

## Criticism of the Main Points of the Special Theory of Relativity

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### ABSTRACT

This article will criticize only certain key aspects of this theory; hopefully, the remaining details will fall away. Critical remarks will be presented very delicately, so as not to offend the sensibilities of its supporters. This article examines the special theory of relativity from a new, different perspective. These new aspects have not been previously discussed. This and all my other articles are conceptually linked and built on the concepts of classical Newtonian physics.

The main points discussed in this article are the constancy of the speed of light and the specifics of the concept of an inertial reference frame.

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### Introduction

It seemed that there were plenty of critical articles on Einstein's theory of relativity even in the time of its author, Lorentz, Poincaré, Rutherford, and modern scholars [1-3]. It seemed that the theory's controversial nature should have relegated it to the status of a hypothesis. However, today, it is presented as the dominant theory. Accordingly, the proposed criticism is addressed primarily to the collective wisdom.

There is a generally accepted framework for the development of scientific knowledge. The basic principles of scientific development can be divided into several aspects, ranging from fundamental principles to applied research. At the core of science lies the pursuit of objective knowledge of the world, the use of experiment and observation, and the logical justification of conclusions. The development of science can be viewed as a movement from fundamental research aimed at understanding the fundamental laws of nature and society to applied research that uses this knowledge to solve specific problems. The constancy of the speed of light in Einstein's theory is a postulate stating that the speed of light in a vacuum ( $c$ ) is the same for all observers in any inertial frame of reference, regardless of the speed of the observer or the light source. This is fundamentally different from classical mechanics and leads to the relativity of time and space. This means that even if you are moving toward or away from light, you will always measure its speed as  $\sim 300,000$  km/s. Einstein's theory also states that the speed of light ( $c$ ) is the ultimate speed in the Universe and is independent of the motion of bodies.

The fundamental principle underlying special relativity is that it is valid only for inertial frames of reference. An inertial frame of

reference (ISR) is one in which the law of inertia holds: a body on which no forces act (or these forces are compensated) is at rest or moves uniformly and in a straight line, without changing velocity. In other words, an inertial frame of reference is a frame of reference that moves uniformly and rectilinearly through space.

The concepts of the constancy of the speed of light and the inertial frame of reference are interdependent. The division of this article into chapters can be considered arbitrary, as this interdependence is very profound.

### Main Part

#### The Constancy of the Speed of Light

The postulate of the constancy of the speed of light is presented in Einstein's theory as a new discovery. It should be noted here that light has a corpuscular-wave nature. This was known before Einstein. The nature of wave phenomena had also been sufficiently studied before Einstein. Specifically, the fundamental property of waves was known: wave speed is independent of the velocity of the wave source. A model for this effect can be the movement of a twig through water.

Experimental measurements of the speed of light in various reference frames revealed that the speed of light is also independent of the reference frame in which the measurement was made. This led to the postulate of the constancy of the speed of light. This postulate is also presented as an achievement of the theory of relativity [4].

Let's examine all these phenomena based on the concepts of classical mechanics, the corpuscular-wave nature of light, and wave theory itself [5]. Thus, from wave theory, we obtain the independence of wave speed from the velocity of the wave source. Here, it's important to emphasize that we're talking about the speed

of the wave itself, once it's formed and freely moving through space, through a medium, in all directions. It's also important to understand that the wave source generates a new wave every instant, whether it's moving or not. The new wave obeys the same laws.

So, every instant, the light source generates a new wave [6]. Naturally, this source is located in a certain frame of reference. Let's assume that the light source moves within this frame of reference. Will the speed of light depend on this movement? From wave theory, we can say no. A  $c+v$  effect is possible, but the speed of the wave, the speed of light, will remain constant. A  $c+v$  effect is possible because the source generates a new wave every instant, but this will be just that: an effect.

However, experiments show that the speed of light from one source in one frame of reference remains constant in other frames of reference. It would seem that this is the true achievement of the theory of relativity. This requires some clarification. The source, the generator of light, is a material object. Let's assume this material object is bound to a certain frame of reference, which is also bound to some other material object. What prevents a light source from simultaneously existing in several frames of reference? Any frame of reference is a convention, while a material object exists objectively. This material object emits, generates, light waves. Even if this object moves in space, this does not affect the nature of light generation. As stated above, the light source generates a new wave every new instant. The question arises: how to define this very instant? This instant can be considered a quantum of light, a photon, the period of radiation—the reciprocal of the frequency of the light wave. The average frequency of the visible spectrum of light waves is 1015 Hz, so this instant is equal to 10-15 seconds. In other words, the light generator generates a new wave of light every 10-15 seconds. The time interval of 10-15 seconds is so short that we can assume that the moment of emission occurs simultaneously in all frames of reference, and the radiation source at this moment is simultaneously present in all frames of reference. We are talking about reference frames whose relative motion is incommensurably small compared to the speed of light  $c$ . If the relative velocities are commensurate with the speed of light  $c$ , then it is highly likely that the effect will be distorted. In this case, further research is necessary.

Thus, the real  $c+v$  effect is impossible due to the wave nature of light, and the Doppler effect is explained. For example, as the source moves away over a period of 10-15 seconds, the distance will increase (redshift), while as the source approaches, the distance will decrease (blueshift).

It must be acknowledged that the Doppler effect is evidence of the relative motion of material objects, an indirect manifestation of the  $c+v$  effect. This is further evidence of the lack of practical significance of Einstein's theory of relativity.

### Physical Properties of Inertial Reference Systems

Einstein's theory of relativity is built on the concept of an inertial frame of reference, a frame of reference that moves through space uniformly and rectilinearly. This concept was used by physicists in Newton's time. At that time, this concept was quite sufficient for performing mathematical calculations in physics and mechanics at short distances and speeds. At that time, there was no need for any other models. But when physicists entered the vastness of space, when, for example, even the Earth's orbital velocity exceeds 30 km/sec, the velocity of the solar system within the galaxy exceeds

200 km/sec, when rectilinear trajectories are impossible even under terrestrial conditions, the concept of an inertial frame of reference must be abandoned (at least formally).

In other words, the concept of a particular case is transferred to phenomena of a general, universal scale. A particular case is considered particular because it examines local processes with reservations. In this case, the reservations are quite significant and fundamental.

So, it must be recognized that in nature, material objects moving through space uniformly and rectilinearly do not exist. Accordingly, inertial frames of reference do not exist in nature. Inertial frames of reference can only be discussed as a special case for short distances. It's worth noting that absolute rest doesn't exist in nature. When speaking of rest, we must understand relative rest. Einstein's theory of relativity is built on the absolutization of the observer on Earth. It is from this observer, who is in "absolute" rest, that all events in nature originate, according to this theory. This is also one of the fundamental errors of Einstein's theory of relativity.

### Conclusion

#### The Constancy of the Speed of Light

Above, an explanation of the constancy of the speed of light in different reference frames from the perspective of classical Newtonian physics is given. The physical mechanism of this effect is demonstrated. It is shown that a light pulse can be considered simultaneous in all reference frames. The light pulse propagates in all reference frames as an independent physical phenomenon and is independent of the movement of the light source. However, one way or another, the light source is inevitably tied to a particular reference frame. All these processes occur at mutual velocities significantly lower than the speed of light.

If the light source or other reference frames move at velocities comparable to the speed of light, certain effects are possible. These effects can only be reliably determined after conducting physical experiments. It is quite likely that these effects will be related to the physical properties of the light wave—frequency and wavelength—rather than to relativistic effects.

The Doppler effect has already been established for any mutual velocities. The Doppler effect does not contradict the presented scheme, which is based on the concepts of classical Newtonian physics.

In other words, the constancy of the speed of light is not a postulate, but a physical reality that can be explained by the concepts of classical Newtonian physics (for relatively low speeds).

#### Physical Properties of Inertial Reference Systems

The concept of inertial reference frames is only applicable as a special case for short distances. Uniform, rectilinear motion in space does not exist in nature. Absolute rest does not exist in nature.

For reference frames at large distances and high speeds, the concept of inertial reference frames is inappropriate.

In Einstein's theory of relativity, the concept of an inertial reference frame is a fundamental requirement. The absence of a basis in nature for the existence of inertial reference frames is a formal basis for refuting this theory.

## General Conclusions

It seemed that just one point of inconsistency in Einstein's theory would be enough to cause it to lose its status as the dominant theory. However, we are witnessing the remarkable tenacity of this theory. This theory has no practical value; all scientific achievements have been achieved not because of this theory, but in spite of it.

The only explanation for this phenomenon is that this theory fills a vacuum in science. For example, science cannot reliably explain the physics of gravity. The theory of relativity fills this niche quite successfully. This was the case at first, but then it became a habit. Later, science quite "successfully" developed this theme. This theme "developed," fortunately, there was room for creativity.

Incidentally, one more point (regarding gravity) should be noted. Comments on general relativity and warp drives [7] assert that massive bodies compress space. A question to relativists (on the forum)—why does space compress rather than expand?—received no answer.

This topic can be viewed differently. It is conceivable that some scientists admire this theory, some consider it brilliant, and some consider it nonsense. There is nothing wrong with everyone sticking to their own opinions. The question is: why present it as truth, why impose it. Let this theory remain controversial, time will judge everyone.

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