of questions. The second kind of problem is more serious, that is, whether the association of the prerequisite formula is allowed. If the association of the prerequisite formula leads to the contradiction of the physical meaning of the mathematical symbol, such association will not be allowed, or the association itself is illegal, and the error caused by such association is more serious. It is nonsense to discuss the physical meaning of such a mathematical conclusion that is forced to be derived under the circumstance that no association is allowed. For example, in the

whole derivation process of Lorentz transformation and Lorentz velocity transformation, we will find that  $\frac{x'}{t'}$  not only represents the velocity  $u'$  of an object in another reference frame, but also represents the velocity  $c$  of light in another reference frame, which will cause the same mathematical symbol to express two different physical meanings at the same time, which will lead to the confusion of symbolic meanings. It is not only in relativity that such problems exist, but also in quantum mechanics that the problem of physical meaning confusion is more "obvious", and the error of Lorentz transformation and Lorentz velocity transformation is "less easy to find" because it involves the deep relationship between physics and mathematics. This type of error is also made in quantum mechanics when the "angular momentum quantization" condition of Bohr's theory of hydrogen atoms is derived from "de Broglie waves". In order to ensure the stability of the atom (the electron does not radiate energy to the outside), it is assumed that the orbital length of the electron is exactly the integer multiple of the wavelength of the "material wave" and forms a standing wave. The mathematical expression is:  $2\pi r_n = n\lambda$   $n = 1, 2, 3 \dots$ , the wavelength of the "material wave"  $\lambda = \frac{h}{mv}$  is substituted, and the angular momentum of the electron can be finally obtained as  $L = mvr_n = n \frac{h}{2\pi}$ . Let's make a careful analysis: for the formula  $2\pi r_n = n\lambda$ , it wants to express the physical meaning: the  $n$  orbital has  $n$  wavelengths, but this assumption is not consistent with the objective fact, it is completely subjective. A simple example to illustrate this is: the third orbital of the electron's "material wave" can have five wavelengths, and the fourth orbital can have six, seven, or even 100 wavelengths, as long as they can be placed end to end. The key is to form a standing wave without the electrons radiating energy. There is no strict quantitative correspondence between them, that is to say, "this  $n$  is not that  $n$ ". Physical concepts and mathematical concepts do not necessarily have unity. This also involves the relationship between physics and mathematics, which needs to be treated with special caution, otherwise it is meaningless to forcibly combine them. We'll talk about this systematically later in the quantum mechanics section.

In addition to the above two kinds of problems, there is a third kind of problem, that is, the physical interpretation of mathematical formulas, which is also the core problem faced by theoretical physics, involving the deep relationship between physics and mathematics. Let's take the problem of quantum tunneling in quantum mechanics as an example. The one-dimensional "quantum tunneling" model is shown below:

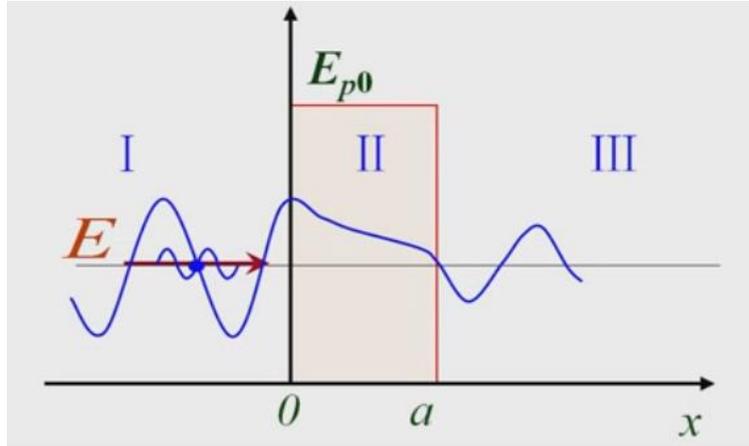


Fig.10. One-dimensional "quantum tunneling" model

The wave functions of region I , II and III are represented by  $\psi_1$  、  $\psi_2$  、  $\psi_3$  respectively

$$\begin{cases} \psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x} , & x \leq 0 \\ \psi_2 = A_2 e^{ik_2 x} + B_2 e^{-ik_2 x} , & 0 \leq x \leq a \\ \psi_3 = A_3 e^{ik_1 x} + B_3 e^{-ik_1 x} , & x \geq a \end{cases} \quad (49)$$

We take  $\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}$  as an example to illustrate the relationship between physics and mathematics. According to quantum mechanics,  $A_1 e^{ik_1 x}$  in  $\psi_1$  represents the incident "matter wave" propagating along the positive direction of the  $x$ -axis in region I , and  $B_1 e^{-ik_1 x}$  in  $\psi_1$  represents the "matter wave" propagating along the negative direction of the  $x$ -axis in region I reflected by the barrier. Let's leave aside whether this physical interpretation is correct for the time being, the solution of "one-dimensional steady state Schrodinger equation" can have many forms,  $\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}$  is only one form of expression,  $\psi_1 = A \sin k_1 x + B \cos k_1 x$  is also the solution of the equation, if the interpretation is based on the above way, What does  $A \sin k_1 x$  and  $B \cos k_1 x$  mean in physics?

Could it be that  $A \sin k_1 x$  stands for incident "matter wave" and  $B \cos k_1 x$  for reflected "matter wave"? Moreover,  $\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}$ , the formula can also be written as  $\psi_1 = C_1 \cos k_1 x + iD_1 \sin k_1 x$  mathematical expression form, if it is the following mathematical expression form and what kind of physical interpretation? According to the objectivity of physical facts, physical facts or physical phenomena do not change in the form of the equations we solve, but which mathematical form is best used to interpret physical facts as true? As if we don't have a rigorous logical argument, this can only be a guess. This phenomenon will be a problem in the construction of the whole building of scientific theories, because we tend to construct mathematical models from some basic concepts or assumptions and carry out extended derivation. Different physical interpretations of mathematical conclusions or intermediate conclusions in the derivation process will determine the direction of the whole theory, and even the same mathematical expression form may face different physical interpretations. For example, there are many mathematical expressions for the solution of the "one-dimensional stationary Schrodinger equation" above. How can we ensure which form is the most "consistent" expression of physical facts? In terms of  $\psi_1$  alone, not only  $\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}$  is the solution of the equation, but  $A \sin k_1 x + B \cos k_1 x$  and  $A_1 e^{ik_1 x}$ 、 $B_1 e^{-ik_1 x}$ 、 $A \sin k_1 x$ 、 $B \cos k_1 x$ 、 $C_1 \cos k_1 x + iD_1 \sin k_1 x$  are all the solutions of the equation. Why  $\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}$  is more "superior" than other mathematical expressions and can accurately express the physical meaning? If we choose  $A \sin k_1 x + B \cos k_1 x$ , can we still interpret it as incident and reflected waves? In addition,  $A \sin k_1 x + B \cos k_1 x$  itself can be written in the form of  $C \sin kx$ . If the mathematical expression of  $C \sin kx$  is used, the formula has only one term. How can we interpret it as incident wave and reflected wave? But we believe that the physical facts of the objective world exist in only one concrete form, not altered by the mathematical form of the equations we solve. Therefore, this is also the problem that any theoretical system may face in the construction process.

While we face three broad categories of problems in sorting out the errors of relativity

and quantum mechanics, all of which involve deeper questions about the relationship between physics and mathematics, it also opens up an incredibly wide field, "Theoretical output machine system engineering" in the book "New Theory of Physics" is inspired in the process of screening relativity and quantum mechanics problems and contradictions, "theoretical output machine system engineering" is a "semi-artificial, semi-intelligent" system, with the infinite exploration of physical theory and mathematical building, just like Euclidean geometry system, Starting from several self-evident postulates such as "the shortest straight line between two points", "all right angles are equal", "Two straight lines are parallel and extend indefinitely without intersection", the huge Euclidean geometric system has been constructed through continuous mathematical derivation and deduction. Euclidean geometric system also has no end point and is theoretically infinitely exploratory. Because even the Euclidean geometry system that has been derived and deduced by human beings for more than 2,000 years still has undiscovered geometric laws, please believe this, the depth of theoretical exploration of Euclidean geometry system may have no end, so we can only get infinitely close to the truth, but never reach. The "theoretical output machine system engineering" we want to construct also has similar characteristics, but this system is larger and takes into account the relationship between physics and mathematics. This system can minimize the adverse effects of artificial interpretation differences of mathematical formulas on the discovery of objective physical laws. The perfect operation of "theoretical output machine system engineering" may need to gather the wisdom of all human beings, which can guarantee the unity of physics and mathematics meaning to the greatest extent and carry out unlimited interactive exploration and deduction. Therefore, this system also has unlimited exploration. Different from pure mathematical system, this system also takes into account objective physical reality. To help humans explore undiscovered laws of physics or mysteries of nature in the most correct way possible.

"Theory output machine system engineering" also has the function of reverse falsification, in the process of mathematical deduction and "translation" of scientific theories, if the results are not consistent with the facts or contradictory, then the original premise hypothesis is likely to be wrong, when we do not know whether our premise hypothesis is correct, we can also take this roundabout way to analyze or demonstrate. The

process of reverse falsification can be reflected in the results obtained in the intermediate process or in the "final" result. Of course, such so-called "final" result may not exist, because the combination of the established premise hypothesis condition formula and other formulas can be varied. Of course, the "other formulas that can be combined" referred to here are generally verified by scientific theory and experiment, should not be some other unproven premise hypothesis formula. On the basis of presuppositions, other theoretical formulas that can be combined with mathematical tools to deduce mathematical formulas, the conclusion or result is theoretically endless. If the middle process of deduction violates the empirical common sense or empirical law or appears the paradox, then the original premise physical hypothesis can be falsified in reverse. In view of space limitation, we briefly describe the main design framework of "Theoretical output machine system engineering" above. This part is discussed in more detail in the New Theory of Physics, so we will not repeat it here.

#### 4 "Experimental Verification" of Special Relativity

##### 4.1 Atomic bomb and the mass-energy equation $E = mc^2$

On the basis of Lorentz velocity transformation and momentum conservation law<sup>[1]</sup>, special relativity also further derived the concept of "moving mass", "moving mass"

$m_u = \frac{m_0}{\sqrt{1 - v^2 / c^2}}$ ,  $m_0$  is the mass of an object at rest,  $m_u$  is the "moving mass" of a

velocity  $v$ , special relativity believes that the mass of an object will change with motion.

Whether  $x' = \frac{x - vt}{\sqrt{1 - v^2 / c^2}}$  in the Lorentz transformation or  $m_u = \frac{m_0}{\sqrt{1 - v^2 / c^2}}$  in

the moving mass, there's  $\sqrt{1 - v^2 / c^2}$  term in the denominator of these expressions,

and if the object is moving faster than the speed of light  $c$ , you're going to have a

negative number in the denominator, which makes no sense. If the speed of an object is

close to the speed of light, the "moving mass" will also tend to infinity, to increase the

speed of the object further requires infinite energy, so the speed of the object will never

reach the speed of light. That's why special relativity says things can't travel faster than the

speed of light. The derivation of the rate of change of kinetic energy from the moving mass

$m_u$  will further lead to the famous Einstein mass-energy equation  $E = mc^2$ , which is

also a meaningless false concept. Since Lorentz transformation and Lorentz velocity transformation are pseudo-formulas without any physical meaning, all the conclusions drawn on this basis are without real physical meaning, and it is also groundless that an object cannot move faster than the speed of light.

The atomic bomb is said to be the so-called "experimental verification" of the importance of special relativity theory. The mass-energy equation in relativity,  $E = mc^2$ , is considered by many to be the theoretical basis for the atomic bomb, which was built on the basis of Einstein's mass-energy equation  $E = mc^2$ , the man responsible for the current nuclear crisis. The meltdown at the Fukushima nuclear power plant caused by the earthquake in Japan has once again led to many such rumors, such as "if it weren't for Einstein, if it weren't for relativity, such a disaster would not have happened". The above statement is completely misleading. The fact is that the only thing Einstein did about the atomic bomb was sign a letter written by Szilard and addressed to President Roosevelt. The letter basically stated that Hitler might be developing a "new bomb" so powerful that if it was developed, it would probably change the course of World War II and that the United States should organize efforts to develop it. To prevent a terrible disaster. Relativity is just a theoretical explanation of why the new bomb was so powerful, and it could have been built without it. As Hawking put it in the original text of *The Universe in a Nutshell*<sup>[5]</sup>: Blaming Einstein's theory of relativity for the atomic bomb is like blaming Newton's law of gravitation for a plane crash. Therefore, it is simply not true that without Einstein's invention of the mass-energy equation there would have been no atomic bomb. The invention of the atomic bomb had nothing to do with relativity. The discovery of nuclear fission was the direct theoretical basis of the atomic bomb, the rest was the work of engineering. In fact, these empirical results or scientific and technological means have nothing to do with relative theory. Mass and energy do have a certain relationship, but they have nothing to do with relativity, because relativity has fundamental errors and is a completely wrong theory. The so-called experimental verification is false, and it is the practice of forcing experimental results into one's own theoretical system.

#### 4.2 On "Relativistic Modification" of Satellite Positioning System

There are a lot of arguments about whether *GPS* satellites need to be corrected for

relativity, some say they do and some say they don't. The most famous is a short article published by an Digest on July 22, 2020, entitled "What's the Use of Relativity?" The article states: "When developing *GPS* satellites, according to the special theory of relativity (*SR*), the atomic clock on the satellite lags behind the atomic clock on the ground by  $7 \mu s$  per day due to the speed of motion. According to general relativity (*GR*), atomic clocks on satellites outpace those on the ground by  $45 \mu s$  a day due to their different positions in the gravitational field. Combined, atomic clocks on *gps* satellites outpace those on the ground by  $38 \mu s$  a day. If the time is not calibrated, the positioning position will drift, about 10km per day. Therefore, there would be no *GPS* without relativity. However, the argument that there would be no *gps* without relativity is no more credible than the argument that there would be no atomic bomb without relativity. Here we quote a published paper<sup>[6]</sup> that systematically and comprehensively introduces whether *GPS* satellites need relativistic correction. This paper discusses in detail the essence of the "relativistic correction" of *GPS* system, arguing that it is wrong to say that "there is no global positioning system without relativity". The paper points out that some fundamental elements of relativity (such as the absence of an absolute coordinate system, simultaneous relativity, the concept of gravitational potential, gravitational field equations, gravitational redshift, etc.) are either wrong, lack experimental basis, or are unreasonably exaggerated. This not only reflects the logic difficulties and inconsistencies of the theory itself, but also brings great confusion to people. Nevertheless, people (including some who participated in the Beidou study many years ago) have come to the clear conclusion that no relativistic correction is needed for *GPS*.

In my opinion, *GPS* satellite positioning system needs to be corrected, but it is definitely not relativity correction, because relativity is a fundamentally wrong theory, as shown in Section 3.2.3 above: The light and shadow effect of moving objects explains in detail that high-speed moving objects will indeed cause the difference in visual time and visual image, and also gives the expression of the spatio-temporal coefficient of high-speed moving objects on visual time and visual space, which will not be repeated here. The "longer life" of  $\mu$  particle in high speed motion is also regarded as a direct experimental verification of special relativity, which is also a way to force experimental

results into one's own theoretical system.  $\mu$  particle in high speed motion will have a great impact on the observation effect, but its essence is still a light and shadow effect. The experimental results we observed are not the real life and position of particle  $\mu$ , because particles moving at high speed do have great differences in visual time and position, but we need to correct this visual difference through the space-time coefficient  $k$ , so as to restore the real space-time state of particle.

To sum up, the presupposition and core formula of special relativity, such as the principle of constant speed of light, relativity of simultaneity and Lorentz transformation, are all contradictory and pseudo-concepts without any physical significance. The so-called experimental verification of relativity is false. All these are the practices of relativity to force experimental results into its own theoretical system. Special relativity is a pseudo-theory without any physical significance.

## 5 General relativity is also a wrong theory

Einstein argued that special relativity applies only to inertial reference frames<sup>[1]</sup>, whose background space-time is the flat Minkowski space-time, while general relativity applies to all reference frames, whose background space-time is the curved Riemann space-time. General relativity is based on special relativity and is the result of extending Minkowski's "flat spacetime" under special relativity to Riemann's "curved spacetime".

Minkowski spacetime is a so-called "four-dimensional spacetime" formed by one time dimension and three space dimensions. In three-dimensional Euclidean space, the distance between two points satisfies space interval invariance, that is, the distance between two points in three-dimensional space has nothing to do with the selection of coordinate system, which can be expressed by mathematical formula as:

$$ds^2 = dx^2 + dy^2 + dz^2 = dx'^2 + dy'^2 + dz'^2 = ds'^2 \quad (50)$$

Where:  $ds$  and  $ds'$  respectively represent the distance between two points in two different coordinate systems. Distance is an intrinsic property of space and has nothing to do with the selection of coordinate systems. According to the special theory of relativity, Minkowski space-time also satisfies the "space-time interval invariance", which can be expressed by the mathematical formula:

$$ds^2 = -c^2 dt^2 + dx^2 + dy^2 + dz^2 = -c^2 dt'^2 + dx'^2 + dy'^2 + dz'^2 = ds'^2 \quad (51)$$

However, the so-called "space-time interval invariance" of Minkowski spacetime is derived from the Lorentz transformation. The "space-time interval invariance" of Minkowski spacetime and the Lorentz transformation are just different mathematical expressions. We can show how the Lorentz transformation can get the so-called "space-time interval invariance" of Minkowski spacetime through formula derivation.

The differential form of the Lorentz transformation is as follows:

$$\begin{cases} dx' = \frac{dx - vdt}{\sqrt{1 - v^2 / c^2}} \\ dy' = dy \\ dz' = dz \\ dt' = \frac{dt - vdx / c^2}{\sqrt{1 - v^2 / c^2}} \end{cases} \quad (52)$$

So let's plug in this formula:  $ds'^2 = -c^2 dt'^2 + dx'^2 + dy'^2 + dz'^2$ , We can get:

$$\begin{aligned} ds'^2 &= -c^2 dt'^2 + dx'^2 + dy'^2 + dz'^2 \\ &= -c^2 \left( \frac{dt - vdx / c^2}{\sqrt{1 - v^2 / c^2}} \right)^2 + \left( \frac{dx - vdt}{\sqrt{1 - v^2 / c^2}} \right)^2 + dy^2 + dz^2 \\ &= \frac{-c^2 \left( dt^2 - \frac{2dtvdx}{c^2} + \frac{v^2 dx^2}{c^4} \right)}{1 - v^2 / c^2} + \frac{dx^2 - 2dxvdt + v^2 dt^2}{1 - v^2 / c^2} + dy^2 + dz^2 \\ &= \frac{-c^2 dt^2 + 2dtvdx - \frac{v^2 dx^2}{c^2} + dx^2 - 2dxvdt + v^2 dt^2}{1 - v^2 / c^2} + dy^2 + dz^2 \\ &= \frac{-c^2 dt^2 - \frac{v^2 dx^2}{c^2} + dx^2 + v^2 dt^2}{1 - v^2 / c^2} + dy^2 + dz^2 \\ &= \frac{-c^4 dt^2 - v^2 dx^2 + c^2 dx^2 + c^2 v^2 dt^2}{c^2 - v^2} + dy^2 + dz^2 \quad (53) \\ &= \frac{-c^2 dt^2 (c^2 - v^2) + (c^2 - v^2) dx^2}{c^2 - v^2} + dy^2 + dz^2 \\ &= -c^2 dt^2 + dx^2 + dy^2 + dz^2 = ds^2 = ds'^2 \end{aligned}$$

Ignoring the intermediate steps, this is the Minkowski "space-time interval invariance" expression mentioned

earlier:  $ds^2 = -c^2 dt^2 + dx^2 + dy^2 + dz^2 = -c^2 dt'^2 + dx'^2 + dy'^2 + dz'^2 = ds'^2$ ,

Thus it can be seen that Minkowski space-time and its "space-time interval invariance" are based on the principle of the speed of light invariance and the Lorentz transformation. The principle of the speed of light invariance is not valid. Lorentz transformation is a pseudo-formula without any physical meaning, so Minkowski space-time and its "space-time interval invariance" are pseudo-concepts without any physical meaning. The extension of special relativity's Minkowski spacetime to general relativity's Riemann "curved spacetime" also has no practical significance. It is nothing more than a game of mathematical calculation.

If the theoretical foundation of relativity is wrong, all inferences and deductive results based on it will not survive, which will lead to the collapse of the whole theoretical edifice, including the general theory of relativity, which is also a pseudo-theory without any physical significance, and this is the fundamental reason why the general theory of relativity and quantum mechanics cannot be unified.

## 6 Quantum mechanics is a false theory

At the Royal Society's celebration of the new century at the end of the 19th century, Lord Kelvin proudly declared that "the theoretical edifice of physics has been built<sup>[1]</sup>, and the physicists of the future need only tinker." At that time, people thought that the understanding of physical phenomena and nature seemed complete. But amid the euphoria, there were still "two disturbing clouds," one being the zero result of Michelson Morley's experiment on the speed of the ether, and the other being the problem of black-body radiation, known in physics as the "ultraviolet disaster." The first cloud gave birth to special and general relativity, and from the previous description of relativity, we know that relativity is completely wrong. The second cloud was the birth of quantum mechanics, an important scientific theory that has influenced human civilization for nearly a century. Quantum mechanics and relativity are called the two pillars of modern physics, but sadly, quantum mechanics is also a wrong theory.

### 6.1 De Broglie wavelength $\lambda = h / p$ is a pseudo formula

#### 6.1.1 What is de Broglie Wave?

De Broglie wave, also known as matter wave, was proposed by the French theoretical physicist de Broglie. In 1910, at the age of 18, de Broglie studied history at the Sorbonne

University in Paris and received a bachelor of Arts degree. In 1911, his interest in physics was aroused when he heard Morris, secretary of the first Solvay Physics Seminar, talk about light, radiation, quantum properties, etc. <sup>[1]</sup>, and then he began to study physics. In 1923, when de Broglie published his paper on the related concept of "matter waves", it did not attract much attention, but later came to it with Einstein's support. Someone once sent a copy of de Broglie's paper to Einstein, who was delighted to see it. He had not expected that his own idea of the "wave-particle duality" of light, which had developed so plentifully in de Broglie's hands, would extend to moving particles. De Broglie believed that not only light has "wave-particle duality", but also all real particles have "wave-particle duality". In his Research on Quantum Theory, he proposed to unify the particle property and the wave of electron. This provided the physical basis for the establishment of quantum mechanics. De Broglie's argument was hailed by Einstein as having "lifted the tip of the great mask of quantum mechanics".

### 6.1.2 The de Broglie wave wavelength is still a fallacy of Special relativity <sup>[1]</sup>

The derivation process of the wavelength of "de Broglie wave" is not complicated. Combining Einstein's mass-energy equation  $E = mc^2$  and Planck's hypothesis of photon quantum energy  $E = h\nu$ , de Broglie obtained that the energy of photon satisfies the following relation:  $E = mc^2 = h\nu$ , the formula can also be written as  $m = \frac{h\nu}{c^2}$ .

Multiply both sides of  $m = \frac{h\nu}{c^2}$  by the speed of light  $c$  to get the momentum of the

photon  $p = mc = \frac{h\nu}{c} = \frac{h}{\lambda}$ . De Broglie came up with two equations for the

wave-particle duality of photons:  $E = h\nu$  and  $p = \frac{h}{\lambda}$ . The  $E$  and  $P$  on the left

side of the equations represent the particle-like side of light, and the frequency  $\nu$  and wavelength  $\lambda$  on the right side represent the wave of light.

De Broglie believed that  $E = h\nu$  and  $p = \frac{h}{\lambda}$  applied not only to photons, but also to all physical particles. There are many other ways to derive the wave-length formula

$\lambda = \frac{h}{p}$ , but no matter which way, it is the combination of the mass-energy equation

$E = mc^2$  and the quantum energy hypothesis  $E = h\nu$ . The mass-energy equation

$E = mc^2$  is a pseudo-concept derived from the Special relativity theory, which has no

practical physical significance. Therefore, the formula  $\lambda = \frac{h}{p}$  for the wavelength of

matter obtained on this basis is also a pseudo-formula without any physical significance.

6.2 The wave function of a material wave is a pseudo formula

The original expression form  $\Psi(x, t) = \psi_0 e^{-i2\pi(vt - \frac{x}{\lambda})}$  of the wave function of material waves is obtained by analogy with the general wave equation

$y(x, t) = Ae^{-i2\pi(vt - \frac{x}{\lambda})}$ , which is also the premise of quantum mechanics theory. By

substituting the hypothesis  $\nu = E / h$  and de Broglie's wave-length formula

$\lambda = h / p$  into the original expression of the matter wave-function, the most basic

formula of quantum mechanics theory is obtained: the matter wave-function equation

$\Psi(x, t) = \psi_0 e^{-\frac{i}{h}(Et - Px)}$ . Previously, we systematically discussed that the de Broglie

wave-length formula  $\lambda = h / p$  is a pseudo-formula without any significance, so the

matter wave-length function equation  $\Psi(x, t) = \psi_0 e^{-\frac{i}{h}(Et - Px)}$  established on the basis

of the de Broglie wave-length formula is also a pseudo-formula without any physical significance.

6.3 Schrodinger equation is a pseudo formula

Schrodinger equation, also known as Schrodinger wave equation, is the core formula

of quantum mechanics. Schrodinger equation is a second order partial differential

equation established by combining the concept of matter wave with the wave equation. In

order to simplify the problem, we will only take the example of a free particle in the

one-dimensional case. According to the theory of quantum mechanics, the Schrodinger

equation for a one-dimensional free particle is:

$$-\frac{\hbar^2}{2m} \frac{\partial^2 \Psi}{\partial x^2} = i\hbar \frac{\partial \Psi}{\partial t} \quad (54)$$

the derivation process of Schrodinger equation is as follows:

the wave function equation of a one-dimensional free particle

$$\text{is: } \Psi(x, t) = \psi_0 e^{-\frac{i}{\hbar}(Et - Px)} \quad (55)$$

the expression finds the first partial derivative with respect to

$$t: \frac{\partial \Psi}{\partial t} = -\frac{i}{\hbar} E \psi_0 e^{-\frac{i}{\hbar}(Et - Px)} = -\frac{i}{\hbar} E \Psi \quad (56)$$

take the second partial derivative of the wave function with respect to  $x$  :

$$\frac{\partial^2 \Psi}{\partial x^2} = -\frac{P^2}{\hbar^2} \psi_0 e^{-\frac{i}{\hbar}(Et - Px)} = -\frac{P^2}{\hbar^2} \Psi \quad (57)$$

both sides of equation (56)  $\times i\hbar$ , we can get:

$$i\hbar \frac{\partial \Psi}{\partial t} = E \Psi \quad (58)$$

both sides of equation (57)  $\times (-\hbar^2 / 2m)$ , we can get:

$$-\frac{\hbar^2}{2m} \frac{\partial^2 \Psi}{\partial x^2} = \frac{P^2}{2m} \Psi \quad (59)$$

the energy of a free particle (not affected by potential energy) is:

$$E = E_k = \frac{P^2}{2m} \quad (60)$$

combined with (58) and (59) above, we can get:

$$-\frac{\hbar^2}{2m} \frac{\partial^2 \Psi}{\partial x^2} = i\hbar \frac{\partial \Psi}{\partial t} \quad (61)$$

this formula is called the time-dependent Schrodinger equation for one-dimensional free particles.

From the above derivation process, it can be seen that the Schrodinger equation of one-dimensional free particles is completely based on the matter wave function. Previously, we systematically discussed the de Broglie wave length formula  $\lambda = h / p$  and the

matter wave function equation  $\Psi(x, t) = \psi_0 e^{-\frac{i}{\hbar}(Et - Px)}$  obtained on this basis. They are all wrong formulas without any meaning. Therefore, the Schrodinger equation constructed

on the matter wave function equation  $\Psi(x, t) = \psi_0 e^{-\frac{i}{\hbar}(Et - Px)}$  is also a pseudo-formula

without any meaning.

Like the theory of Relativity, errors in the core concepts and assumptions of quantum mechanics, such as the de Broglie wave-length formula, the wave function of matter waves, and the Schrodinger equation, all the inferences and deductive results based on this basis cannot be spared, which is enough to lead to the collapse of the whole building of quantum mechanics theory. Therefore, the quantum mechanics theory is also a pseudo-theory without any physical significance.

The above is only to discuss the errors in quantum mechanics from one aspect of the core formula of quantum mechanics. In the following sections, we will comprehensively demonstrate the errors in quantum mechanics from experimental verification, basic concepts, physical interpretation and other aspects to echo the problem itself.

## 6.4 Compton effect and its errors

### 6.4.1 Compton effect and its mathematical derivation

In 1923, Compton discovered a new phenomenon when studying the experiment of  $X$ -ray scattering through matter, that is, in addition to the original wavelength of  $\lambda_0$  in the scattered light, there are also  $X$ -rays with wavelength greater than  $\lambda_0$ , and the increment of its wavelength varies with the different scattering Angle, which is called Compton effect. Compton believed that when photon and electron collide, some energy of photon is transferred to electron. Compton assumed that photon, like physical particles such as electron and proton, not only has energy, but also has momentum. Energy is conserved during collision, so is momentum. According to this idea, Compton set up the equation and calculated the wavelength difference before and after scattering, the derivation process is as follows:

$$\text{According to conservation of energy} \quad h\nu_0 + m_0c^2 = h\nu + mc^2 \quad (62)$$

$$\text{According to conservation of momentum} \quad \frac{h\nu_0}{c} \vec{e}_0 = \frac{h\nu}{c} \vec{e} + m \vec{v} \quad (63)$$

In the above equation,  $h\nu_0$  represents the initial energy of incident photon, and  $m_0c^2$  represents the energy of electron in rest state.  $h\nu$  is the energy of photon after scattering,  $mc^2$  is the energy of electron after photon action, where  $m$  is the dynamic

mass of electron.  $\frac{h\nu_0}{c}$  represents the initial momentum of the photon and  $\vec{e}_0$

represents the direction of the initial momentum of the photon.  $\frac{h\nu}{c}$  represents the

momentum of photon after scattering.  $\vec{e}$  represents the direction of photon momentum after scattering, and  $\vec{mv}$  represents the momentum of electron after scattering.

Transpose the momentum conservation formula above, square both sides, and multiply both sides by  $c^2$ , we get:

$$m^2 c^2 \nu^2 = h^2 \nu_0^2 + h^2 \nu^2 - 2h^2 \nu \nu_0 \cos \theta \quad (64)$$

Transpose the above energy conservation formula and square it to obtain:

$$m^2 c^4 = h^2 (\nu_0 - \nu)^2 + m_0^2 c^4 + 2m_0 h c^2 (\nu_0 - \nu) \quad (65)$$

Subtract the above two formulas to obtain:

$$m^2 c^2 (c^2 - \nu^2) = h^2 (\nu_0 - \nu)^2 + m_0^2 c^4 + 2m_0 h c^2 (\nu_0 - \nu) - h^2 \nu_0^2 - h^2 \nu^2 + 2h^2 \nu \nu_0 \cos \theta \quad (66)$$

After sorting out the formula, we can get:

$$m^2 c^2 (c^2 - \nu^2) = -2h^2 \nu_0 \nu + m_0^2 c^4 + 2m_0 h c^2 (\nu_0 - \nu) + 2h^2 \nu \nu_0 \cos \theta \quad (67)$$

The square  $m^2 = \frac{m_0^2}{1 - \frac{\nu^2}{c^2}}$  of the "dynamic mass" formula of special relativity

$m = \frac{m_0}{\sqrt{1 - \frac{\nu^2}{c^2}}}$  is substituted into the above equation, and the left end of the equation

becomes  $m_0^2 c^4$ , and the right end of the equation also has  $m_0^2 c^4$  terms. After

cancellation, both sides of the equation are divided by  $m_0 c \nu \nu_0$ , and finally, we can get:

$$\frac{c}{\nu} - \frac{c}{\nu_0} = \frac{h}{m_0 c} (1 - \cos \theta) \quad (68)$$

$$\text{That is: } \Delta \lambda = \lambda - \lambda_0 = \frac{h}{m_0 c} (1 - \cos \theta) \quad (69)$$

Where  $\frac{h}{m_0 c}$  is a constant, generally expressed by  $\lambda_c$ , and its size is

$$\lambda_c \approx 2.43 * 10^{-12} m$$

$\lambda_c$  is known as the Compton wavelength, and this formula also shows that the wavelength offset is independent of the scattering material and only depends on the scattering Angle. The Compton effect is regarded as another important experimental verification of the particle nature of light in addition to the photoelectric effect.

#### 6.4.2 The Compton effect must be wrong

The whole derivation process of the Compton effect is based on the pseudo-concepts such as the mass-energy equation of special relativity and the dynamic mass. The energy conservation formula  $h\nu_0 + m_0c^2 = h\nu + mc^2$  is established on the basis of the mass-energy equation and the quantum energy hypothesis. Momentum conservation

$$\frac{h\nu_0}{c} \vec{e}_0 = \frac{h\nu}{c} \vec{e} + m \vec{v}$$

is also obtained by combining the mass-energy equation and the quantum energy hypothesis, where:  $\frac{h\nu_0}{c} = \frac{m_0c^2}{c} = m_0c$ ,  $\frac{h\nu}{c} = \frac{mc^2}{c} = mc$ ,

$$\frac{h\nu_0}{c}$$
 represents the initial momentum of the photon, and  $\frac{h\nu}{c}$  represents the

momentum of the photon after scattering. As an important experimental proof of the properties of light particles, the derivation of the formula of the Compton effect is completely based on the relevant conclusions of the special relativity theory. The mass-energy equation and the moving mass are all pseudo concepts obtained by the special relativity theory without any physical significance, so the theoretical derivation of the Compton effect is bound to be wrong. The physical experiment of Compton effect is even more impossible to achieve the unity of experimental data and formula derivation results.

#### 6.5 The photoelectric effect does not prove that light is particle

Einstein explained the photoelectric effect by saying that only electromagnetic waves above a certain frequency can cause the photoelectric effect to occur in certain substances. The photoelectric effect is only related to the frequency of light, not its intensity. Einstein was awarded the Nobel Prize in Physics in 1921. Einstein rediscovered the light quantum hypothesis, which had disappeared from the academic world for five years and was

doubted by Planck himself, and happily found a "theoretical basis" for the photoelectric effect. In Einstein's day, there was a limit to the maximum intensity of light that could be provided because of the limited level of science and technology. Since the invention of laser in the 1960s<sup>[7]</sup>, scientists have respectively used ordinary red light and 694.3 *nm* red laser of the same frequency to irradiate cadmium sulfide crystal sheets. The ordinary red light is almost not absorbed and does not produce photocurrent. Red laser can be strongly absorbed and produce a strong photocurrent, but also produces a higher frequency than 694.3 *nm* on the surface of cadmium sulfide crystal green light. These experiments are in serious contradiction with Einstein's interpretation of the photoelectric effect. Of course, Einstein's supporters still have their own explanation for the photoelectric effect that occurs in lasers. They argue that while ordinary light acts on a particle with a single photon, lasers can act on a particle with multiple photons. If we do not go into the root cause of the problem, but unprincipled to defend a theory of the past, or even rely on the so-called "physical explanation" to maintain the "correctness" of a theory, this is itself a lack of scientific spirit. Truth must be able to stand the test of time and technology, with the discovery and application of science and technology, especially laser, such a high intensity light, completely shattered Einstein's absurd conjecture. We should also be grateful that modern science gives us the opportunity to test the validity of a past theory or conjecture.

To sum up, the Compton effect and photoelectric effect as the so-called experimental proof of light particle property are not valid, they can not show that light has particle property. The "wave-particle duality" hypothesis of light has become a groundless conjecture. In fact, the "wave-particle duality" hypothesis of light is completely wrong. the debate on whether light is a wave or a particle has lasted for more than 300 years. However, compromise and concession are by no means the attitude that science should have. Einstein's proposal of the concept of "wave-particle duality" is another misdirection to the process of human science. This misdirection has a profound influence and makes theoretical physics fall into the abyss of "quantum" once again. The particle does not have true displacement in the direction of propagation, but the motion of the particle is true displacement. These two states of motion of a particle are contradictory, and cannot and should not be forcibly put together, because the volatility and the particle nature themselves have many irreconcilable contradictions. If light were a particle, it would be

bound to bump into each other as it travels, but the fact is that two different beams of light would meet without affecting each other, as only waves can. In addition, if the light is a particle, there will be a mass loss when the light source continues to shine, but this is not the case. This mass loss is not because the current scientific and technological means are not accurate enough to detect such a small mass change. The real reason is that there is no such matter as "light" and light is not any particle. Just as there is no such thing as "sound" or "sound particles". The essence of light is a wave, which is fully verified by interference, diffraction, reflection and refraction. The so-called experimental proof of the "Compton effect" and "photoelectric effect" is false. The mathematical derivation of the Compton effect is completely based on the wrong mass-energy equation of special relativity, which is impossible to be consistent with the experimental results. The photoelectric effect is also limited by the scientific and technological level at that time and obtained incorrect conclusions.

The "wave-particle duality" hypothesis of light was another misdirection by Einstein to the theoretical system of physics. This misdirection had a profound impact. It "inspired" de Broglie to put forward the hypothesis that all matter particles have "wave-particle duality", which made physics go astray again and slide into the abyss of quantum theory. The modern physical system believes that light can propagate without any medium. This statement is fundamentally absurd and idealistic. Any discussion about light in this false and contrary to the most basic logical cognitive basis is meaningless.

In the process of the continuous development of the system of Relativity and Quantum mechanics, there are more and more theories and ideas that are harder for people to understand, such as space-time exchange in relativity, moving mass, backward flow of time, parallel universes, the "dead and alive cat" in quantum mechanics, consciousness determines matter, Pauli exclusion principle, uncertainty principle, and so on. Even a series of bizarre conclusions such as the inversion of cause and effect, these absurd conclusions are actually derived from "the speed of light does not change", "light waves do not need media", "wave-particle duality" and other anti-logic, anti-common sense assumptions, these theories and people's experience of common sense and logical cognition gradually alienated, even serious departure. In the end, the modern system of physics can only sink deeper and deeper into the mire of mathematical calculation, which is

the fundamental reason why modern scientific theory has stagnated.

## 6.6 Problems with the core concepts of Quantum mechanics

### 6.6.1 Related concepts of Quantum mechanics

Quantum mechanics began with the study of blackbody radiation. We heat a metal rod with a flame. As the temperature increases, the color of the rod changes from dark red to orange, then yellow and white, and finally blue and white. Any object at any temperature is constantly radiating out various wavelengths of electromagnetic wave phenomenon known as thermal radiation phenomenon. The energy that an object radiates out the electromagnetic wave is called radiant energy. When the temperature is different, the wavelength range of the radiant energy concentration is also different, so we observe the color of the object at different temperatures. In order to describe this phenomenon quantitatively, theoretical physics defines several concepts of thermal radiation.

#### 1. Concepts related to thermal radiation

##### (1) Monochromatic radiating degree $M_\lambda(T)$

The energy radiated per unit wavelength interval from a unit area of a surface at a given temperature  $T$ , per unit time. In other words, in the  $\lambda$  to  $\lambda + d\lambda$  Wavelength range, the energy radiated is  $dM_\lambda$ , monochromatic radiating degree  $M_\lambda(T) = \frac{dM_\lambda}{d\lambda}$

##### (2) Radiating degree $M(T)$

The total energy of electromagnetic waves of all wavelengths emanating from a unit area of a surface at a given temperature  $T$ , per unit time. If the monochromatic radiating degree  $M_\lambda(T)$  is integrated in the whole band, the Radiating degree can be obtained  $M(T) = \int_0^{+\infty} M_\lambda(T) d\lambda$

##### (3) Monochromatic absorption ratio $\alpha_\lambda(T)$

The ratio of absorbed energy to incident energy in the  $\lambda$  to  $\lambda + d\lambda$  Wavelength range.

##### (4) Monochromatic reflection ratio $r_\lambda(T)$

The ratio of reflected energy to incident energy in the range of wavelengths  $\lambda$  to  $\lambda + d\lambda$ .

For an opaque object,  $\alpha_\lambda(T) + r_\lambda(T) = 1$

## (5) What is absolute black body

There is an idealized model of the phenomenon of thermal radiation, called the absolute black body, or black body for short. Suppose there is an opaque object, when the electromagnetic wave incident on the surface of the object, part of the electromagnetic wave is reflected out, part of the electromagnetic wave is absorbed, no transmission phenomenon. At the same time, the object at different temperatures, but also emit a variety of wavelengths of electromagnetic waves. If an object can absorb the electromagnetic energy of all wavelengths incident on it, without reflection and transmission phenomenon, we call the object absolute black body, black body for short. Since the black body can absorb all incoming electromagnetic wave energy, its monochromatic absorption ratio  $\alpha_{\lambda}(T) = 1$ . The black body is an ideal model. There is no such object in reality. Even the blackest coal in the world has an absorption ratio of only 98 percent. But physicists think it's possible to construct an idealized blackbody model using an opaque cavity with a small hole in it. When an electromagnetic wave comes in through the hole, the electromagnetic wave is reflected several times on the inner wall of the cavity. Each time, the inner wall absorbs some of the energy of the electromagnetic wave. Almost all the energy of the electromagnetic wave is absorbed, and since the hole is very small compared to the surface area of the entire cavity, very few electromagnetic waves can be emitted through the hole, which can be roughly referred to as a black body. If the cavity is heated, it will radiate electromagnetic waves of various wavelengths, and eventually the cavity will reach a thermal equilibrium temperature. In reality, when sunlight strikes through an open window, almost all of the incoming light is absorbed, and very few electromagnetic waves can escape through the window. Therefore, during the day, when we look at an open window from a distance, it appears dark, which can also be seen as black body.

## 2. Kirchhoff's law

In 1859, the German physicist Kirchhoff drew the following conclusions based on the characteristics of several objects in a closed container when they were in thermal equilibrium: At the same temperature, the ratio of Monochromatic radiating degree  $M_{\lambda}(T)$  and monochromatic absorption ratio  $\alpha_{\lambda}(T)$  of any object is equal, equal to the

absolute black body at this temperature to the Monochromatic radiating degree  $M_{B\lambda}(T)$  of the same wavelength. The formula of Kirchhoff's law is expressed as:

$$\frac{M_{1\lambda}(T)}{\alpha_{1\lambda}(T)} = \frac{M_{2\lambda}(T)}{\alpha_{2\lambda}(T)} = \frac{M_{3\lambda}(T)}{\alpha_{3\lambda}(T)} = \dots = M_{B\lambda}(T) \quad (70)$$

For example, the physical meaning of the above formula can be expressed as: under the condition of temperature  $700\text{ K}$ , iron, copper, ceramic three materials in the  $500\text{ nm}$  band near the monochromatic radiating degree and monochromatic absorption ratio are equal, are equal to the  $500\text{ nm}$  band of any material black body monochromatic radiating degree.

If  $M_{B\lambda}(T)$  is known, the monochromatic radiating degree of an object near a certain wavelength and of a certain material at a certain temperature  $T$  satisfies the following relation:  $M_{i\lambda}(T) = M_{B\lambda}(T) \cdot \alpha_{i\lambda}(T)$ , in other words: If we know the monochromatic radiating degree of the blackbody at a specific temperature and a certain wavelength, and we measure the monochromatic absorption ratio of the material at that temperature and at that wavelength, we can find the monochromatic radiating degree of the material at that temperature and at that wavelength. The formula also shows that the stronger the absorption ratio of an object to electromagnetic wave is, the stronger its ability to radiate energy is. In short, a good absorber is also a good radiator. The black body is a complete absorber and an ideal radiator. Therefore, it becomes very important to study the monochromatic radiating degree of black body, and determining the monochromatic radiating degree of black body becomes the core problem in the study of thermal radiation. Because according to the definition of black body, black body has nothing to do with the material of the object, and the black body formed by the object of any material has exactly the same value under the same temperature and wavelength. The monochromatic radiating degree of black body is regarded as a physical quantity with "universal" value, and it is the study of the law presented by this physical quantity that leads to the emergence of the quantum mechanics theory later. Kirchhoff's law is very important for quantum mechanics.

### 3. Steffan-boltzmann law

According to the experiment, at three different temperatures of  $2000\text{ K}$ ,  $1750\text{ K}$

and  $1500\text{ K}$ , the monochromatic radiating degree and wavelength of the black body of any material "meet the following experimental curve":

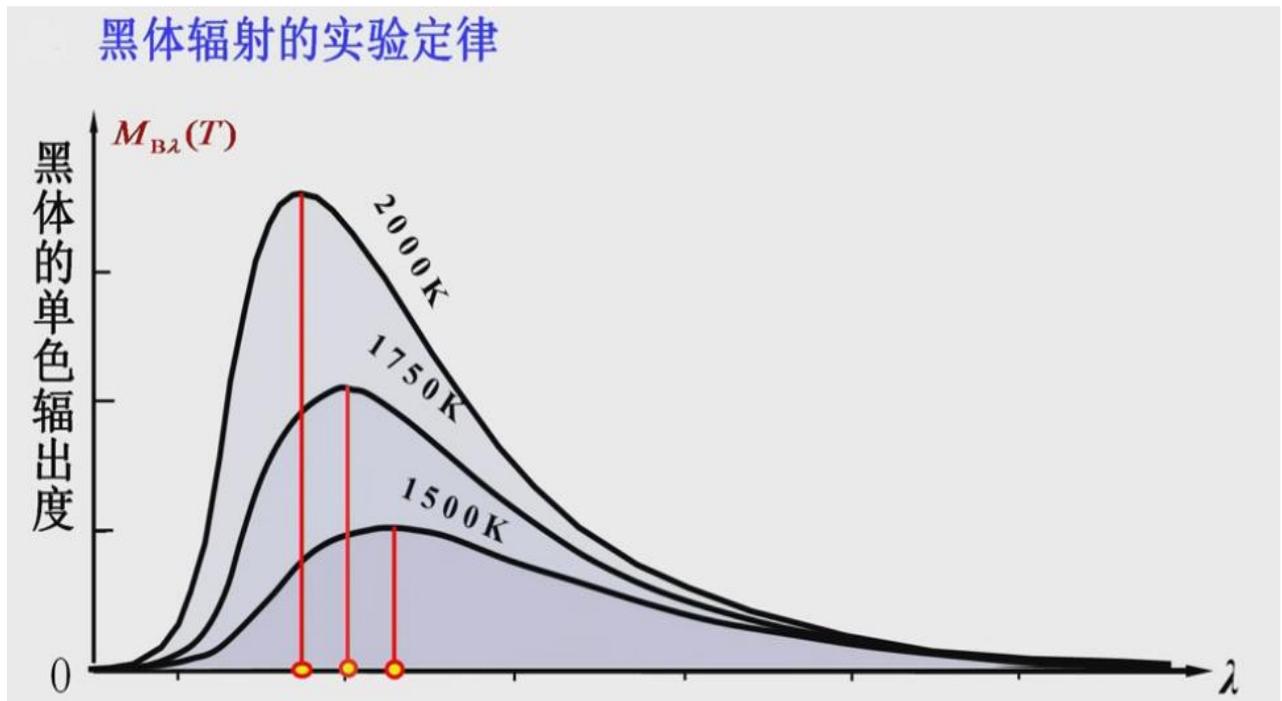


Fig. 11. Curve of monochromatic radiance outdegree distribution along wavelength

It can be seen from the above curve that with the increase of temperature, the area surrounded by the monochromatic radiating degree  $M_{B\lambda}(T)$  curve and the  $\lambda$ -axis increases continuously. At the same time, each monochromatic radiating degree curve corresponds to a peak wavelength, and with the continuous increase of temperature, the peak wavelength corresponding to the monochromatic radiating degree  $M_{B\lambda}(T)$  curve also moves towards the short wave direction. It is said that by summarizing the experimental data, two experimental laws are found: one is the Steffan-Boltzmann law, and the other is the Wien displacement law. Here we only briefly describe the Steffan-Boltzmann law. We know that the area surrounded by the curve and the  $\lambda$ -axis actually represents the radiating degree of the blackbody at this temperature, that is, the sum of the energies corresponding to all wavelengths at this temperature, that is, the total energy radiated by the blackbody at this temperature. Obviously, as the temperature increases, this area also increases, that is, the radiating degree of the blackbody, or the total energy radiated, also increases. It is said that in 1879, Steffan concluded the experiment, and in 1884, Boltzmann derived the relationship between the radiating degree

exhume of the black body and the temperature satisfaction from the classical theory, which is called Steffan-Boltzmann law, the formula is as follows:  $M(T) = \sigma T^4$ , where  $\sigma$  is called the Steffan constant, and its value is  $5.67 \times 10^{-8} W / m^2 K^4$ .

#### 6.6.2 "Ultraviolet Disaster" is a man-made physics accident

Physics is a science of observation and experiment. It is the essential feature of this discipline that human beings summarize the laws behind the phenomena by observing the intuitive physical phenomena. However, sometimes when we observe some experimental phenomena, human senses may not be able to capture the complete information about the experiment or physical phenomenon. On the basis of such incomplete information, we may face serious problems or even mistakes in defining physical concepts and constructing theoretical systems, so as to be unable to correctly reveal the essential law behind the phenomenon. Not only that, but also produce a series of conclusions that contradict physical facts, such as "ultraviolet disaster" and "quantization". The idea that light and electromagnetic wave can propagate without any medium is absurd and idealistic in modern theoretical physics system, which violates the most basic logical cognitive law. Since theoretical physics does not deny that electromagnetic wave is a kind of wave, it must admit that there must be some kind of "matter" vibrating, without which the vibration of "matter" will not produce waves. The vibration of "matter" is more fundamental than the wave, and it is the root cause of the wave. This is the most basic logical cognition and an insurmountable cognitive red line. Otherwise, electromagnetic wave should not be called a wave. Although we do not know exactly what this "matter" is, but it must be objective existence, we must believe this! The Michelson-Morley experiment did not prove that the aether did not exist. Michelson believed to his death that the aether existed, and he was convinced that his experiment must not have been perfect enough to measure it. Einstein's abandonment of the aether was yet another misrepresentation of human science, a misrepresentation that was disastrous for theoretical physics and human science in general. We are not going to argue here whether this "matter" is ether or not, but that if it is a wave it must be admitted that there must be some "matter" vibrating, which is the most basic logical judgment law.

According to the conclusions of classical wave mechanics, the average energy

density of any wave in a wave cycle can be expressed as  $\bar{w} = \frac{1}{2} \rho A^2 \omega^2$ , so the wave energy depends not only on the frequency ( $\omega = 2\pi f$ ), but also on the amplitude and other factors. However, both "monochromatic radiating degree" and "radiating degree" describe the relationship between the energy and frequency of electromagnetic wave. "radiating degree" describes the total energy of electromagnetic wave of all wavelengths emitted from the unit area of the surface of an object at a certain temperature  $T$  within a unit time. Through the formula  $\bar{w} = \frac{1}{2} \rho A^2 \omega^2$  for the average energy density of a wave, we find that the energy of a wave is not only dependent on the frequency, but also closely related to the amplitude of the wave and other factors. Although the meaning of the radiating degree and average energy density are not the same, their decisive factors are the same. Both of these two indicators are expressions of wave energy. Although they are represented in different angles and ways, they actually answer the relationship between electromagnetic wave energy and its decisive factors. The "radiating degree" describes a physical scenario, for example, the total energy of electromagnetic waves of various frequencies emanating from an object with a surface area of exactly  $1m^2$  in one second when the object's temperature is  $1000K$ ; The energy density of electromagnetic waves describes another physical scenario, such as the total energy of electromagnetic waves of various frequencies contained in a space of  $1m^3$ . We do not deny that these two indicators do differ, but they have one thing in common, both express the relationship between the energy of electromagnetic waves and its decisive factor. Even if "radiating degree" expresses the energy of various electromagnetic waves radiated on the surface of the object, but these energies are still jointly determined by the electromagnetic wave frequency, amplitude and other factors, rather than solely determined by the frequency. Theoretical physicists artificially define the physical index of "monochromatic radiating degree" and want to use it to describe the relationship between wave energy and frequency. Then they not only use classical theories to deduce relevant formulas, but also try to find the so-called physical law of this index through experiments. However, all this is in vain. Because the artificially defined physical concept of "monochromatic radiating

degree " is incapable of doing this, because the energy of a wave depends not only on frequency but also on other factors such as amplitude, which is the root cause of the ultraviolet disaster and Planck's "quantization" problem, The theory established on the concept of " monochromatic radiating degree" defect type has to make the assumption of "quantization", otherwise it will appear that the "theory" is inconsistent with the experiment. The superficial concept of " monochromatic radiating degree " abandons the influence of the amplitude and other factors of electromagnetic wave on the wave energy, and only uses frequency to define the wave energy. The result is inevitably that the energy becomes "part by part" and is discontinuous. This bizarre conclusion, which even Planck himself did not want to believe, was actually a serious physical accident caused by the artificially defined defective concept of " monochromatic radiating degree ", which also made theoretical physics fall into the abyss of "ultraviolet disaster" and "quantization".

People are usually more willing to believe the words of famous people like Einstein. We cite Einstein's description of electromagnetic wave in "On the Electrodynamics of Moving Bodies". Einstein thinks that electromagnetic wave has amplitude, should we agree with Einstein's statement? The answer is yes. Since light wave and electromagnetic wave are waves, it must be admitted that there must be amplitude and frequency of the wave, the monochromatic radiating degree is a physical concept determined by the frequency of wave , so where will the amplitude of electromagnetic wave be placed? Acknowledging and stating definitively that electromagnetic waves have amplitudes was probably the only thing Einstein did right in his life. The monochromatic radiating degree completely ignores the effect of amplitude on wave energy, which is the root of theoretical physics falling into the abyss of quantum mechanics. Light wave energy should have been determined by frequency and amplitude and other factors, but now it has to be completed by an index, the result can be imagined, the energy can only be "quantized", the creation of the monochromatic radiating degree of the concept of physics is a serious physical accident, the so-called "ultraviolet disaster" of black body radiation, is a serious physical accident caused by the incomplete concept of physics, It was a man-made physical accident that plunged theoretical physics into the abyss of quantum mechanics. No matter how many complicated or seemingly profound interpretations some so-called experts make, we cannot get rid of the problem of the monochromatic radiating degree itself. We also admit

that at a certain temperature, the energy of an electromagnetic wave emitted by an object does have a set of data "correspondence" with its wavelength, but this so-called "correspondence" is meaningless. If the relationship between energy and amplitude is not taken into account, the energy distributed according to wavelength is meaningless. This can only be a so-called objective law search of pure appearance, which is also the challenge faced by experimental science, because we may not be able to directly observe all the influencing factors of the physical law we want to reveal.

People sometimes identify with their own senses or intuitions and insist that there is no problem with the physical definition of "monochromatic radiating degree" because it is exactly what they have observed, reflecting the "deep connotation" of physics as a science of observation and experiment. "Monochromatic radiating degree" only considers the appearance, without deep consideration of the key factors of the wave energy, only connects the color (frequency) of the object directly felt by the naked eye with its radiation energy, and tries to find out the mathematical law satisfied between them. This approach is not advisable, nor can it reveal the objective physical law correctly. While it is possible to draw a so-called "correspondence" between the wavelength of radiation and the energy emitted by an object in a particular physical experiment, this correspondence is not universal, because in another physical environment, the "correspondence" will not hold. It's impossible to figure out the mathematical relationship between the energy of a wave and its frequency, because behind the energy of a wave are physical factors such as the amplitude of the wave. We can identify color (frequency) very intuitively, but it is not easy to identify amplitude and medium density, although we can not visualize the amplitude and medium density, but their influence on the wave energy is fundamental.

Therefore, starting from the basic concepts of "monochromatic radiating degree" and "radiating degree" describing thermal radiation, it is doomed that this theoretical system will inevitably slide into the abyss of "quantization". The result of constructing a theoretical system based on this incomplete physical concept is bound to be full of loopholes. This eventually led to the quantum mechanics "quantization", "uncertainty principle", "dead and alive cat" and many other absurd conclusions. Physics is a science of observation and experiment. When we find some regularity in the temperature of an object and the color it shows, we want to reveal such regularity. This is also the basic practice of physics. However,

there is still a huge gap between this representation and the essence of things. We should not only observe this representation and sum up the empirical rule, but also use logical thinking to make up for the congenital defect of observing the representation of things with sensory experience. Human's sensory capacity is limited, we can only use the five senses of the eye, ear, nose, tongue and body to intuitively understand various phenomena or appearances. When studying the problem of thermal radiation, we can not only see that the temperature and color of an object have some regularity, but also draw the curve of temperature and color (frequency) change under a specific and definite physical scene. We also want to summarize the mathematical expression of this law. Although we can see the color, it is not easy for us to see and quantify the physical quantities such as dielectric density and amplitude of electromagnetic wave. Although it is not easy for us to observe the factors such as amplitude and dielectric density, they affect the law of energy change that we want to find. Therefore, the rule search that omits some key factors is doomed to get no correct result. Let's take a more straightforward example to illustrate the problem. If there are a lot of cylinders with different base areas and very high heights standing on the ground, we can't see where the tops are because they are so high up in the sky, and we don't even know if they have tops, but we know the density of these cylinders, and we can measure the weight of each cylinder in some way. By dividing the weight by the density, we can figure out the volume of the cylinder. Suppose we don't know that the volume of a cylinder is equal to the base area times the height, but through observation and summary, we find that the volume of a cylinder with a larger base area is generally larger, so we want to find out what is the relationship between the volume of a cylinder and the base area? Then we summarize a lot of experimental data, and we draw graphs to find the best mathematical expressions possible. In fact, some curves are drawn, and we can make some guesses to come up with "so-called mathematical expressions" that express the one-to-one correspondence we see between the area of the base and the volume of the cylinder, that is, We establish some mathematical correspondence between the area of the base of the cylinder that we can see and its volume, and we think that the area of the base of the cylinder only determines the volume of the cylinder. Moreover, some of the mathematical expressions are in good agreement with the experimental data, for example, the specific cylinder samples selected are exactly matched with the mathematical models

established. However, this collection of experimental data and the establishment of mathematical tools are meaningless, because the volume of the cylinder is not only related to the base area, but also closely related to the height of the cylinder. The index of "monochromatic radiating degree" defined in the study of thermal radiation is exactly the same as the index of "volume per unit area" defined in the above case. We use "volume per unit area" to calculate and find the relationship between area and volume. Under the condition of specific cylindrical experimental samples, We can actually find this quantitative correspondence, but it doesn't make any sense, because it's not universal, because it's not just the area of the base that determines the volume of the cylinder, it's also the height of the cylinder, and we don't see the effect of the height of the cylinder on the volume because the cylinder is so high up in the sky, We don't know what their height is, or even we are not sure whether it has a height index, which is beyond the scope of our direct observation, just like when we express the energy of blackbody radiation, we cannot see clearly or it is not easy to directly observe the influence of medium density and amplitude on the wave energy. However, this seems to be a paradox, because only by observing phenomena can we know the essential properties of things, but the observation itself is incomplete, we cannot guarantee that we can observe all the decisive elements of the essence of things. However, we do not need to feel confused about this. Any knowledge and theoretical system are not isolated, but there is some correlation and unity between them, through which we can construct or verify new theories. In the long-term exploration process, we have accumulated a lot of experience and constructed many correct theoretical systems and mathematical tools. This is the precious wealth of human beings. We should construct new theories based on the known correct theoretical system combined with new empirical content. The edifice of human knowledge is gradually built in this way, so the truth can never reach the end point, but can only be approached infinitely. Therefore, we must not construct a theoretical system just from the observed phenomena. The concepts of "monochromatic radiating degree" and " radiating degree" make this mistake. We should construct a new theory based on the basic theoretical system of wave theory combined with the new experimental phenomena observed. And it does possess the phenomena of interference, diffraction, reflection and refraction that all waves have, so we should believe that electromagnetic waves must also conform to the wave theory which we

have established long ago and which still seems very correct. According to the wave theory, its average energy density should also satisfy  $\bar{w} = \frac{1}{2} \rho A^2 \omega^2$ , that is to say, The energy of electromagnetic wave is determined by frequency, amplitude and other factors together, rather than by frequency alone.

### 6.6.3 Contradiction between Kirchhoff's Law and Compton's scattering phenomenon

In the previous section, we have systematically discussed the concept that the Compton effect is fundamentally wrong in physics, because the mathematical derivation of the Compton effect is entirely based on the wrong special relativistic mass-energy equation. In this section, we will systematically discuss the contradictions and errors of Kirchhoff's law itself. Here we merely want to illustrate the contradiction between Kirchhoff's law and Compton scattering, two important physics concepts of quantum mechanics, thus echoing the conclusion itself that quantum mechanics is a false theory.

Based on the characteristics of several objects in a closed container in thermal equilibrium, Kirchhoff drew the following conclusion: at the same temperature, the ratio of monochromatic radiating degree  $M_\lambda(T)$  and monochromatic absorption ratio  $\alpha_\lambda(T)$  of any object is equal, equal to the monochromatic radiating degree  $M_{B\lambda}(T)$  of the absolute black body at that temperature to the same wavelength.

Strictly speaking, we don't need to go any further to find out whether Kirchhoff's law is correct, because Kirchhoff's law is based on an inherently flawed physical concept of "monochromatic radiating degree", and therefore Kirchhoff's law itself is inherently flawed. But to echo the fact that these concepts are inherently wrong, we go on to discuss the other mistakes of Kirchhoff's law.

Let's not discuss whether Kirchhoff's law is correct, whether it really conforms to the experimental facts, first of all, Kirchhoff's law is based on the premise that the wavelength of the electromagnetic wave absorbed by the object is equal to the wavelength of the electromagnetic wave emitted by the object. According to the mathematical expression of Kirchhoff's law:

$$\frac{M_{1\lambda}(T)}{\alpha_{1\lambda}(T)} = \frac{M_{2\lambda}(T)}{\alpha_{2\lambda}(T)} = \frac{M_{3\lambda}(T)}{\alpha_{3\lambda}(T)} = \dots = M_{B\lambda}(T)$$

To make it easier to understand, let's take an example to illustrate the physics scenario expressed by the above formula: Under the condition of temperature of  $700\text{ K}$ , the monochromatic radiating degree of iron bars, copper bars, ceramic bars and many other materials in the band range of  $500\text{ nm}$  and the ratio of monochromatic absorption ratio are all equal to the monochromatic radiating degree of any material black body in the band range of  $500\text{ nm}$ . Taking an iron bar as an example, assuming that the temperature is  $700\text{ K}$ , the energy corresponding to the electromagnetic wave near  $500\text{ nm}$  band radiated by the iron bar is 10 joules. Since we study the thermal radiation problem when the object reaches thermal equilibrium, then the energy of the electromagnetic wave absorbed by the iron bar is also 10 joules, which is no problem. But can we be sure that the electromagnetic wave absorbed by the bar is also  $500\text{ nm}$ ? We can't be sure of that. Absorption of an electromagnetic wave by an object and emission of an electromagnetic wave are two completely different physical processes, and the wavelength of an incoming electromagnetic wave is not necessarily the same as the wavelength of an outgoing electromagnetic wave. Because thermal radiation and reflection are not the same physical phenomena or physical concepts. Although we also agree that any object emits electromagnetic waves of various bands, the electromagnetic waves radiated by an object are all in the whole band, only different objects and different temperatures have different characteristic wavelengths, it does not mean that the monochromatic radiating degree and absorption ratio have the same wavelength basis, which is crucial and also the root of the problem of Kirchhoff's law. Because under the condition of thermal equilibrium, the electromagnetic wave absorbed by the object may not be covered by the whole band, and even if the wavelength of the electromagnetic wave absorbed by the object is full band, it does not mean that the absorbed electromagnetic wave and the radiation electromagnetic wave have the same wavelength basis. If the phenomenon of Compton scattering experiment is real, it just shows that the electromagnetic wave absorbed by the object and the electromagnetic wave emitted are not of the same wavelength, so the basis of the unity of Kirchhoff's law of wavelength itself is not valid. We know from the Compton scattering experiment that: when studying the experiment of  $X$ -ray scattering through real matter, Compton found a new phenomenon, that is, in addition to the original wavelength  $\lambda_0$  in

the scattered light, there are also  $X$ -rays with a wavelength greater than  $\lambda_0$ , and the increment of its wavelength varies with the scattering Angle. Although Compton's explanation of the Compton effect is completely wrong, if the phenomenon of Compton scattering experiment is real, it just shows that the wavelength of the incoming electromagnetic wave is not necessarily equal to the wavelength of the outgoing electromagnetic wave. Although  $X$ -ray energy is very high, it is still a kind of electromagnetic wave. The so-called Compton scattering phenomenon also reflects the relationship between the incident wave and the outgoing wave in essence. If the wavelength of the incident electromagnetic wave is not necessarily equal to the wavelength of the outgoing electromagnetic wave, then the ratio of monochromatic radiating degree  $M_\lambda(T)$  to monochromatic absorption ratio  $\alpha_\lambda(T)$  will lose the basis of unity, let alone whether the ratio is equal to the monochromatic radiating degree of the black body. Although the bar may indeed have a wavelength of  $500\text{ nm}$ , it may actually have nothing to do with the incoming  $500\text{ nm}$  wave, because it is likely that the outgoing  $500\text{ nm}$  wave is mainly caused by the influence of the  $400\text{ nm}$  wave, as in the Compton scattering experiment, the incoming wave is one wavelength, Scattered electromagnetic waves are of another or more wavelengths. If Compton's scattering experiment is real, it would shake the foundation of Kirchhoff's law, which is: The wavelength of the incident electromagnetic wave is not necessarily equal to the wavelength of the outgoing or scattered electromagnetic wave. The ratio of the monochromatic radiating degree  $M_\lambda(T)$  and absorption ratio  $\alpha_\lambda(T)$  loses the uniform basis, and this ratio will become meaningless. In fact, it is not difficult to understand, because the absorption and radiation of electromagnetic wave by an object are completely different physical processes. According to the formula of average energy density for arbitrary fluctuations summarized above:  $\bar{w} = \frac{1}{2} \rho A^2 \omega^2$ . When the object is in a state of thermal equilibrium, the energy of incident electromagnetic wave and outgoing electromagnetic wave remains unchanged. Both Compton scattering experiment and Kirchhoff's law can explain the issue of incident and outgoing electromagnetic wave energy by using the energy density formula. Are respectively incident stage, object propagation stage and exit stage. Incident stage:

Assume that the density of the medium in the space where the incident electromagnetic wave is located is  $\rho_1$ , the amplitude is  $A_1$ , and the angular frequency and frequency are  $\omega_1$  and  $f_1$  respectively. Propagation stage within the object: the process of absorbing electromagnetic wave is also the process of incident electromagnetic wave propagating inside the object. The propagation media density of electromagnetic wave inside the object is different from that in the air. It is assumed that when propagating inside the object, the density of electromagnetic wave propagating media is  $\rho_2$ , the amplitude is  $A_2$ , and the angular frequency and frequency are  $\omega_2$  and  $f_2$  respectively. Exit phase: It is assumed that the electromagnetic wave medium density in the space of the outgoing electromagnetic wave is  $\rho_3$ , the amplitude is  $A_3$ , and the angular frequency and frequency are  $\omega_3$  and  $f_3$  respectively. If the object is in thermal equilibrium, there must

be:  $\bar{w} = \frac{1}{2} \rho_1 A_1^2 \omega_1^2 = \frac{1}{2} \rho_2 A_2^2 \omega_2^2 = \frac{1}{2} \rho_3 A_3^2 \omega_3^2$ . Since the electromagnetic wave

medium environment of the incident stage and the exit stage is the same,  $\rho_1 = \rho_3$ .

Moreover, more importantly, the second stage can be used as a bridge between the first stage and the third stage to establish the connection between the incident wave and the

exit wave.  $A_1^2 \omega_1^2 = A_3^2 \omega_3^2$  or  $A_1^2 f_1^2 = A_3^2 f_3^2$ . According to the relation between electromagnetic wave velocity and frequency and wavelength  $c = \lambda f$ , it can also be

written as  $A_1 f_1 = A_3 f_3$  or  $\frac{A_1}{\lambda_1} = \frac{A_3}{\lambda_3}$ .

If we assume that the incident light and the radiated light of the experimental object have the same wavelength, the corresponding wavelength of the monochromatic radiating degree  $M_\lambda(T)$  and the monochromatic absorption ratio  $\alpha_\lambda(T)$  are also the same, and the wavelength basis of the two is uniform. In this case, the monochromatic radiating degree and the monochromatic absorption ratio can be divided. When the experimental objects of Kirchhoff's law reach the state of thermal equilibrium, they still meet the conservation of energy. According to the above deduction, when the thermal equilibrium is reached, the amplitude divided by the wavelength is a constant value. If the wavelength of

the electromagnetic wave radiated by these experimental objects is equal to the wavelength of the incident electromagnetic wave,  $\frac{A_1}{\lambda_1} = \frac{A_3}{\lambda_3}$ , then its amplitude will not

change. There is no difference between radiated light and reflected light, and obviously thermal radiation should not have exactly the same physical effect as reflection, so there would be no physical difference between reflection and radiation, which is obviously not the physical scenario we want to represent. Here, we also need to emphasize that, even

without using the formula  $\bar{w} = \frac{1}{2} \rho A^2 \omega^2$  for the average energy density of the wave and

the equation  $\frac{A_1}{\lambda_1} = \frac{A_3}{\lambda_3}$  for the relationship between amplitude and wavelength under

thermal equilibrium, if the wavelength of the incident wave is equal to that of the radiation wave, according to the definition of "monochromatic radiating degree", the radiation energy depends entirely on the wavelength, So Kirchhoff's law experiment is again incident light is exactly equal to radiation, which is exactly the same as what we get with the fluctuating energy density formula. Incident light waves are exactly the same as radiation waves, and clearly not the physical scenario Kirchhoff's law intended. One might also make the assumption that, regardless of whether the incident wavelength is equal to the radiation wavelength, it is mandatory to define "monochromatic radiating degree  $M_\lambda(T)$ "

divided by "monochromatic absorption ratio  $\alpha_\lambda(T)$ ", but can this be the case that the ratio is equal and independent of the material, as described by Kirchhoff's law experiments?

The answer is no. Let's take a simple example to illustrate this problem. If the incident light is monochromatic, and this light has only one frequency or wavelength, and it hits an object or a black body, after a period of time, the object or the black body reaches thermal equilibrium, of course, the object or the black body will also radiate electromagnetic waves outward continuously, and the electromagnetic waves emitted will not be monochromatic. Otherwise, the radiation becomes a reflection, and the electromagnetic wave radiated by the object or blackbody may be of various wavelengths, but we do not know how many wavelengths. Obviously, in this case, we cannot calculate by dividing the monochromatic radiating degree  $M_\lambda(T)$  by the monochromatic absorption ratio  $\alpha_\lambda(T)$ . Although the

radiated electromagnetic wave may have a relatively broad wavelength range, there is only one wavelength corresponding to the monochromatic absorption ratio  $\alpha_{\lambda}(T)$ . The monochromatic absorption ratio  $\alpha_{\lambda}(T)$  in other wavelength ranges does not exist at all. We can do this with a monochromatic laser. If the incident light is a monochromatic laser, the light emitted will no longer be a laser, but may be of some other wavelength. Therefore, the experiment of Kirchhoff's law is very limited. If the wavelengths of incident light and radiated light are not uniform, the monochromatic radiating degree  $M_{\lambda}(T)$  divided by monochromatic absorption ratio  $\alpha_{\lambda}(T)$  is meaningless. However, if the wavelength of incoming light is exactly equal to the wavelength of outgoing light, the radiation phenomenon and reflection effect are exactly the same, but radiation and reflection are not essentially the same, nor should they have the same physical effect. Moreover, the Compton scattering experiment, if correct, also shows that reflection is a different physical process than scattering or radiation. It can be seen that Kirchhoff's law is not only experimentally incomplete, but also logically contradictory.

## 6.7 Bohr's theory of the hydrogen atom was incorrect

### 6.7.1 Bohr's theory of hydrogen atoms

According to the classical electromagnetic theory, the electrons in uniform circular motion around the nucleus will continue to radiate electromagnetic wave outward. As the atoms continue to radiate energy outward, the energy of the atoms will continue to decrease, and the frequency of electrons rotating around the nucleus should also gradually change. At this time, the spectrum emitted by the atoms should be continuous spectral line, and the electrons will eventually fall into the nucleus. If the Rutherford model of the atom is explained by classical electromagnetic theory, atoms should be unstable. It follows that classical theory is "unable to explain" discrete spectral lines and Rutherford's model of nuclei.

In view of the "difficulties" encountered in classical physics, Niels Bohr applied the concept of quantum to the atomic system on the basis of Rutherford's atomic model in 1913, put forward three famous hypotheses, "successfully" explained the problem of hydrogen spectrum, laid a solid foundation for the development of quantum mechanics, and established many important concepts in the theory of quantum mechanics.

(1) Steady-state hypothesis

An electron in an atom can only move in a circle in orbits with discontinuous radii. Electrons in these orbits neither radiate nor absorb energy, but are in a stable state called a steady state. The orbital corresponding to each stationary state is called the stationary orbital, and each stationary state orbital corresponds to an energy, which is called the "energy level" and can be represented by  $E_1, E_2, E_3 \dots$ , in which  $E_1$  has the smallest energy and is called the ground state, and  $E_2, E_3 \dots$  is called the excited state.

(2) The hypothesis of quantization condition of angular momentum

According to Rutherford atomic model, the outer electron moves in orbit around the nucleus, and the orbit is regarded as circular motion. Let the radius of the orbit in circular motion be  $r$ , the "rest mass" of the electron be  $m$ , and the velocity be  $v$ . Under such conditions, the electron has angular momentum, which can be represented by the vector  $\vec{L} = \vec{r} \times m\vec{v}$ ,  $\vec{r} \perp m\vec{v}$  according to the characteristics of circular motion. Bohr assumed that the angular momentum of an electron moving in a stationary orbit can only be an integral multiple of  $\hbar$ , that is,  $L = mvr = n\hbar$ , where  $n = 1, 2, 3 \dots$  is called the main quantum number.

(3) Frequency condition hypothesis

If the energy of the initial state and the final state are  $E_k$  and  $E_n$  respectively, if  $E_k > E_n$ , then the atom will emit a "photon" outward-assuming the frequency of the "photon" is  $\nu$ , then the energy of the "photon" is  $h\nu$ . According to the "Planck-Einstein light quantum" theory and the conservation of energy, satisfy:  $h\nu = E_k - E_n$ , this formula is called the "frequency condition" hypothesis.

According to Newton's law, Coulomb's law and quantization condition hypothesis, there are the following equations:

$$\begin{cases} L = mvr = n\hbar \\ \frac{e^2}{4\pi\epsilon_0 r^2} = \frac{mv^2}{r} \end{cases} \quad (71)$$

By simultaneous and eliminating  $v$  in the two formulas, the orbital radius of the electron

outside the nucleus can be obtained:  $r_n = n^2 \frac{\epsilon_0 \hbar^2}{\pi m e^2}$ ,  $n = 1, 2, 3 \dots$ , It can be seen from

this equation that  $\frac{\epsilon_0 \hbar^2}{\pi m e^2}$  is a constant, so the orbital radius  $r_n$  of the outer electron is

also discrete. The smallest orbital radius is  $r_1$ , and its size is

$r_1 = 5.3 \times 10^{-11} m = 0.53 \text{ \AA}$ . This radius is also called "Bohr radius". Other orbital radii

meet  $r_n = n^2 r_1$ ,  $n = 1, 2, 3 \dots$ . According to the above equation, the energy relation

of the whole hydrogen atom system can be obtained. The energy of the hydrogen atom

system includes the kinetic energy of the nucleus, the kinetic energy of the electron and

the potential energy between them. If the nucleus is regarded as relatively stationary, the

kinetic energy of the electron is  $\frac{1}{2} m v_n^2 = \frac{e^2}{8\pi\epsilon_0 r_n}$ . In terms of the potential energy

between the nucleus and the extranuclear electron, only electrostatic potential energy

between them is considered. Take infinity as the zero of electrostatic potential energy,

$E_p = -\frac{e^2}{4\pi\epsilon_0 r_n}$ , so the total energy of the hydrogen atom system is

$E_n = \frac{1}{2} m v_n^2 - \frac{e^2}{4\pi\epsilon_0 r_n} = -\frac{e^2}{8\pi\epsilon_0 r_n}$ , and then substitute  $r_n = n^2 \frac{\epsilon_0 \hbar^2}{\pi m e^2}$  into the

equation:  $E_n = -\frac{m e^4}{8\epsilon_0^2 \hbar^2} \frac{1}{n^2}$   $n = 1, 2, 3 \dots$ . Since  $-\frac{m e^4}{8\epsilon_0^2 \hbar^2}$  is a constant in the

formula, the energy of hydrogen atom is also discrete. When  $n = 1$ , the energy of

hydrogen atom system is the lowest, which can be calculated as:

$E_1 = -\frac{m e^4}{8\epsilon_0^2 \hbar^2} = -13.6 eV$ . This state is called the "ground state". According to the

quantum theory, if the electron in hydrogen atom is excited from the "ground state" to

infinity, the minimum energy required is  $13.6 eV$ , which is said to be in good agreement

with the experimental data. The energy of the other orbitals satisfies  $E_n = E_1 / n^2$ .

### 6.7.2 There was something seriously wrong with Bohr's theory of the hydrogen atom

According to Bohr's hypothesis of quantization of angular momentum, the angular momentum in a stationary orbit can only be an integer multiple of  $\hbar$ . This assumption is

actually still based on de Broglie's concept of "matter wave". In order to ensure the stability of the atomic structure, the electrons moving in the orbit neither radiate energy nor absorb energy, so that they are in a stable state. According to de Broglie, the electron is both a particle and a wave, and in order for the atom to be stable, the wave must be a standing wave, that is, the electron's orbit is regarded as a circular standing wave. If the orbital radius of an electron is  $r$ ,  $2\pi r = n\lambda$  must be satisfied to form a standing wave. This relationship is derived from the wave theory of classical mechanics, because only an even multiple of half wavelength can form a circular standing wave, where  $r$  represents the orbital radius and  $\lambda$  represents the wavelength of a "material wave". By deforming  $2\pi r = n\lambda$ ,  $r = \frac{n\lambda}{2\pi}$  can be obtained; by multiplying momentum  $mv$  on both sides

of the equation, angular momentum  $L = mvr = \frac{n\lambda mv}{2\pi}$  can be obtained; and

according to  $\lambda = h/p$ ,  $L = mvr = n\hbar$  can be obtained finally. This is the mathematical derivation process of Bohr's theory of hydrogen atoms "angular momentum quantization hypothesis". However, de Broglie's formula  $\lambda = h/p$  for the wavelength of "matter wave" is a pseudo-formula with no physical significance, because it is based on the "mass-energy equation" of special relativity, which is also a pseudo-formula. Even if we assume that de Broglie's "matter wave" is correct, its inference  $\lambda = h/p$  is also completely in line with the physical reality, and the "angular momentum quantization hypothesis" is still wrong, because in the "angular momentum quantization hypothesis" there is also the same problem as the special relativity of mathematical symbols meaning confusion or confusion, which involves the deep relationship between physics and mathematics. When we use mathematical symbols for mathematical deduction or derivation of a physical theory, do we notice whether the same mathematical symbol represents the same physical meaning? Can the same mathematical symbol represent an extended, collaborative physical meaning? Can the use and extension of mathematical symbols ensure that their extended physical meaning is still valid? If a letter in the previous formula represents a certain physical meaning, and it appears in another formula by extension, if the letter in the previous formula represents a certain physical meaning, does

the same letter in the subsequent formula by extension have a consistent physical meaning, If the consistency or synergy of the meaning before and after or the meaning of inference cannot be guaranteed, then the derivation will lose its meaning, and the whole process of theoretical derivation will become a mathematical game in a complete sense and lose the physical meaning of reality. Therefore, when we derive and interpret the meaning of symbols, we must be careful enough, otherwise the same mathematical symbol will represent two different physical meanings or the extended meanings of symbols will be inconsistent. Although there is no mathematical logic error in the whole derivation process, the corresponding physical meanings may be different. Taking the "angular momentum quantization hypothesis" as an example, let's specifically explain how the discordant relationship between mathematical symbols and physical meanings is formed. The starting point of derivation of the formula of "angular momentum quantization hypothesis" is  $2\pi r = n\lambda$ , which is translated into the language of physics: in order for an electron to form a circular standing wave, its orbital length  $2\pi r$  must be an integer multiple of the wavelength, that is,  $2\pi r = n\lambda$ . To be more explicit, the form of the formula becomes:  $2\pi r_n = n\lambda_n$ , the letter  $n$  in  $r_n$  represents the NTH orbital of the electron, the radius of which is  $r_n$ , the  $n$  on the right side of the equation represents the  $n$  wavelengths forming a circular standing wave,  $\lambda_n$  represents the wavelength of the NTH orbital. It is a subjective assumption that there must be  $n$  wavelengths in the NTH orbital, which is the core problem and error of the "angular momentum quantization hypothesis". We must be clear about a physical fact: "This  $n$  is not that  $n$ ", we cannot assume that the formula associated with  $2\pi r_n$  must be  $n\lambda_n$ . If we want to define even multiples of half wavelength, we can express it in terms of  $z\lambda_n$ , where  $z$  can be any positive integer. Therefore, the expression for the "angular momentum quantization hypothesis" should be  $L_n = mvr_n = z\hbar$ , and  $z$  has nothing to do with  $n$ . The derivation of the relation between radius and energy level in different orbitals will also be the result of the "angular momentum quantization hypothesis"  $mvr_n = z\hbar$  combined with Newton's law and Coulomb's law  $\frac{e^2}{4\pi\epsilon_0 r_n^2} = \frac{mV^2}{r_n}$ , so the orbital radius of the extrinsic electron obtained

by the combination will no longer be  $r_n = n^2 r_1$ ,  $n = 1,2,3 \dots$ . The energy levels are no longer  $E_n = E_1 / n^2$ ,  $n = 1,2,3 \dots$ , but may be a completely uncertain relation determined by any natural number  $z$ .

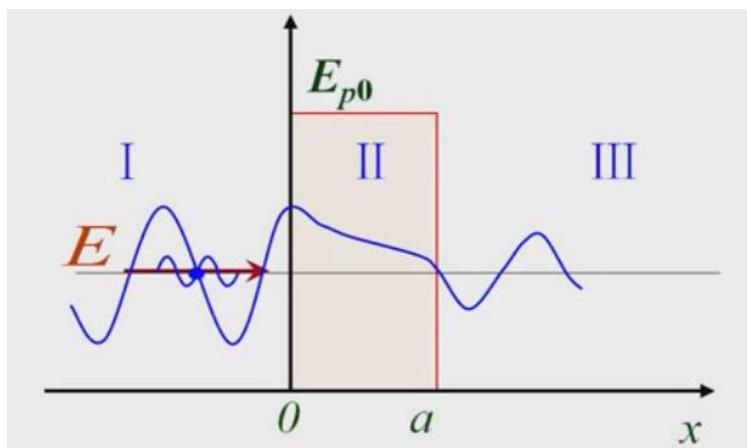
The starting point of the "angular momentum quantization hypothesis" is only to ensure that the orbital length  $2\pi r$  must be an integer multiple of the wavelength to form a circular standing wave. However many times is acceptable, it does not have a strict quantitative relationship. For example, the third orbital can have 10 full wavelengths to form a standing wave, or 100 full wavelengths. Therefore, " $L_n = n\hbar$ ", obtained by the combination of " $2\pi r_n = n\lambda_n$ " and " $\lambda = h / p$ ", the wavelength of de Broglie's "matter wave", is meaningless. The reason is not only that the wavelength formula of "matter wave" is a false formula, but also that the mathematical symbol does not match the physical meaning. In addition, Bohr's theory of hydrogen atom also draws the conclusion that orbital radius  $r_n = n^2 r_1$ . By combining  $2\pi r_n = n\lambda_n$  and  $r_n = n^2 r_1$ ,  $\lambda_n = n\lambda_1$  can be obtained. The physical meaning expressed by this formula is that the wavelength of "material wave" in the NTH orbital is  $n$  times that of "material wave" in the first orbital. However, according to the view of quantum mechanics, the wavelengths of electromagnetic waves in different "energy levels" or orbitals do not satisfy the simple quantitative relationship of  $\lambda_n = n\lambda_1$ , which is a very serious and confusing result of not taking into account the deep relationship between physics and mathematics. Therefore, when deducing equations of simultaneous equations, we must carefully examine whether the meanings represented by characters are consistent and whether they conform to physical facts. If mathematical derivation of simultaneous equations is carried out without careful examination, the result can only be a mathematical game, and the result obtained does not have any physical significance. The so-called Bohr theory of the hydrogen atom, which provided a solid foundation for the development of quantum mechanics, is also nonsense, because the theory and a series of assumptions are still based on de Broglie's "waves of matter," and some of these assumptions are seriously flawed, the result of forced mathematical derivation without regard to physical facts. Thus it can be seen that any theory constructed on the premise of false assumptions cannot withstand in-depth

scrutiny, and there will inevitably be some contradictions, errors or paradoxes exposed among its many inferences or extended theories, but the length of time of exposure is different. With the further deduction of the theoretical system, such problems will be completely exposed, and the inconsistencies of the theoretical system will be revealed eventually.

## 6.8 "Quantum tunneling" and its contradictions

### 6.8.1 What is Quantum Tunneling?

"Quantum tunneling" is another important concept in quantum mechanics theory, also known as "square barrier", "barrier penetration" or "tunneling effect". The one-dimensional "Quantum tunneling" model is shown below:



The space is divided into three regions: Potential energy in region I,  $E_p(x) = 0$ ,  $x \leq 0$ . Potential energy in region II,  $E_p(x) = E_{p0}$ ,  $0 \leq x \leq a$ ,  $E_{p0}$  is constant. Potential energy in region III,  $E_p(x) = 0$ ,  $x \geq a$ . Let's say I have a microscopic particle with energy  $E$ , The particle moves from region I to region III. According to classical physics, If  $E < E_{p0}$ , It is impossible for a particle to cross the barrier in region II to reach region III, but according to the point of view of quantum mechanics, whether the particle can reach region III depends on the solution of the "stationary Schrodinger equation" under the condition of one-dimensional "quantum tunneling". In other words, if the wave function of the particle in region III is not zero, then the particle may reach region III.

The wave functions of region I, II and III are represented by  $\psi_1$ 、 $\psi_2$ 、 $\psi_3$  respectively, and the potential function is substituted into the "one-dimensional stationary

Schrodinger equation", which has the following forms:

$$\begin{cases} \frac{d^2\psi_1}{dx^2} + \frac{2m}{\hbar^2} E\psi_1 = 0, & x \leq 0 \\ \frac{d^2\psi_2}{dx^2} + \frac{2m}{\hbar^2} (E - E_{p0})\psi_2 = 0, & 0 \leq x \leq a \\ \frac{d^2\psi_3}{dx^2} + \frac{2m}{\hbar^2} E\psi_3 = 0, & x \geq a \end{cases} \quad (72)$$

$$\text{Let } \frac{2mE}{\hbar^2} = k_1^2; \quad \frac{2m}{\hbar^2} (E - E_{p0}) = k_2^2 \quad (73)$$

By solving the steady-state Schrodinger equation in the three regions respectively, we can obtain:

$$\begin{cases} \psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}, & x \leq 0 \\ \psi_2 = A_2 e^{ik_2 x} + B_2 e^{-ik_2 x}, & 0 \leq x \leq a \\ \psi_3 = A_3 e^{ik_1 x} + B_3 e^{-ik_1 x}, & x \geq a \end{cases} \quad (74)$$

From the point of view of quantum mechanics, the first term on the right of the three obtained wave functions represents a "matter wave" propagating along the positive  $x$ -axis, while the second term represents a "matter wave" propagating along the negative  $x$ -axis.  $A_1 e^{ik_1 x}$  in  $\psi_1$  represents the incident "material wave" propagating along the positive direction of  $x$ -axis in region I, and  $B_1 e^{-ik_1 x}$  in  $\psi_1$  represents the incident "material wave" propagating along the negative direction of  $x$ -axis reflected by the barrier in region I.  $A_2 e^{ik_2 x}$  in  $\psi_2$  represents the transmitted "material wave" penetrating the barrier in the positive direction of the  $x$ -axis in region II, and  $B_2 e^{-ik_2 x}$  in  $\psi_2$  represents the "material wave" reflected by the right boundary of the barrier  $x = a$  in region II and propagating in the negative direction of the  $x$ -axis.  $A_3 e^{ik_1 x}$  in  $\psi_3$  represents the transmitted "matter wave" passing through the barrier in the positive direction of  $x$ -axis in region III. In addition, according to quantum mechanics, the value of  $B_3$  in  $B_3 e^{-ik_1 x}$  in  $\psi_3$  should be zero. The reason is that the "matter wave" passing through the barrier is no longer reflected, so there is no longer a reflected "matter wave".

In order to embody the so-called "quantum tunneling" effect, quantum mechanics defines the concepts of the reflection coefficient and transmission coefficient of the

"material wave". The reflection coefficient  $R$  is the probability that microscopic particles,

or "waves of matter," will bounce off the barrier,  $R = \frac{|B_1|^2}{|A_1|^2} = \left| \frac{B_1}{A_1} \right|^2$ . The transmission

coefficient,  $T$ , represents the probability that a microscopic particle or "wave of matter"

will cross the barrier,  $T = \frac{|A_3|^2}{|A_1|^2} = \left| \frac{A_3}{A_1} \right|^2$ .  $A_1$ ,  $B_1$ ,  $A_2$ ,  $B_2$ ,  $A_3$  can be solved by using the

so-called properties of the "material wave" wave function, such as single value, continuous and finite. the wave function is continuous at  $x = 0$ ,  $x = a$ ,  $\psi_1(0) = \psi_2(0)$ , By the

general property that the function is continuous, the first derivatives of the wave functions  $\psi_1$  and  $\psi_2$  should also be continuous at  $x = 0$ , thus:

$\left. \frac{d\psi_1}{dx} \right|_{x=0} = \left. \frac{d\psi_2}{dx} \right|_{x=0}$ . similarly,  $\psi_2(a) = \psi_3(a)$ ,  $\left. \frac{d\psi_2}{dx} \right|_{x=a} = \left. \frac{d\psi_3}{dx} \right|_{x=a}$ . The above four

equations about function continuity combined with the "normalization condition" of the wave function of "material wave", the relationship between  $A_1$ ,  $B_1$ ,  $A_2$ ,  $B_2$ ,  $A_3$  can be

worked out, so as to obtain the reflection coefficient  $R$  and transmission coefficient  $T$ .

After calculation, it can be obtained:

$$R = \frac{(k_1^2 - k_2^2)^2 \sin^2(k_2 a)}{(k_1^2 - k_2^2)^2 \sin^2(k_2 a) + 4k_1^2 k_2^2} \quad (75)$$

$$T = \frac{4k_1^2 k_2^2}{(k_1^2 - k_2^2)^2 \sin^2(k_2 a) + 4k_1^2 k_2^2} \quad (76)$$

According to the above formula, if the total energy  $E$  of particles is greater than the barrier  $E_{p0}$ , then  $R \neq 0$ , the incident particles or "matter waves" can not be transmitted into the III region all, there is still a certain probability of reflection to the I region. If the total energy of the particle  $E$  is less than the barrier  $E_{p0}$ , then  $T \neq 0$ , the incident particle or "matter wave" may still pass through the barrier into region III, which is called "tunneling" or "quantum tunneling" in quantum mechanics.

According to quantum tunneling, the scientists also created a scanning tunneling microscope. Because of the tunneling effect, electrons in a metal are not confined to the

interior and surface of the metal. The density of the electron cloud does not rapidly decline to zero at the surface boundary. When the probe is very close to the surface of the sample but not in contact with it, the "electron cloud" of the two will overlap. Electrodes are connected to the surface of the probe and the sample respectively. The voltage between the two electrodes is  $U$ . The electrons pass through the barrier between the two electrodes, through the narrow channel of the electron cloud, from the probe electrode to the sample surface electrode through the air or vacuum, which is called the barrier, creating what's called the tunnel current  $I$ . The tunnel current  $I$  is very sensitive to the distance between the probe and the sample surface. When the probe is scanned over the sample surface, Even atomic-scale fluctuations on the surface of a sample show up through the "tunnel current" generated between them, and the surface morphology of the sample can be displayed with the help of electronic devices and computers.

### 6.8.2 The relationship between physics and mathematics from "quantum tunneling"

"Quantum tunneling" is still a theory constructed on the basis of false concepts such as "material wave" wavelength, wave function and Schrodinger equation. The hypothesis of energy "quantization" is also an inevitable product of the incomplete concept of "monochromatic radiating degree" of blackbody radiation. So the so-called "quantum tunneling" model is also meaningless. In addition to theoretical errors, the "quantum tunneling" theory also faces the problem of the deep relationship between physics and mathematics, which is specifically manifested in how we interpret the physical meaning of mathematical formulas. When solving the one-dimensional stationary Schrodinger equation for the three regions of the "quantum tunneling model" respectively, we can get:

$$\begin{cases} \psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}, & x \leq 0 \\ \psi_2 = A_2 e^{ik_2 x} + B_2 e^{-ik_2 x}, & 0 \leq x \leq a \\ \psi_3 = A_3 e^{ik_1 x} + B_3 e^{-ik_1 x}, & x \geq a \end{cases} \quad (77)$$

According to quantum mechanics,  $A_1 e^{ik_1 x}$  in  $\psi_1$  represents the incident "matter wave" propagating in the positive direction of  $x$ -axis in region I, and  $B_1 e^{-ik_1 x}$  in  $\psi_1$  represents the incident "matter wave" propagating in the negative direction of  $x$ -axis reflected by the barrier in region I. Let's not discuss for the moment whether the physical interpretation of  $\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}$  is correct. In terms of the solution of

"one-dimensional stationary Schrodinger equation"  $\frac{d^2\psi_1}{dx^2} + \frac{2m}{\hbar^2} E\psi_1 = 0$  , there are

many forms.  $\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}$  is just one of the mathematical expressions.

$\psi_1 = A \sin k_1 x + B \cos k_1 x$  is also a solution of the equation. If interpreted according

to the above way, what are the physical meanings of  $A \sin k_1 x$  and  $B \cos k_1 x$

respectively? Could it be that  $A \sin k_1 x$  stands for incident "matter wave" and

$B \cos k_1 x$  for reflected "matter wave"? Or some other physical implication? Moreover, in

terms of  $\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}$  , this formula can also be written as

$\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x} = (A_1 + B_1) \cos k_1 x + i(A_1 - B_1) \sin k_1 x$  or simply written

as  $\psi_1 = C_1 \cos k_1 x + iD_1 \sin k_1 x$  , If it is the mathematical expression of

$\psi_1 = C_1 \cos k_1 x + iD_1 \sin k_1 x$  , what physical interpretation should be made?

According to the objectivity of physical facts, physical facts do not change in the form of

the equations we solve, but which mathematical form is best used to interpret physical

facts as true? As if we don't have a rigorous logical argument, this can only be a guess. This

phenomenon will be a problem in the construction of the whole edifice of scientific theory,

because we tend to construct mathematical models from some basic concepts or

assumptions and extend the derivation. The physical interpretation of the mathematical

conclusion or the intermediate conclusion in the derivation process will determine the

direction of the whole theory. Even different mathematical expressions of the same

problem in the link of theoretical derivation may bring different physical interpretations.

For example, there are many mathematical expressions for the solution of

"one-dimensional stationary Schrodinger equation" above. How can we ensure which form

is the most "consistent" expression form of physical facts? As far as

$\frac{d^2\psi_1}{dx^2} + \frac{2m}{\hbar^2} E\psi_1 = 0$  is concerned, not only  $\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}$  is the solution

of the equation, but  $A \sin k_1 x + B \cos k_1 x$  ,

$A_1 e^{ik_1 x}$  、  $B_1 e^{-ik_1 x}$  、  $A \sin k_1 x$  、  $B \cos k_1 x$  、  $C_1 \cos k_1 x + iD_1 \sin k_1 x$  are the

solutions of the equation. Why is  $\psi_1 = A_1 e^{ik_1 x} + B_1 e^{-ik_1 x}$  more "superior" than other mathematical expressions to accurately express physical meanings? In addition,  $A \sin k_1 x + B \cos k_1 x$  itself can be written in the form of  $C \sin kx$ . If the mathematical expression of  $C \sin kx$  is used, the formula has only one term. How can we interpret it as incident wave and reflected wave? But we believe that the physical facts of the objective world exist in only one concrete form, not altered by the mathematical form of the equations we solve. Therefore, this is also the problem that any theoretical system may face in the construction process. However, this kind of problem is more prominent in the theory of quantum mechanics. This is because the basis of quantum mechanics itself is wrong, and we cannot find the corresponding physical facts or physical phenomena in the real world for many problems, so we can only interpret the physical meaning of mathematical formulas by guessing. Due to the lack of objective facts or physical phenomena as reference basis, The interpretation becomes more fanciful, and even the same mathematical formula can be interpreted differently by different people. In quantum mechanics, there are a large number of mathematical formulas that are divorced from objective facts, and these formulas can hardly find corresponding physical facts or physical phenomena, just like the physical interpretation of  $\psi_1$  is:  $A_1 e^{ik_1 x}$  represents the incident "matter wave" propagating in the positive direction of  $x$ -axis in zone I, and  $B_1 e^{-ik_1 x}$  in  $\psi_1$  represents the incident "matter wave" propagating in the negative direction of  $x$ -axis reflected by the barrier in zone I. In fact, the microscopic particles are not waves at all, let alone the problem of positive or negative propagation. There would be no reflection coefficient or transmission coefficient, and certainly no so-called "quantum tunneling" effect. As for the scanning tunneling microscope "manufactured" according to the "quantum tunneling" theory, it is the result of quantum mechanics forcing some experimental conclusions into its own system. As a theory with completely wrong foundation, quantum mechanics cannot correctly guide objective physical experiments or inventions, because the mathematical formulas of the whole theory are without any physical significance.

According to the so-called "quantum tunneling principle" of the scanning tunneling

microscope, there are "electron clouds" at the tip of the probe, which can also be understood as "waves of matter" in quantum mechanics. There are also "electron clouds" or "waves of matter" on the surface of the sample. When the tip of the needle is close to the surface of the sample, the "waves" of matter between the two may overlap. The "matter wave" of both may behave as described by the "quantum tunneling" effect: if the total energy of the particle  $E$  is less than the barrier  $E_{p0}$ , then the transmission coefficient  $T \neq 0$ , the incident particle or "matter wave" may still pass through the barrier into region III. This means that "material waves" near the tip of the probe may pass through the air or vacuum barrier and reach the surface of the sample, creating what is known as a "tunnel current." We have systematically analyzed that the so-called "quantum tunneling" is nothing but an extension of the wrong Schrodinger equation, which has no physical significance. The current generated by "scanning tunneling microscope" is actually the result of the discharge of the tip and the voltage inserted between the metal probe and the sample. Because the tip of the probe is extremely small and its electron density is high, it is more sensitive to the change of voltage than the general situation. In this case, only a small voltage may break through the air or vacuum to form a current. This is just a simple electrical problem. If, as described in Quantum tunneling, the metal probe and the sample are very close to each other, a "wave of matter" or an "electron cloud" may pass through the barrier and reach the other side. According to the "quantum tunneling" transmission formula of "matter wave" :

$$T = \frac{4k_1^2 k_2^2}{(k_1^2 - k_2^2)^2 \sin^2(k_2 a) + 4k_1^2 k_2^2}, \text{ Among them: } \frac{2mE}{\hbar^2} = k_1^2 ; \frac{2m}{\hbar^2} (E - E_{p0}) = k_2^2 ,$$

As long as the barrier  $E_{p0} \neq 0$ , the transmission coefficient  $T$  must not be equal to zero, in other words, there must be a so-called "tunnel current", so it is not necessary to add a voltage to achieve the "tunnel current", if there is such a "current", it is only a matter of test accuracy. If a voltage is applied to the probe and sample surface, it is not clear whether the voltage is causing the breakdown current or the so-called "tunnel current". In fact, neither "tunneling effect" nor "tunnel current" can exist, they are all pseudo-concepts constructed on the basis of errors in quantum mechanics. "Scanning tunneling microscope" is just a common electrical phenomenon, which has nothing to do with quantum

mechanics. It is believed that "scanning tunneling microscope" is manufactured according to "quantum tunneling" theory. It is the practice of forcing the experimental results of electric power theory into the theoretical system of quantum mechanics.

## 7 The "combination theory" of Relativity and Quantum mechanics is all wrong <sup>[1]</sup>

Previously, we systematically discussed that both relativity and quantum mechanics are false theories without any meaning. As two pillars of modern physics, relativity and quantum mechanics have also formed many so-called "combined" theories during the "development" process of nearly a century, such as: Relativistic quantum mechanics, quantum field theory (including quantum electrodynamics, quantum chromodynamics, unified theory of weak electricity, Standard model of elementary particle physics), Young-Mills theory, etc. Relativity and quantum mechanics are both wrong, and all the extended theories built on them are wrong, and none of them will survive. Strictly speaking, we do not need to go into any further analysis of these extended theories, because their foundations are wrong, and they must be wrong. Given the profound influence of these theories on our knowledge system, the "foundation" of the current human cognition of the macro and micro world, they have consumed much of the spiritual wealth of human beings, and given many so-called "experimental proofs", out of respect for the enormous intellectual resources of human beings, Let's talk briefly about how relativity and quantum mechanics actually "combine". What mistakes and problems exist in these so-called "combination theory"?

### 7.1 "Relativistic quantum mechanics" does not hold true

In theoretical physics, the Schrodinger equation does not take into account the so-called "relativistic effects". The Dirac equation is a quantum-mechanical equation that does take into account "relativistic effects". The Dirac equation was created by the British physicist Paul Dirac in 1928. What is supposed to satisfy both special relativity and quantum mechanics is actually a Lorentz covariant version of the Schrodinger equation, which also "predicts" the existence of antiparticles. And, in 1932, Carl Anderson "discovered" positrons.

In order to show that "relativistic quantum mechanics" is also not true, we briefly explain the two core formulas of "relativistic quantum mechanics", Klein-Gauden equation

and Dirac equation.

### 1. Klein-Gauden equation

According to the previous process of deriving the Schrodinger equation from the wave function, we can know:

$$i\hbar \frac{\partial \Psi}{\partial t} = E\Psi \quad (78)$$

$$\nabla^2 \Psi = -\frac{P^2}{\hbar^2} \Psi \quad (79)$$

the above two expressions can also be written as operators:

$$i\hbar \frac{\partial}{\partial t} = \hat{E} \quad (80)$$

$$-\hbar^2 \nabla^2 = \hat{P}^2 \quad (81)$$

Combining the above two equations with the "non-relativistic" energy and momentum relation  $E = \frac{P^2}{2m}$  gives the Schrodinger equation for free particles:

$$i\hbar \frac{\partial}{\partial t} \psi = -\frac{\hbar^2}{2m} \nabla^2 \psi \quad (82)$$

The above is the Schrodinger equation without considering the "relativistic effect". When considering the "relativistic effect", according to the relation between energy and momentum in special relativity:

$$E^2 = c^2 P^2 + m^2 c^4 \quad (83)$$

By substituting the above two operators and operating on the wave function  $\psi$ , we can obtain:

$$-\hbar^2 \frac{\partial^2}{\partial t^2} \psi = (-\hbar^2 c^2 \nabla^2 + m^2 c^4) \psi \quad (84)$$

The above equation is the fundamental equation of relativistic quantum mechanics, called the Klein-Gauden equation, which was independently derived by Swedish physicist Oskar Klein and German Walter Gauden in the 1930s. The equation is not only the fundamental equation of "relativistic quantum mechanics", but also the fundamental equation of quantum field theory.

## 2. Free particle solution of Klein-Gauden equation

The appropriate deformation of  $-\hbar^2 \frac{\partial^2}{\partial t^2} \psi = (-\hbar^2 c^2 \nabla^2 + m^2 c^4) \psi$  is as follows:

$$\frac{\partial^2}{\partial t^2} \psi = c^2 \nabla^2 \psi - \frac{m^2 c^4}{\hbar^2} \psi \quad (85)$$

The general form of the solution of the matter wave function

$$\text{is: } \psi = A e^{i(\vec{k} \cdot \vec{r} - \omega t)} = A e^{\frac{i}{\hbar}(\vec{P} \cdot \vec{r} - Et)} \quad (86)$$

Among them:  $\vec{k} = \frac{\vec{P}}{\hbar} \quad \omega = \frac{E}{\hbar}$

The solution for  $E^2 = c^2 P^2 + m^2 c^4$  is:  $E = \pm \sqrt{c^2 P^2 + m^2 c^4}$  (87)

According to "relativistic quantum mechanics",  $E = +\sqrt{c^2 P^2 + m^2 c^4}$  represents relativistic energy and  $E = -\sqrt{c^2 P^2 + m^2 c^4}$  represents negative energy in quantum mechanics.

## 3. Dirac equation

Klein-gordon equation is the first equation of "relativistic quantum mechanics", but it always has the problem of negative energy and negative probability, Dirac equation is born in this so-called "dilemma", Dirac combined the special relativity, Schrodinger equation, Heisenberg matrix mechanics and other theories, finally get the Dirac equation:

$$i\hbar \frac{\partial}{\partial t} \psi = (c \vec{\alpha} \cdot \vec{P} + \beta mc^2) \psi \quad (88)$$

Dirac's equation "solved" the so-called problem of negative energy and negative probability, and Dirac also thought that negative energy should correspond exactly to positrons or antiparticles.

## 4. "Relativistic quantum mechanics" does not hold true

As the name implies, "relativistic quantum mechanics" is a theory based on Relativity and Quantum mechanics. However, both Relativity and Quantum mechanics are false theories. Therefore, "relativistic quantum mechanics" theory and its inferences are also false theories that are fundamentally wrong and have no physical significance.

The Klein-Gordon equation is the fundamental equation of "relativistic quantum mechanics". From its derivation, we find that it is actually a kind of Schrodinger equation

which takes into account the so-called "relativistic effect". Special relativity is a pseudo-theory without any physical significance, so the so-called "relativistic effect" does not exist, and Schrodinger equation itself is a meaningless pseudo-formula, as the fundamental equation of "relativistic quantum mechanics", Klein-Gordon equation is also a pseudo-formula without any physical significance. The Dirac equation based on the Klein-Gordon equation also makes no sense. "Relativistic quantum mechanics" does not work.

## 7.2 Quantum field theory does not hold true

Quantum field theory (QFT), a combination of relativistic quantum mechanics and classical field theory, is said to have been "widely used" in particle physics and condensed matter physics. Quantum field theory includes quantum electrodynamics, quantum chromodynamics, the unified theory of weak electricity, etc. On top of these theories, modern physics also established the standard model of elementary particle physics composed of fermions and bosons. Like "relativistic quantum mechanics", quantum field theory is based on special relativity and quantum mechanics, both of which are meaningless pseudo-theories. Therefore, the theoretical system built on them is doomed. Quantum field theory is also a pseudo-theory without any physical significance. Quantum field theory has a great influence on the modern physics system and chemistry and other disciplines. Out of respect for this theory which consumes great mental resources of human beings, let's briefly discuss what the theory is about. What mistakes and problems it has.

### 1. Brief description of Quantum field theory

The experimental basis of quantum field theory is still the "wave-particle duality" of microscopic particles, and its theoretical construction aims to further solve the related problems caused by "wave-particle duality". As the name suggests, quantum field theory starts from the quantization of electromagnetic field. Planck proposed the concept of quantization when studying the problem of black body radiation, and Einstein further proposed the concept of light quantum or photon through the experiment of photoelectric effect. However, until the mid-1920s, people's understanding of the theory of light and electromagnetic wave was still basically limited to the macroscopic theory of electromagnetic field, that is, classical electrodynamics. With the continuous development

of quantum mechanics theory, scientists believe that a particle theory should be established on the basis of classical electromagnetic theory, which can reflect the micro electromagnetic phenomenon, so it is necessary to quantize the classical electromagnetic field.

Quantum field theory is a physical theory that combines "relativistic quantum mechanics" with classical electromagnetic field theory. Therefore, Klein-Gordon equation and Dirac equation are not only the basic equations of "relativistic quantum mechanics", but also the basic equations of quantum field theory. Quantum field theory is a combination of special relativity, quantum mechanics, and classical electromagnetic theory. In the process of further "combining" these theories, quantum field theory also proposed the Lagrange matinee, Klein-Gordon field, Dirac field and other concepts. Lagrange matinee first applies the concepts of proper time in special relativity and the four-dimensional vector and its metric in Minkowski spacetime, and further combines the classical Laplace quantity, Lorentz transformation symmetry, quantization condition, energy momentum conservation, angular momentum conservation and so on to establish the equation. Klein-gordon field, as the name implies, is based on Klein-Gordon equation, while combining the Fourier transform of the field, commutator, energy and momentum generation and annihilation, charge flow and other concepts to establish equations. On the basis of Dirac equation, the equation of the Dirac field is established by combining the Laplace density, the four vectors of the current, the Lorentz transformation of the spinor field, the conservation of charge, the quadratic quantization, the propagator and the gauge invariance. In view of the complex mathematical expressions of Lagrange matinee, Klein-Gordon field, Dirac field and other concepts, we will not elaborate here, we only need to understand the basic framework results of these concepts.

At present, the four known interaction forces are: strong interaction, weak interaction, electromagnetic interaction, and gravitational interaction. Except for the gravitational interaction, the other three interactions have been found to "meet" the specific gauge symmetry of the quantum field theory (or Young-Mills field) to describe. The strong interaction has quantum chromodynamics (QCD); The weak interaction has four Fermionic point action theory. In the weak interaction, Li Zhengdao and Yang Zhenning discovered parity nonconservation. Electromagnetic interactions have quantum electrodynamics

(QED). All of these theories belong to the branch of quantum field theory, which is based on special relativity and quantum mechanics.

## 2. Quantum field theory does not hold true

Quantum field theory, which is based on special relativity and quantum mechanics, is also necessarily a false theory. The proper time, Minkowski metric and Lorentz transform used in Lagrange matinee are all pseudo concepts derived from special relativity without any physical significance, so the so-called Lagrange matinee is not valid. As for the Klein-Gauden field and the Dirac field, which are based on the Klein-Gauden equation and the Dirac equation respectively, we have briefly discussed above that these two equations are also meaningless pseudo-concepts, so the so-called Klein-Gauden field and the Dirac field do not exist. As for quantum chromodynamics, the unified theory of weak electricity and quantum electrodynamics, they all belong to the branches of quantum field theory. They all have fundamental errors, and the result is the same as the theory of relativistic quantum mechanics, which is a pseudo-theory without any physical significance.

## 7.3 The Standard Model of elementary particle physics has no practical physical meaning

### 1. A brief description of the Standard Model of elementary Particle Physics

The Standard Model of elementary particle physics is a physical theory about the known elementary particles, while the quantum field theory is the mathematical foundation and theoretical framework of the Standard model of elementary particle physics. The Standard model holds that all known matter is made up of the elementary particles in the model. In quantum field theory, a particle is a quantum excitation of a field, and each particle has its own corresponding field. In the process of quantization, the bose field satisfies the commutation relation, the Fermi field satisfies the anticommutation relation, and the interaction and dynamics between particles can be described by quantum field theory. The Higgs is the final link in the construction of the standard model of elementary particle physics.

The Standard Model of elementary particle physics consists of fermions and bosons. Fermions are divided into quarks and leptons. There are 12 kinds of quarks, including up quark ( $u$ ), down quark ( $d$ ), odd quark ( $s$ ), charm quark ( $c$ ), bottom quark ( $b$ ), top quark ( $t$ ) and their corresponding six antiparticles. There are also 12 kinds of leptons, including electron ( $e$ ), Muyon ( $\mu$ ), Tao ( $\tau$ ), neutrino ( $\nu_e$ ), neutrino ( $\nu_\mu$ ), neutrino ( $\nu_\tau$ ), and their

corresponding six antiparticles. Both neutrons and protons are made up of three types of quarks with spin 1/2. Bosons are made up of gluons, photons,  $Z$  bosons,  $W$  bosons and Higgs bosons. Fermions are particles that satisfy Fermi-Dirac statistics and whose spin quantum number of angular momentum is integer multiples of half odd numbers. Fermions obey the Pauli exclusion principle, which means that if only one particle is allowed in a quantum state of a system of identical particles, the particle is called a fermion. According to the Standard Model of elementary particle physics, all particles of matter in elementary particles are fermions, the building blocks of matter (such as quarks and neutrinos, which make up protons and neutrons).

A boson is a particle whose spin quantum number is an integer, following Bose-Einstein statistics. Bosons do not obey the Pauli exclusion principle. Multiple identical bosons can be in the same quantum state at the same time, and Bose-Einstein condensation can occur at low temperatures. According to quantum field theory, the fundamental structure of matter is fermions, and the fundamental interactions between matter are transmitted by bosons.

## 2. The Standard Model of elementary particle physics has no practical physical meaning

The mathematical basis and theoretical framework of the Standard Model of elementary particle physics is quantum field theory, which is another set of wrong theories built on the basis of special relativity and quantum mechanics. Therefore, the mathematical basis and theoretical framework of the standard model of elementary particle physics are fundamentally wrong, and the model will not be spared. The Standard Model of elementary particle physics is also a pseudo-concept with no physical meaning.

The Standard Model of elementary particle physics consists of fermions and bosons. Fermions are particles with integral multiples of half-odd spin quantum numbers, and bosons are particles with integral spin quantum numbers. Spin quantum number is a concept obtained by analyzing the quantum properties of hydrogen atom using Schrodinger equation, but Schrodinger equation is a pseudo-formula based on a series of wrong theories and concepts such as matter wave and special relativity mass-energy equation. Principal quantum number  $n$ , angular quantum number  $l$ , orbital quantum number  $m_l$  and spin quantum number  $m_s$  obtained by combining the Schrodinger equation with the potential energy function of hydrogen atom are all pseudo-concepts

without any physical significance. Therefore, there is no standard for the division of fermions and bosons. As for quarks and leptons, it is also not true that they have no color charge. The color charge is a concept derived from the framework of quantum chromodynamics. Quantum chromodynamics, as a branch of quantum field theory, is also a false theory, so the color charge is a false concept. The six antiquarks and six antileptons are also the extension of the antiparticle concept derived from the two meaningless equations of Klein-Gauden equation and Dirac equation. The direct theoretical basis of antiparticle is the relation between mass and energy of special relativity  $E^2 = c^2P^2 + m^2c^4$ , written as the primary form of energy  $E = \pm\sqrt{c^2P^2 + m^2c^4}$ . According to the theory of relativistic quantum mechanics,  $E = +\sqrt{c^2P^2 + m^2c^4}$  represents relativistic energy, while  $E = -\sqrt{c^2P^2 + m^2c^4}$  represents negative energy in quantum mechanics. The equation  $E^2 = c^2P^2 + m^2c^4$  of the relation between mass and energy in special relativity is a completely false formula, so neither  $E = +\sqrt{c^2P^2 + m^2c^4}$  nor  $E = -\sqrt{c^2P^2 + m^2c^4}$  has any physical significance, and the so-called antiparticle concept derived on this basis is also invalid. Finally, the mass of all particles in the Standard Model of elementary particle physics is expressed as energy divided by the square of the speed of light. In fact, it is still expressed using the mass-energy equation  $E = mc^2$  in special relativity. Special relativity is a completely wrong theory, and this statement of mass is absurd and meaningless. Therefore, the Standard Model of elementary particle physics has no practical physical significance.

#### 7.4 Young-mills theory is a false theory

##### 1. Brief introduction of Young-Mills theory

Young-mills theory is the basis of modern gauge field theory and is regarded as an important breakthrough in physics in the second half of the 20th century. In 1954, Zhen-Ning Yang and Robert Mills extended the concept of quantum electrodynamics to non-Abelian groups to explain strong interactions. This idea was criticized by Pauli because qubits in the Young-Mills field must be quality-free in order to maintain the invariance of the standard. Therefore, the theory was not taken seriously by the physics community at the time. It was not until 1960 that Jeffrey Goldstone et al. introduced the concepts of

spontaneous symmetry breaking and progressive freedom, which reactivated the Young-Mills theory and demonstrated that both theories "successfully" applied the unified theory of weak electricity and quantum chromodynamics.

## 2. Young-mills theory is a false theory

Quantum electrodynamics is based on the special theory of relativity and quantum mechanics. The extension of the concept of quantum electrodynamics by Zhenning Yang and Robert Mills to non-Abelian groups is also not valid, because quantum electrodynamics is a fundamentally wrong theory, and therefore Young-Mills theory is not valid. The so-called successful application of the unified theory of weak electricity and quantum chromodynamics is also not valid, because the unified theory of weak electricity and quantum chromodynamics, as subdisciplines of quantum field theory, are also based on the two wrong theories of special relativity and quantum mechanics, neither of which has practical physical significance.

## 7.5 String theory is incorrect

### 1. A brief account of string theory

String theory is a branch of theoretical physics that tries to tackle the seemingly incompatible theories of quantum mechanics and general relativity, and to create a unified theory that describes the entire universe. One of the original ideas of string theory was to help solve the wave-particle duality problem. The basic idea of string theory is that the fundamental units of nature are not point-like particles like electrons, photons, neutrinos and quarks, but rather tiny, thread-like strings, including open strings with endpoints and closed, loop-like strings. Different vibrations and motions of strings produce different kinds of elementary particles. Energy and matter can be converted, so string theory does not prove that matter does not exist. In string theory, strings are small in scale, and the basic principles governing their properties predict the existence of several large, thin-film objects, which are simply called branes. According to string theory, the universe may be a  $D=3$  brane in  $9+1$  dimensional space-time.

String theory is seen as the most promising theory to unite nature's fundamental particles with the four interacting forces. And, for the first time, superstring theory combines general relativity and quantum mechanics, two fundamental theories of the 20th century, into a mathematically self-consistent framework. The physical model in string

theory says that the fundamental unit of all matter is a small string of energy, and the average length of a string is the Planck length, and if a piece of space is smaller than the Planck length, then whatever happens inside of it doesn't matter to the string, it doesn't matter to the string. Elementary particles as large as interstellar galaxies and as small as electrons, protons and quarks are made up of these lines of energy that occupy two dimensions of space-time. Originally, string theory was a Bose string theory that encompassed the space of 26 latitudes. After the addition of so-called supersymmetry, so-called superstring theory emerged. In 1990, Edward Witton proposed an  $M$ -theory with an 11-latitude space. He proved that many different versions of superstring theory were actually the result of different limit setting conditions of  $M$ -theory, which led to the second revolution in superstring theory.

As far as its theoretical framework is concerned, string theory is based on quantized coordinates, and it takes at least ten dimensions to build a theoretical framework that makes gravity compatible with quantum mechanics. String theory also holds that the ground state of the closed  $F$  string turns out to be a massless field of spin 2, known as a graviton, which is consistent with General relativity.

## 2. String theory is incorrect

The starting point of string theory is to solve the contradiction between quantum mechanics and general relativity, and also to try to establish a unified theory. Superstring theory, on the other hand, combines general relativity and quantum mechanics into a mathematically self-consistent framework, a fusion of the two pillars of physics. However, quantum mechanics and general relativity are both wrong theories, so string theory itself, which was created to solve the problem of supposed incompatibility between them, is meaningless. Superstring theory perfectly combines general relativity and quantum mechanics into a mathematically self-consistent framework. It is also a mathematical game, because quantum mechanics and general relativity are both false theories that have no physical significance. In this sense, it makes sense that string theory is viewed more as a mathematical theory than a physical theory.

Nor is it true that the average length of a string is the Planck length. The Planck length does not exist. The Planck length and the Planck time are pseudo-concepts based on a false theory of quantum mechanics. The bose string theory of 26 latitude space and the

fermion theory involved in string theory are also wrong. Fermions are particles whose spin quantum numbers are half odd integer multiples, and bosons are particles whose spin quantum numbers are integers. Bosons and fermions are the results of incorrect theories of quantum field theory, and they have no practical physical significance. Therefore, the so-called Bose-string theory and theories about fermions are also wrong. String theory's claim that at least 10 dimensions are needed to create a theoretical framework for gravity to be compatible with quantum mechanics is also fundamentally wrong, because quantum mechanics is wrong, and compatibility in the 10 dimensions is a mathematical game that has no physical meaning. Finally, the ground state of the closed  $F$  string is shown to be a massless field with spin 2, the graviton, which is consistent with General relativity. This statement also has no real physical significance, because General relativity is a pseudo-theory without any physical significance.

#### 7.6 On the validity of existing experimental results

As the two pillars of modern physics, relativity and quantum mechanics are bound to cause the collapse of modern physics system due to the error of their theoretical foundation. However, in the course of nearly a century of exploration, human beings have also accumulated a large number of experience results. Physics, as a science of experiment and observation, although the theory of relativity is completely wrong, it does not affect the real existence of such objective things as atomic bombs. The problem of nuclear energy and its nature have other reasons, which have nothing to do with relativity. Laser, transistor, tunneling microscope and so on have nothing to do with quantum mechanics, because quantum mechanics is also wrong theory, but this does not prevent the validity of existing experimental results. These are all attempts by relativity and quantum mechanics to force experimental results into their own theoretical systems. In fact, these empirical results or technological means have nothing to do with relativity and quantum mechanics.

### 8 Conclusion

Relativity, Quantum mechanics, Young-Mills theory and String theory are all wrong theories<sup>[1]</sup>. They cannot guide physical practice correctly, nor can they make correct predictions. They only make theoretical physics further and further away from objective facts. It seems that the theoretical building constructed by human beings has collapsed. In the journey of exploring the mysteries of the universe, people have lost their homes for

survival, and science has become a homeless child. But there is no need to panic and feel helpless, because in the course of nearly a century of exploration, mankind has accumulated a great deal of valuable experience, and some of the results of experience have also made science and modern civilization achieve great success. However, this kind of exploration lacks the correct theoretical guidance, just like a ship without a helmsman drifting in the wind on the vast sea. Although we can also capture, but these results or experience are blind and lack of direction, only in the right basic theory combined with empirical knowledge to make science closer to the truth.

Although the theory of relativity is a loss in human's quest for truth, it has inspired a wide range of fields, allowing us to have a deeper understanding of the relationship between physics and mathematics. "Theoretical output machine system Engineering" in "On the Errors of Relativity and Quantum Mechanics and the New Theory of Physics" is inspired by the process of screening the errors and contradictions of relativity and quantum mechanics. The perfect operation of "Theoretical output machine system engineering" needs to gather the wisdom of all mankind, and the discovery of truth and scientific exploration are not only dependent on scientists. Perhaps everyone will be a seeker and discoverer of truth. "Theoretical output machine system engineering" is a deep combination of mathematical architecture and the physical world. Combined with modern computer technology, it is a semi-intelligent and semi-artificial system with infinite exploration. Mathematics is the logical framework for human to understand the world, and it has the authority of knowledge, which will not be divided into different opinions. Mathematics is therefore regarded by philosophers as knowledge of true universal necessity. Mathematics is the result of continuous derivation and deduction from several self-evident axioms, just as Euclidean geometry starts from several self-evident presuppositions or axioms such as "two parallel lines extend infinitely without intersection", "all right angles are equal", "Two straight lines are parallel and extend infinitely without intersection". Through continuous deduction and derivation, the huge Euclidean geometry system is established. Theoretically, Euclidean geometry system also has infinite exploration. "Theoretical output machine system engineering" also has infinite exploration, but also to take into account the mathematical logic framework and objective physical facts, is a larger theoretical system, has infinite exploration and eternal significance, so the

truth can only be infinitely close to but never reach.

Overrule the theory of Relativity and Quantum mechanics is not the purpose, we must construct a new correct theory to make human civilization go further, which is also the common goal of all mankind. After three years of writing, the book New Physical Theory has been completed, with a total of 678 pages and about 400,000 words. Due to the limited space of the paper, I will not discuss it in detail here. "New Theory of Physics" can perfectly explain almost all physical and chemical phenomena, but also involves a series of theories and practical paths such as normal temperature nuclear fusion, normal temperature superconductivity, anti-gravity flight, "theoretical output machine system engineering". Thanks again to Academician Chen Jiaer for his theoretical guidance and help. Finally, I would like to present to you the conclusion of the book New Physical Theory:

Human's journey to explore the universe will be a long and arduous process, but it is our greatest ambition to look up at the starry sky and face the vast universe. Only when we stand on the high ground of morality can we make human beings go further. There is no eternal truth in the world, and human's journey to explore the truth is endless. To the extent that we cannot stand in the halls of mainstream scientific theory or even on the high ground of vested interests and greedily and selfishly direct the rudder of human destiny, mankind seems to have made no real progress. In the face of the ultimate concern of human beings, human nature and morality are the prerequisite guarantee that can really inspire and spur human beings to the vast sky, otherwise human beings can only be confined to a corner of the universe forever due to their narrow limitation.

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