

PHYSICAL SCIENCES

THE CORRECTED VERSION OF THE SPECIAL THEORY OF RELATIVITY¹

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Abstract

This article shows that the version of the special theory of relativity (STR) presented in all physics textbooks is incorrect, since relativistic formulas obtained therein are incorrect. They are incorrectly explained using the wrong principle of non-exceeding the speed of light and have led to incorrect conclusions about the physical unreality of imaginary numbers and the existence in nature of only our visible universe. This version of the STR proved to be in demand only because its authors were not able to explain physical sense of imaginary numbers. The article provides three proofs of physical reality of imaginary numbers and explains their physical sense in the theory of linear electric circuits, relativistic physics and astrophysics. This made it possible to obtain corrected relativistic formulas, from which appropriate conclusions were drawn.

Keywords: Special theory of relativity, imaginary numbers: Multiverse: dark matter: dark energy.

1. Introduction

The special theory of relativity (STR) [1]-[3] created in the 20th century has been deservedly considered one of the most significant achievements of modern physics, since it introduced the principle of relativism into science. This is why STR is now taught in all university physics textbooks. However, the relativistic formulas obtained in this theory turned out to be incorrect due to the lack of experimental knowledge in physics of the 20th century necessary to complete their derivation. What is the physical meaning of named imaginary numbers and now is not explained in any textbook. Therefore, a postulate was introduced in STR, called the principle of not exceeding the speed of light, which allowed the physical meaning of imaginary numbers not to be explained, since nothing supposedly corresponds to them in nature.

This is how the STR has still been studied in physics textbooks.

2. The current version of the STR is incorrect

For a newly created scientific theory, this is pardonable, since such a theory must be developed. Therefore, over time, something in it must be refuted and corrected. The author of the concept of an open society, Sir Karl Raimund Popper, argued [4] that "...the struggle of opinions in scientific theories is inevitable and is a prerequisite for the development of science."

And in STR there are already a lot of such denials [5]-[54]. This is the existence of shock oscillations - tsunamis, music of pianos and other musical instruments, bell ringing in Christian churches and even swinging swings in playgrounds. This is the modern theory of resonance under the influence of not only sinusoidal oscillations of constant amplitude, but also damped sinusoidal oscillations, and even under the influence of exponential pulses. And this is even radio

engineering created earlier by STR, since STR and radio engineering mutually refute each other.

But the authors of physics textbooks, not being able to challenge these refutations, nevertheless, still do not take them into account [55]-[63].

3. The corrected version of the STR

Therefore, the corrected version of the STR [64] is in demand. In its incorrect principle of light speed non-exceedance STR denying physical reality of imaginary numbers is replaced by the principle of physical reality of imaginary numbers proven experimentally.

Let us show how, for example, this can be done by correcting the Lorentz-Einstein's formula

$$m = \frac{m_0}{\sqrt{1 - (v/c)^2}} \quad (1)$$

where m_0 is the rest mass of a moving body (for example, an elementary particle);

m is the relativistic mass of a moving body;

v is the velocity of a body;

c is the speed of light.

It can be seen from the graph (see Fig. 1a) that the function $m(v)$ has a discontinuity at $v = c$. It corresponds to real numbers for argument values $v < c$, while for argument values $v > c$ it corresponds to imaginary numbers that were discovered in the 16th century and whose physical sense remained unexplained until the 20th century. And since we have proved the physical reality of imaginary numbers, in this situation it is necessary to explain their physical meaning. But on the graph of the function $m(v)$, its branch at the values of the argument $v > c$ corresponds to a physically unstable process that cannot exist in nature. Therefore, the Lorentz-Einstein formula cannot be explained. Hence, it is incorrect.

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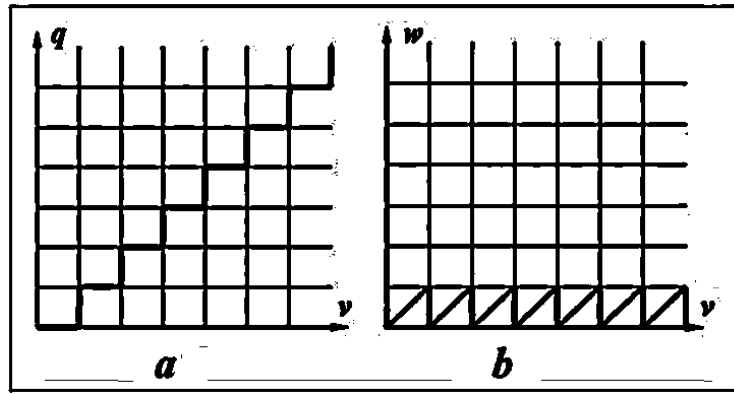


Fig. 1. Graphs of the function $m(v)$ corresponding to the generally recognized but incorrect and corrected versions of STR in the subluminal $v < c$ and hyperluminal $v > c$ ranges

And the graph of the Lorentz-Einstein formula, which can be explained (see Fig. 1b), on the range $v > c$ should be similar to the graph of this function (see Fig. 1a) on the range $v < c$. Thus, the corrected Lorentz-Einstein's formula can be written as follows

$$m(v) = \frac{m_0(i)^q}{\sqrt{1-(v/c-q)^2}} = \frac{m_0(i)^q}{\sqrt{1-(w/c)^2}} \quad (2)$$

where $q = \lfloor v/c \rfloor$ is the 'floor' discrete function of the argument v/c (see Fig. 2a);

$w = v - qc$ is the local velocity that in each universe takes values in the range $0 \leq w < c$ (see Fig. 2b).

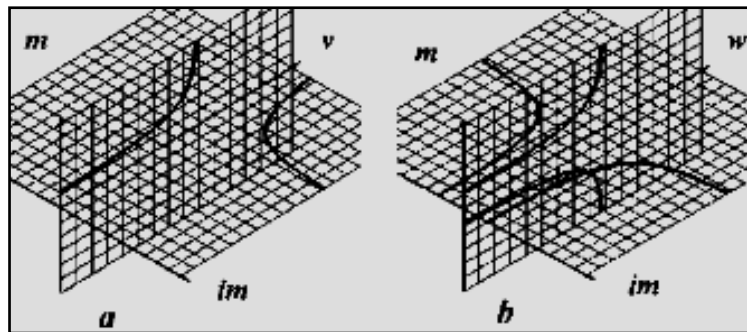


Fig. 2.

Graphs of functions $q(v)$ and $w(v)$ illustrating the meaning of the 'floor' function of discrete mathematics

Therefore, at $q = 0$ the formula (2) should be written as (1), and at $v > c$ it should be written as follows

$$m(v) = \frac{im_0}{\sqrt{1-(v/c-1)^2}} = \frac{im_0}{\sqrt{1-(w/c)^2}} \quad (3)$$

The graph of the function $m(v)$ in Fig. 1b shows that the value $q = 1$ corresponds to a fragment of this function on the interval $c \leq v < 2c$. Those on this interval $c \leq v < 2c$ it corresponds to universe adjacent to our universe. And this other universe is already invisible to us, as it is located beyond the event horizon. Therefore, for definiteness, we call it tachyon universe. Our visible universe will then be called tardion universe. The value $q = 2$ corresponds to an invisible tardion antiverse, for which $2c \leq v < 3c$. The value $q = 3$ corresponds to an invisible tachyon antiverse, for which $3c \leq v < 4c$. Etc.

Therefore, it follows from the corrected Lorentz-Einstein formula that the statement contained in physics textbooks about the existence in nature of our only visible universe is incorrect. In fact, we are in the Multiverse, which, due to the mutual invisibility of the universes in it, we will call the hidden Multiverse. But to make sure that the invisible universes really exist, we need an appropriate experiment that made it possible to see them.

4. Corollaries of the corrected version of the STR

4.1. How to see invisible universes

And in order to understand what this experiment can be, first of all, it is necessary to understand that in

Formula (2) the parameter q is an additional spatial dimension in which mutually invisible parallel universes² somehow drift relative to each other. They touch each other and even slightly penetrate into each other generating respective passages through which their matter content is exchanged. These passages are commonly referred to as portals [65], [66] or stargates [67]. And the entrances to them are presumably at least some of the anomalous zones, of which there are a lot on Earth [68]-[71].

And since in other universes the constellations in the sky inevitably differ from the constellations in our earthly sky, then when moving through the portals from the Earth to any neighboring universe, the map of our

starry sky will gradually be transformed into a map of the starry sky of the neighboring universe. And if a telescope is placed in such a portal, then by comparing the position of the stars in the sky in the portal and outside the portal (see Fig. 3), changes in the position of the stars can be detected. These other constellations in the starry sky in the portals will be the desired experimental evidence [72]-[77]. The corresponding experiments is very low-cost and easily implemented. Moreover, some observatories are already in anomalous zones. As, for example, the Main Astronomical Observatory of the National Academy of Sciences of Ukraine, which is located 12 km from the center of its capital, Kiev, in the Goloseyevsky forest.

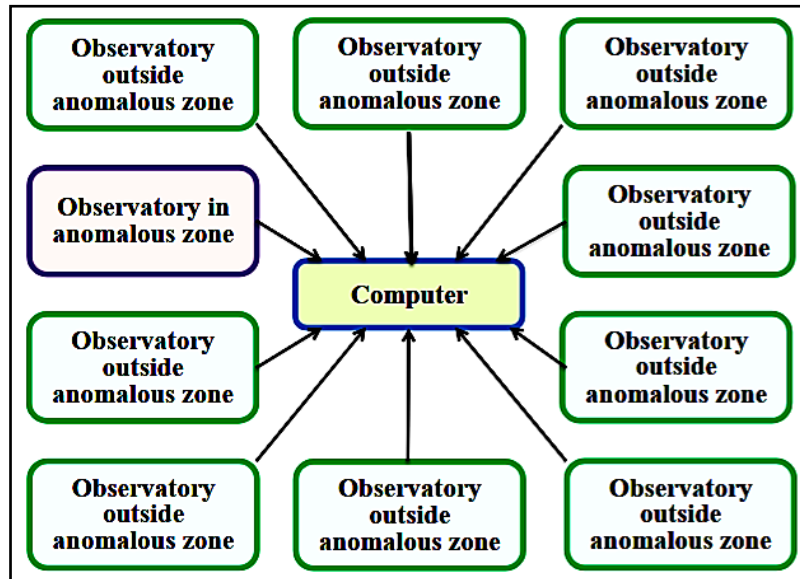


Fig. 3. Schematic diagram of an astronomical experiment to detect invisible universes

4.2. The need geophysical research of portals

Naturally, the farther the telescope is placed in the portal, the more the constellations in its starry sky will differ from the constellations observed outside the portals. And the more convincing will be such astronomical observations. In addition, as a result of such astronomical observations, it will be possible to determine how many different neighboring invisible universes are located next to our visible universe [78]-[88].

But the great value of such observations lies not only in this. And also in the fact that the study of the geophysical characteristics of portals will make it possible to create artificial portals, with the help of which it will be possible to move from our universe to other currently invisible to us, and therefore unknown universes. That will accelerate the transformation of human civilization into a super-civilization.

However, people now avoid any visit to the portals, as the portals are invisible labyrinths in which it is impossible not to get lost. Therefore, in order to make visiting portals safe, it is necessary to create means of portal orientation that will allow invisible portals to be seen in the same way that a compass allows navigators to see the invisible magnetic field of the Earth. And this is quite possible to do if we use the fact that the intensity of the electromagnetic radiation of terrestrial radio stations decreases as we dive into the portals. And when it reaches the neighboring universe, this radiation will disappear completely. After all, on Earth there is no such electromagnetic radiation from neighboring universes.

4.3. Dark matter, dark energy

Having proved the existence of mutually invisible parallel universes, we need to find out their location in the hidden Multiverse, or, in other words, the structure of the hidden Multiverse.

² Since, despite their infinity, they do not intersect

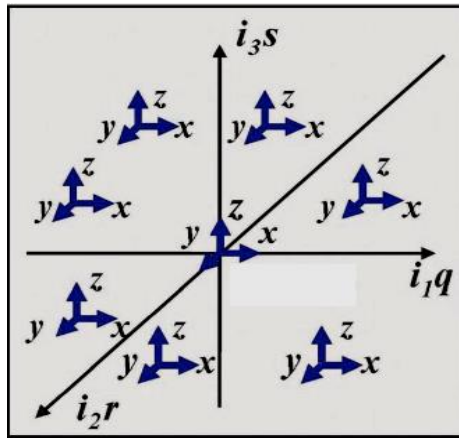


Fig. 4. The six-dimensional space of the hidden Multiverse, in which q, r, s are the coordinates of invisible parallel universes, and x, y, z are the coordinates of the material content in each such parallel universe

We also need to understand the meaning of dark matter and dark energy called as such because of their incomprehensibility and because no chemical elements have been found therein, as well as because they neither absorb nor emit nor reflect nor refract electromagnetic radiation. However, they account for more than 95% of the whole mass-energy in space. More precisely, according to the data obtained by the WMAP spacecraft [89], the mass-energy of our visible universe (actually, the hidden Multiverse) consists of 4.6% of baryonic matter, 22.4% of dark matter and 73.0% of dark energy. And according to more recent data obtained by the Planck spacecraft [90], the entire universe (actually, again, the entire hidden Multiverse) consists of 4.9% of baryonic matter, 26.8% of dark matter and 68.3% of dark energy.

Therefore, the truth and completeness of knowledge in modern physics, which cannot explain the phenomena of dark matter and dark energy, raises serious doubts. And since it was proved above in the most indisputable way that in nature there is not the

Monoverse, but the Multiverse, then in addition to searching for the clues to the nature of the phenomena of dark matter and dark energy at the Large Hadron Collider in the microcosm, it is also necessary to search for their clues in the macrocosm of our hidden Multiverse. After all, Albert Einstein himself said: *"Insanity: doing the same thing over and over again and expecting different results"*.

The search for a solution to this problem in the hidden Multiverse allows us to assume that [91], [92]:

- dark matter and dark energy are evoked by invisible parallel universes of the hidden Multiverse, creating a kind of its own gravitational shadow in our visible universe;
- dark matter is evoked by invisible universes of the hidden Multiverse adjacent to our visible universe;
- dark energy is evoked by the rest of the universes of the hidden Multiverse, except for our visible and adjacent invisible universes.

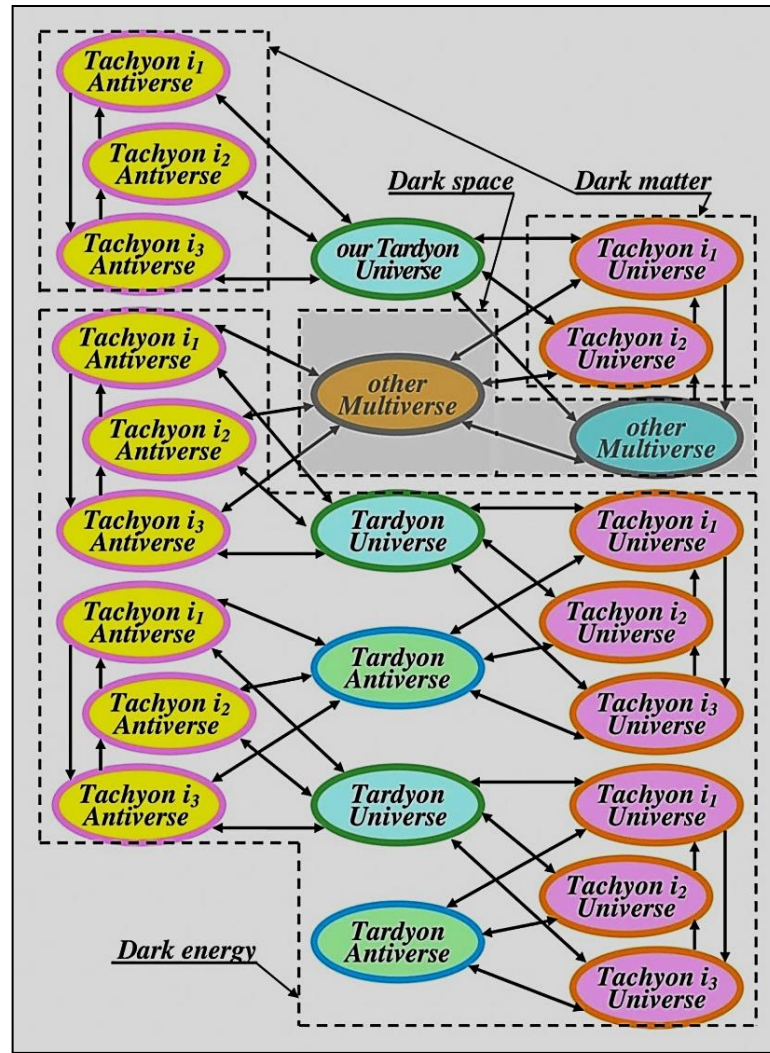


Fig. 5. Possible structure of the hidden Multiverse

- chemical composition of dark matter and dark energy cannot be determined because they are just images.

Such an explanation of the phenomena of dark matter and dark energy provides important information about the structure of the hidden Multiverse. Indeed, given that mutually invisible universes of the hidden Multiverse are interconnected by numerous portals through which they exchange their matter content it can be argued that their mass-energy has significantly averaged over billions of years of their existence.

Thus:

- the whole hidden Multiverse should consist of $100\% / 4.6\% = 21.8$ parallel universes according to the experimental data obtained by the WMAP spacecraft, and of $100\% / 4.9\% = 20.4$ parallel universes according to the data obtained by the Planck spacecraft;
- the whole hidden Multiverse should consist of $100\% / 4.6\% = 21.8$ parallel universes according to the

experimental data obtained by the WMAP spacecraft, and of $100\% / 4.9\% = 20.4$ parallel universes according to the data obtained by the Planck spacecraft;

- dark matter should consist of $22.4\% / 4.6\% = 4.9$ parallel universes according to the experimental data obtained by the WMAP spacecraft, and of $26.8\% / 4.9\% = 5.5$ parallel universes according to the data obtained by the Planck spacecraft;

- dark energy should consist of $73.0\% / 4.6\% = 15.9$ parallel universes according to the experimental data obtained by the WMAP spacecraft, and of $8.3\% / 4.9\% = 13.9$ parallel universes according to the data obtained by the Planck spacecraft.

However... these results are inconsistent with the formula (2), since according to the WMAP and Planck spacecraft data, five-six rather than two invisible universes should be adjacent to our visible universe. Therefore, the relativistic formula (2) must be corrected again as follows:

i_1, i_2, i_3 are the related imaginary units [51], wherein

$$i_1^2 = i_2^2 = i_3^2 = -1 \quad (5)$$

$$i_1 i_2 i_3 = i_2 i_3 i_1 = i_3 i_1 i_2 = -1 \quad (6)$$

$$i_1 i_3 i_2 = i_2 i_1 i_3 = i_3 i_2 i_1 = 1 \quad (7)$$

$$m(q, r, s) = \frac{m_0(i_1)^q (i_2)^r (i_3)^s}{\sqrt{1 - [\mathbf{v}/c - (q + r + s)]^2}} \quad (4)$$

where $\mathbf{v}$ is the velocity measured from our tardyon universe;

$\mathbf{c}$ is the speed of light;

4.4. Antimatter, anti-time, anti-space

Therefore, the hidden Multiverse has a quaternion structure in six-dimensional space (Fig. 4). For example, shown in Fig. 5, a helical structure in which adjacent to our visible tardyon universe is five invisible tachyon universes and anti-universes that evoking phenomenon of dark matter, as well as sixteen other invisible universes evoking phenomenon of dark energy. Thus, such a hidden Multiverse contains twenty-two invisible universes, which is consistent with the mathematically analyzed data obtained by the WMAP and Planck spacecraft. In addition, this structure is connected to two other universes that are outside the hidden Multiverse and form, together with the hidden Multiverse, the Hyperverses. And some invisible universes located in the Hyperverses outside the hidden Multiverse, as shown in Fig. 5 could presumably be adjacent to our visible universe. And then they can be discovered and studied by astronomical and geophysical research in portals.

From such a structure of the hidden Multiverse it also follows that in its cosmic antipodes of universes/antiuniverses there are matter/anti-matter, as well as time/anti-time and space/anti-space [93]-[101].

4.5. Déjà vu phenomenon, time loop

The corrected version of STR allows explaining another unusual phenomenon - déjà vu. It is so unusual that until now only medical scientists have tried to explain it. Translated from the French 'déjà vu', it means 'already seen'. And this term describes an allegedly psycho-emotional phenomenon corresponding to the state of a person in which it seems to him that he had already been in exactly the same situation. Moreover, psychologists say that up to 97% of all people were in this state at least once in their lives.

And although a large number of hypotheses have been proposed to date to explain the phenomenon of déjà vu, it's all not clear here. As in the phenomena of dark matter and dark energy. And all the déjà vu hypotheses are not very convincing. They do not explain why almost all people sooner or later find themselves in this state, regardless of place of residence, age, gender and other factors. If it is an infection, how is it spread? Why, in spite of everything, almost all of humanity is infected? And if it is an infection, then why without any consequences and complications? And if not an infection, then why did the phenomenon of déjà vu hit so many people? But why not everyone?

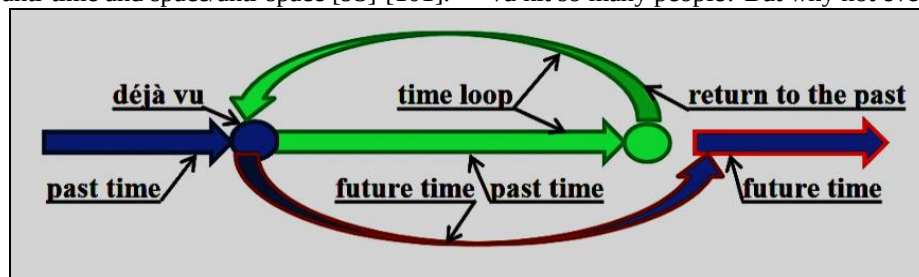


Fig. 6. Explanation of the 'déjà vu' phenomenon, which is created as a result of the intersection of the time branch 'return to the past' and the time branch 'past time' with the formation of a 'time loop'

Therefore, we propose another hypothesis - a physical one. Very unusual, but explaining everything. However, explaining in a different way than it is now customary in science to explain, using only the knowledge gained in the past. And we will explain using knowledge that is expected to be obtained in the future. Those suppose that in the future a highly developed human civilization, possessing extremely perfect computers, will be able to calculate any hypothetical situations in its development both in the past and in the future. Let's also assume that the inhabitants of these super-civilizations will be able to travel to their past. Then, the inhabitants of these super-civilizations, traveling into the past and making some changes to it, will be able to correct their future as well (see Fig. 6). And people who are exposed to such an impact, being in a time loop, from some point in time in their past further in the future will live in a different branch of time. And they will forget their previous life in the time loop, as the memories of everything that happened to them from their memory will somehow be erased. So this hypothesis really explains everything.

But a very important circumstance follows from it – the whole life of all people on Earth is currently under the control of aliens from the future and is recorded in the memory of their supercomputers. Therefore, they know everything about us. And they try not to interfere in our lives because it can change their future. And then they will not be able to return to their future to their relatives and friends. Nevertheless, sometimes they still find such situations in the past on their supercomputers, which correct their future in a favorable way, not excluding the possibility of returning to their relatives and friends. And these options are being implemented.

5. Conclusion

Thus, the article proves that the version of the special theory of relativity studied in the educational process of all universities - even the most prestigious ones - is incorrect. And the corrected version presented in the article has convincing experimental evidence and allows many inexplicable things to be explained. Therefore, in the existing physics textbooks, the presentation of the special theory of relativity must be corrected.

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