Seven Problems the Special Theory of Relativity

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【**Abstract**】In this paper ,firstly ,by comparing the propagation of light to the mechanical motion of a body, it is pointed out that the propagation of light is not a mechanical motion, the speed of light is not a velocity of mechanical motion and the Galilean relativity principle of mechanics is extended to optics lacks any evidences of theory and reality; secondly, from optics, there is no irreconcilable conflict between the principle of constancy of light velocity and Galilean coordinate transformation, in the special theory of relativity it is thought that the principle of constancy of light velocity contradicts the Galilean coordinate transformation because the propagation of light is looked upon as a mechanical motion and the speed of light looked upon as a velocity of mechanical motion; thirdly, the scientific theory has a range of validity, the range of validity of mechanics is the mechanical motion of a body, the range of validity of optics is the propagation of light; fourthly, the scientific and rational explanation to the Michelson-Morley experiment is to apply classical optics, it is called the speed of the earth relative to the ether is zero, which is not that classical physics has problems, but it is wrong that some physicists look upon the propagation of light as the propagation of light wave occurred in the ether to explain the Michelson-Morley experiment; fifthly, the real and natural space stays the same with the change of the frame of reference; sixthly, the property of time and space of the special theory of relativity is not consistent with reality; seventhly, the present experiment can not confirm the special theory of relativity sufficiently.

【**Kew Word**】the principle of constancy of light velocity; the Michelson-Morley experiment; ; Galilean coordinate transformation; the Galilean relativity principle of mechanics

1.Is the propagation of light a mechanical motion? What are the evidences that the Galilean relativity principle of mechanics is extended to optics?

The special theory of relativity is based on two postulates: the natural extension of the Galilean relativity principle of mechanics and the principle of constancy of light velocity. Therefore one wants to learn the special theory of relativity, at first, must correctly understand the propagation of light and the mechanical motion of a body, classical optics and Newtonian mechanics.

There are essential distinctions between the propagation of light and the mechanical motion of a body.

From the subject of motion: the propagation of light is electromagnetic field, while the mechanical

motion is material object, field and material object are two distinct matters.

From the form of motion: the propagation of light is a wave motion, the wave motion and mechanical motion are two different forms of motion.

From the regularity of motion: the propagation of light obeys the law of optics such as the law of reflection, the law of refraction, while the mechanical motion of a body obeys Newton's law of motion and the Galilean relativity principle of mechanics .

Form the term of description :what the propagation of light uses is light path and the speed of light, what the term "light path" represent is the distance light propagated in free space, the term "the speed of light" is the ratio of the light path with respect to the time light propagated, the light path and the speed of light are scalars, and the speed of light is a wave speed, is a constant, its value depend on the permeability of free space and permittivity of free space, is not related to the choice of frame of reference; what the mechanical motion of a body uses is position vector and velocity, what the term "position vector" represent is a body's position in a frame of reference, the term "velocity" is the derivative of position vector with respect to time, the position vector and velocity are vectors, the position vector and velocity of a body are based on a frame of reference, are different in different frames of reference, and the velocity is not a wave speed, is not related to the permeability of free space and permittivity of free space.

By comparing the propagation of light to the mechanical motion of a body, we are not difficult to draw the conclusions that the propagation of light is not a mechanical motion, the speed of light is not a velocity of mechanical motion, therefore we have a reason to know: what are the evidences that the mechanics relativity is extended to optics?

The scientific theory of describing the mechanical motion of a body is Newtonian mechanics, in which the description to mechanical motion of a body is based on the choice of reference frame, choosing different reference frames, the description to mechanical motion of a body is different. In chosen reference frames, if the mechanical motion of a body obeys Newtonian first law, such reference frames is called as inertial frames of reference, otherwise, is called as non-inertial frames of reference. Therefore, there is, mechanical motion of a body all obeys the same mechanics law(Newton's law of motion)in every inertial frame of reference, or in every inertial frame of reference the mechanics law is the same, just this is the Galilean relativity principle of mechanics, so that, the Galilean relativity principle of mechanics is related to the choice of reference frame and Newton's law of motion, if we will extend the Galilean relativity principle of mechanics to other motions, must consider what relationships there are between these motions and the choice of reference frame, Newton's law of motion.

The scientific theory of describing the propagation of light is classical optics, in which the description to the propagation of light is not based on the choice of reference frame. Light path, the speed of light, the law of optics such as the law of reflection, the law of refraction is not related to the choice of reference frame and Newton's law of motion, in optics we do not need to consider the choice of reference frame, the reference frame is an inertial frame or non-inertial frame. Therefore the Galilean relativity principle of mechanics is extended to optics lacks any evidences, which is not to see there are essential distinctions between the propagation of light and the mechanical motion of a body.

2 .Is there a conflict between the principle of constancy of light velocity and Galilean coordinate transformation in optics?

In optics the real mean of the principle of constancy of light velocity is that the light path is directly proportion to the time light propagated, its ratio depends on the permeability of free space and permittivity of free space, and thereby the calculation of the time light propagated and phase is by the calculation of light path to fulfill.

In the Galilean coordinate transformation, the size of space and time stay the same, hence in the Galilean coordinate transformation, the geometric distance between the optical components, the geometric path of light, the light path and the time light propagated stay the same, naturally, the speed of light, the ratio of light path with respect to the time light propagated, also stays the same. Therefore, there is no irreconcilable conflict between the principle of constancy of light velocity and Galilean coordinates transformation, the key to the problem is how to understand the propagation of light and the speed of light.

Why is it thought that the principle of constancy of light velocity contradicts the Galilean coordinate transformation? One probably reason is that the propagation of light is looked upon as a mechanical motion and the speed of light looked upon as a velocity of mechanical motion. The velocity of a body is different in different frames of reference, just as we discussion ahead, the propagation of light is not a mechanical motion, the speed of light is not a velocity of mechanical motion, if we will look upon the speed of light as a velocity of mechanical motion, will draw a wrong conclusion that the principle of constancy of light velocity contradicts the Galilean coordinate transformation..

3.What are the ranges of validity of Newtonian mechanics and optics?

Newtonian mechanics is based on the observation and experiment to the mechanical motion of a body, the range of validity of it is the mechanical motion of a body. To mechanics problems, only correctly applying Newtonian mechanics can obtain correct results. Optics is based on the observation and experiment to the propagation of light, the range of validity of it is the propagation of light, to optics problems, only correctly applying classical optics can obtain correct results. Therefore, one wants to correctly explain the Michelson-Morley experiment, must correctly apply classical optics.

4. How to explain the Michelson-Morley experiment?

In optics the calculation of the time light propagated and phase is by the calculation of light path to fulfill., therefore, in the Michelson-Morley experiment, no matter how to rotate the Michelson interferometer, only if the distance between the reflection mirror and beam splitter stays the same, the light path between them also stays the same, naturally, the light path difference and phase difference also stay the same, there is no motion of fringe. Thus, only applying optics can we rationally explain the Michelson-Morley experiment.

Why there is that the speed of the earth relative to the ether is zero? Because this explanation is based on the propagation of light is looked upon as the propagation of light wave occurred in the ether, which is an assumption of some physicists, is not confirmed by any experiments. Both Newtonian mechanics and optics are based on the observations and experiments, but not the assumption. It is wrong that the propagation of light wave occurred in the ether, it only states some physicists misunderstand the propagation of light, but not confirms Newtonian mechanics and optics have problems. Even if classical optics also correctly explains the Michelson-Morley

experiment, it states classical optics needs to improve, but not demonstrates Newtonian mechanics has problems, because the propagation of light and the mechanical motion of a body are distinct motions.

5. Can the natural space shrink?

The natural space is an objective, real and natural existence. Its existence does not depend on our mind, can not change with the change of our willing, can be felled, described and imitated by us. The awareness to the natural space is based on the observations and experiments to the natural space, but not any assumptions.

The natural space is not called which is moving or at rest, because the subject of motion is matter, which is matter moves in the natural space, is matter's position changes in the natural space. If the natural space is moving or at rest, there is that the natural space is moving or at rest in the natural space, which is self-lift on the concept. In reality, we only observe matter moves in the natural space.

The natural space stays the same with the change of the motion state of a body, which is the change of the motion state of itself, but not the natural space. In reality, in an accelerator we accelerate electrons to nearly the speed of light, the accelerator, the earth, the Galaxy and the universe stay the same, what changes is the motion state of the electrons.

What describes and imitates the natural space is a frame of reference, which is not an objective, real and natural existence, it exists in our mind, can change with the change of our willing, there is no frame of reference in reality, it is artificially created. We may choose either the earth or the sun as a frame of reference, may choose either the rectangular coordinate system or the spherical coordinate system, this is wholly determined by our willing. Though the frame of reference is subjective, what it describes and imitates is objective and real, it is a real, objective description and imitation to the natural space.

In physics a frame of reference is three dimensions, positive real number space, but not one, two, four or five dimensions, which just derives from the observation to the natural space. In reality we locate the position of a body in space as long as using three independent figures, and the distance between bodies is more than zero.

The natural space stays the same with the change of the motion state of a body, thus, the space of frames of reference also stays the same in coordinates transformation, just this is the base of the Galilean coordinate transformation.

In the special theory of relativity it is thought that space shrinks with the change of frame of reference, but it is not definitely pointed out what shrinks is the natural space or the space of frame of reference, the natural space can not shrink because the property of the natural space is dictated by nature, but not by human, in the real world we choose a spaceship at a high speed as a frame of reference, impossibly obtain the earth, the solar system, the Galaxy and the universe will shrink, if it is real, the property of the universe is dictated by our willing. The world is not dictated by god, but is more impossibly dictated by human. It is only the space of frame of reference shrinks, which derives from a pure, mathematical, thought process——the Lorentz transformations. As a pure thought product, we have a reason to doubt whether it is real and rational. The natural space stays the same with the change of the motion state of a body, while the space of frame of reference shrinks, it states that the Lorentz transformations does not really describe and imitate the property of the natural space.

Some physicists thought that space shrink is an observation to the natural space. The natural space stays the same, while we observe the natural space shrinks, and it states our observation can not really, objectively and correctly reflect the property of the natural space. The science demands that the scientific theory and model must really describe and imitate the property of nature.

6. Is the time and space of the Lorentz transformations consistent with reality?

Suppose the distance between airport A and airport B is 10000km, separately set up a clock at airport A , airport B and a plane , the plane flies from airport A to airport B along a straight line at a constant speed of 1000km / h at 0 o'clock, when does the plane arrive at airport B?

This is a simple problem, from the ground, the distance between airports is 10000km, the speed of the plane relative to the ground is 1000km / h, then the interval between begin and end is:

$\Delta t = 10000km \div 1000km / h = 10h$

The plane motion begins at 0 o'clock, when the plane arrives at airport B, the time of the ground's clock is 10 o'clock. according to the time dilation of the special theory of relativity, the time of the plane's clock is less than one of ground's clock, suppose it is 10y o'clock, ($y<1$), from the plane, the speed of the ground relative to the plane is 1000km / h, the interval between begin and end is 10y h, so the distance between the plane and airport A is:

$s = 1000km \times 10y\ h = 10000y\ km\ (y<1)$

This is not consistent with the real distance between airport A and airport B of 10000km, namely, if we fly by air at a time, according to the special theory of relativity not only can make the time dilate, but also can make the real distance between airports shrink, this is a paradox. In reality, whether from the plane or from the ground, there are two constants: the real distance between the airports and the relative speed, so the interval between begin and end is the same, the time of begin is all 0 o'clock, the time of end is all 10 o'clock certainly, which is consistent with the Galilean coordinate transformation, but not the Lorentz transformations

The awareness of time and space of the special theory of relativity does not derive from the observations to nature, but the Lorentz transformations, which is artificially created in order to reconcile the conflict between the principle of constancy of light velocity and Galilean coordinate transformation that looking upon the speed of light as a velocity of mechanical motion cause. Though this makes the speed of light stay the same in coordinate transformations from pure mathematics, but does not make the property of time and space of coordinate transformations be consistent with reality.

7.Can the present physical experiments confirm the special theory of relativity sufficiently?

To the demonstration of theory, it only considers the observed phenomena in the experiments are similar with the predictions of the theory, yet must demonstrates there is the inevitable, intrinsic and sole connection between them, namely, the observed phenomena in the experiments are the inevitable and sole results of the predictions of the theory, there is no other possibility, that the observed phenomena in the experiments are similar with the predictions of the theory is inevitable, but not occasional. Just as the predictions of horoscope occasionally come true, and thereby we

can not predicate the predictions of horoscope is scientific.

The special theory of relativity lacks such demonstrations. For example, “the mass of electrons at a high speed turns weight ”, the result of experiment is based on the classical electromagnetism, but not the electromagnetism of relativity, because the apparatus of measuring electron’s mass, mass spectrometer, its principle is based on the classical electromagnetism. In the special theory of relativity, not only the mass has the effect of relativity, but also the electromagnetic flied has the effect of relativity, one wants to demonstrate the special theory of relativity with the experiment, can not only considers the effect of relativity of mass, but omit the effect of relativity of electromagnetic flied, thus, this experiment is incomplete. Another example, “the lifetime dilation of particle at a high speed”, the experiment’s prerequisite is that the intrinsic lifetime stays the same whether the particle is at rest or moving, this possibility can not be excluded, namely, the lifetime dilation of particle is dictated by the motion property of itself, but not the effect of relativity. Therefore, these experiments can not confirm the special theory of relativity sufficiently.

In the Newton era, the people have known not to resolve optical problems in mechanics and thereby established optics, however, this day in physics an aberrational phenomenon has appeared: the extension of Newtonian mechanics, the special theory of relativity, is not based on mechanics principles and experiments, but an optics principle and experiment. Some physicists is not from optics to understand the principle of constancy of light velocity and the Michelson-Morley experiment, when they can not correctly make out rational explanations to the Michelson-Morley experiment and the principle of constancy of light velocity, at first not consider the way of their understanding has problems, but doubt classical mechanics has problems, and artificially created a theory instead of classical mechanics.

狭义相对论七问

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摘要：本文首先通过对光的运动与实物机械运动的对比分析论证，指出光的运动不是实物机械运动，将建立在实物机械运动基础上的力学相对性原理推广到光学中缺乏事实和理论根据，其真实性，合理性令人质疑：其次，从光学角度讲，光速不变原理与伽利略坐标变换之间并不存在不可调和的矛盾，狭义相对论之所以认为光速不变原理与伽利略坐标变换之间存在不可调和的矛盾，是因为狭义相对论把光的运动等同于了实物机械运动，把光速等同于了实物机械运动的惯性速度：第三，牛顿力学的适用范围是实物机械运动，而光学的适用范围是光的运动：第四，对迈克尔逊——
莫雷光学实验科学合理的解释是应用经典光学理论，所谓经典物理学万里晴空的一朵乌云并不是经典物理学存在问题，而是把光看成是“以太”为介质的物质机械波并以此为依据验证地球相对于“以太”的速度在实验方法和原理上是错误的：第五，自然存在的空间并不会随着物质运动状态的改变而改变，也不会随着参照物的改变和参照物的运动状态的改变而改变：第六，狭义相对论的洛伦兹变换在现实中是不能自洽的：第七，现有的物理实验不能确证狭义相对论的物理结论。