

Physical Sciences: Astrophysical Portals are a Source of New Knowledge

Antonov, A. A.

Independent researcher, Kiev, Ukraine

ABSTRACT

The article claims that the version of the special theory of relativity studied in all physics textbooks is incorrect and sets out the main provisions of its corrected version. And from the relativistic formulas of the corrected version of SRT it follows that in nature, in addition to our visible universe, there are mutually invisible universes and anti-universes that are connected to each other by a large number of portals. At the same time, the entrances to the portals are supposedly the so-called anomalous zones, which people avoid visiting, since it is very difficult to get out of them. However, scientific research of portals by unmanned robotic complexes is possible and necessary. Such scientific research will allow solving a number of very important scientific problems - proving the existence of mutually invisible universes adjacent to our visible universe, explaining the Fermi paradox, proving the possibility of traveling not only in the space of the hidden Multiverse, but also in time, etc.

Keywords: imaginary numbers; special theory of relativity, invisible universes and antiuniverses, hidden Multiverse, Hyperverse, portals, anomal zones.

THE VERSION OF SRT TAUGHT IN ALL PHYSICS TEXTBOOKS IS INCORRECT

Although Albert Einstein became famous as the author of the special and general theories of relativity, who was nominated for the Nobel Prize 66 times, he received it in 1921 not for the theory of relativity, but for the study of the photoelectric effect. And he never received the Nobel Prize for the special theory of relativity (SRT) because SRT had no experimental confirmation. In other words, SRT was actually called a theory incorrectly, since it was only a hypothesis. And therefore, according to the Nobel Committee, sooner or later it could be experimentally refuted. And the Nobel Committee turned out to be right - now it has already been experimentally refuted.

First, in 1934, it was refuted by the discovery of Cherenkov radiation [1], which was created by the movement of electrically charged particles in a transparent medium with a refractive index $n > 1$ at a speed exceeding the phase velocity of light in this medium. For this discovery, P.A. Cherenkov, I.E. Tamm and I.M. Frank even received the Nobel Prize in 1958. But the SRT was then corrected and survived.

Then, in 2011, the OPERA collaboration tried to disprove it at the Large Hadron Collider, expecting to receive the Nobel Prize for this. And they even published a message about their success [2]. But six months later, in 2012, at the same Large Hadron Collider, the ICARUS collaboration found an error in the OPERA experiment and disproved it [3].

And in the 21st century, the generally accepted version of SRT has already been confidently refuted by the existence of radio technology, the existence of tsunamis, the existence of pianos and other musical instruments, and even the existence of suspended swings on playgrounds, as well as many other experiments [4]-[15]. But throughout the 20th century, relativistic physicists could not figure this out. And even now, the authors of physics textbooks do not understand this. And therefore, these textbooks still present the incorrect version of SRT created in the 20th century [16]-[45], according to which relativistic formulas have the form (see Fig. 1a, b, c)

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

$$\Delta t = \Delta t_0 \sqrt{1 - (\frac{v}{c})^2} \quad (2)$$

$$l = l_0 \sqrt{1 - (\frac{v}{c})^2} \quad (3)$$

in which m_0 – rest mass of a moving body;

- m – relativistic mass of a moving body;
- Δt_0 – rest time of a moving body;
- Δt – relativistic time of a moving body;
- l_0 – rest length of a moving body;
- l – relativistic length of a moving body;
- v – speed of motion of a body;
- c – speed of light.

And these formulas in textbooks are explainable only in the range of subluminal speeds $v < c$, in which the quantities m , Δt and l take on values measured by real numbers. But in the range of superluminal speeds $v > c$, these quantities m , Δt and l already take on values measured by imaginary numbers discovered by Scipione Del Ferro, Niccolo Fontana Tartaglia, Gerolamo Cardano, Lodovico Ferrari and Rafael Bombelli [46] 400 years before the creation of the SRT, the physical meaning of which, however, was not explained by them. But, perhaps, even earlier than them, imaginary numbers were discovered by Paolo Valmes [47], who was burned alive at the stake for this by the sentence of the inquisitor Thomas de Torquemada. The creators of the SRT also could not explain this. And the physical meaning of imaginary numbers in physics textbooks has not been explained to this day.

Moreover, the graph of the function $m(v)$ in the range of speeds $v > c$ (see Fig. 1a) corresponds to a physically unstable process, which cannot exist in nature at all. Therefore, all formulas (1)-(3) are completely incorrect. But since such a theory, which even its authors could not explain, was of no use to anyone, a postulate was introduced into it, called the principle of not exceeding the speed of light, the meaning of which is clear from its name. And the SRT was preserved, since it claimed that in nature processes confirming the physical reality of imaginary numbers

allegedly do not exist. And in the 20th century, no one objected to this. And therefore, despite the above-mentioned experiments refuting the SRT, it is sometimes even claimed that Albert Einstein understood that nothing in the Universe can move faster than the speed of light. And that the speed of light is not just a number, but a physical limit. The same as, for example, absolute zero at a temperature of minus 273.15 degrees Celsius.

But the version of SRT that is still studied in all physics textbooks is incorrect [16]-[45], because:

- the relativistic formulas obtained in it are incorrect;
- the relativistic formulas obtained in it were incorrectly explained using the incorrect principle of not exceeding the speed of light;
- from these incorrect relativistic formulas, incorrect conclusions were made about the physical unreality of imaginary numbers and about the existence in nature of our only visible universe, in which everything is measured only by real numbers.

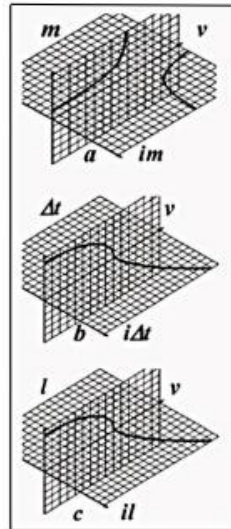


Fig 1: Graphs of functions $m(v)$, $\Delta t(v)$ and $l(v)$ corresponding to the existing versions of the SRT in the subluminal $v < c$ and superluminal $v > c$ ranges

CORRECTED VERSION OF SRT

But not all scientists share the opinion set out in the version of SRT given in physics textbooks that, in accordance with the principle of not exceeding the speed of light, imaginary numbers are physically unreal and that in nature there is only one visible universe, ours, since both of these statements are refuted experimentally.

And the relativistic formulas of the corrected version of SRT have the form [48]-[56]

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

$$\Delta t(q, r, s) = \Delta t_0 i_1^q i_2^r i_3^s \sqrt{1 - [v/c - (q + r + s)]^2} \quad (5)$$

$$l(q, r, s) = l_0 i_1^q i_2^r i_3^s \sqrt{1 - [v/c - (q + r + s)]^2} \quad (6)$$

in which $q(v) = [v/c]$ is the “floor” function of discrete mathematics of the argument v/c , which is the fourth spatial dimension (Fig. 2); $r(v) = [v/c]$ is the “floor” function of discrete mathematics of the argument v/c , which is the fifth spatial dimension (Fig. 2); $s(v) = [v/c]$ is the “floor” function of discrete mathematics of the argument v/c , which is the sixth spatial dimension (Fig. 2). That is, our Multiverse is six-dimensional – each universe has three dimensions x, y, z and three more dimensions q, r, s have coordinates of these universes in the Multiverse (Fig. 3) – and is described by quaternions $f_{q,r,s}(x, y, z) + i_1 q + i_2 r + i_3 s$, the number of which is equal to the number of universes in the Multiverse. This is exactly what Lisa Randall predicted: “We could be living in a three-dimensional pocket of higher dimensional space.”

In this case, the three imaginary units i_1, i_2, i_3 in quaternions are related by the relations.

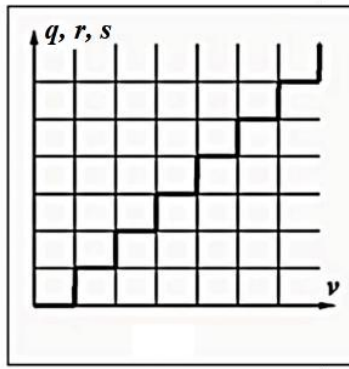


Fig 2: Graphs of functions $q(v)$, $r(v)$, $s(v)$, illustrating the meaning of the “floor” function of discrete mathematics.

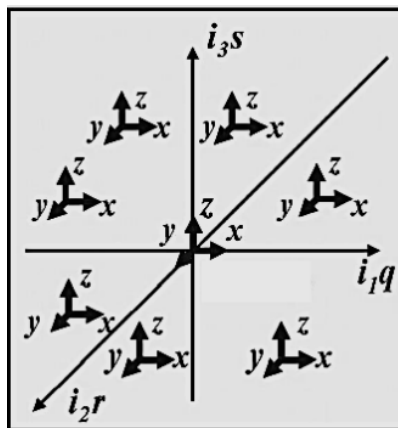


Fig 3: Six-dimensional space of the hidden Multiverse, where q, r, s are the coordinates of invisible parallel universes, and x, y, z are the coordinates of the matter content in each parallel universe

$$i_1^2 = i_2^2 = i_3^2 = -1 \quad (7)$$

$$i_1 i_2 i_3 = i_2 i_3 i_1 = i_3 i_1 i_2 = -1 \quad (8)$$

$$i_1 i_3 i_2 = i_2 i_1 i_3 = i_3 i_2 i_1 = 1 \quad (9)$$

In the mathematics of hypercomplex numbers, the function $i_1^q i_2^r i_3^s$ can be calculated only for integer values q, r, s , but can take both positive and negative values and both real and imaginary values. But we have already proven that imaginary numbers are physically real and therefore we must also explain them. Therefore, let us now consider the values $m(v)$, $\Delta t(v)$ and $l(v)$ of the quantities, and in the range of velocities $v > c$ for successive values of the argument $q + r + s$ equal to 0, 1, 2, 3, 4, 5, ... Then for our visible universe with coordinates $q=0, r=0, s=0$, i.e. located at the origin, we obtain $i_1^q i_2^r i_3^s = 1$. For definiteness, we will call it the tardyon universe.

For the value $q + r + s=1$ in the range of velocities $v > c$, we obtain $i_1^q i_2^r i_3^s = +i$. This situation corresponds to the invisible universe, since it is located beyond the event horizon. For definiteness, we will call it the tachyon universe. For the value $q + r + s=2$ in the velocity range $v > c$ we get $i_1^q i_2^r i_3^s = -1$. This situation also corresponds to an invisible universe, since it is located beyond the event horizon. We will call it a tardyon antiuniverse. For the value $q + r + s=3$ in the velocity range $v > c$ we get $i_1^q i_2^r i_3^s = -i$. This situation also corresponds to an invisible universe, since it is also located beyond the event horizon. We will call it a tachyon antiuniverse. For the value $q + r + s=4$ in the velocity range $v > c$ we get $i_1^q i_2^r i_3^s = +1$. This situation also corresponds to an invisible tardyon universe (but a different one), since it is also located beyond the event horizon. For the value $q + r + s=5$ in the velocity range $v > c$ we get $i_1^q i_2^r i_3^s = +i$. This situation also corresponds to an invisible tachyon universe (but a different one), since it is also located beyond the event horizon. Thus, all universes except ours are invisible. Therefore, we will call our Multiverse hidden. And the hidden Multiverse has a helical structure.

An example of a possible structure of the hidden Multiverse is shown in Fig. 4. As can be seen, in such a structure of the hidden Multiverse, it is possible to move to the tardion antiuniverse from the tardion universe and to the tachyon universe from the tachyon antiuniverse in different ways, but not arbitrarily, but only in such a way, in which the value will successively take the values $+1, +i_1 \oplus i_2 \oplus i_3, -1, -i_1 \oplus i_2 \oplus i_3, +1, \dots$ etc., where \oplus is the symbol of the logical operation of discrete mathematics 'exclusive OR'. In this case, different trajectories of movement from one universe (or antiuniverse) to another can differ only due to substitution of some tachyon universes from i_1, i_2, i_3 with others and some tachyon antiuniverses from i_1, i_2, i_3 with

others. Consequently, the tachyon universes i_1, i_2, i_3 in the hidden Multiverse are located parallel to each other. The tachyon antiuniverses i_1, i_2, i_3 for the same reasons are also placed parallel to each other. And therefore, in the hidden Multiverse, when moving from any tardyon universe to a tardyon antiuniverse and then to another tardyon universe, parallel universes and antiuniverses must alternate in the following sequence – ‘tardyon universe’, ‘one of the tachyon universes’, ‘tardyon antiuniverse’, ‘one of the tachyon antiuniverses’, ‘tardyon universe’, ‘one of the tachyon universes’, etc. Moreover, naturally, the movement from our tardion universe to the tardion antiuniverse through some tachyon universe - for example, i_1 - does not necessarily have to proceed further through the tachyon antiuniverse i_1 . It can proceed further through tachyon antiuniverses i_2 and i_3 . The same reservation applies to the situation if the movement from the tardion universe to the tardion antiuniverse begins through tachyon universes i_2 or i_3 . All these transitions are shown in Fig. 4.

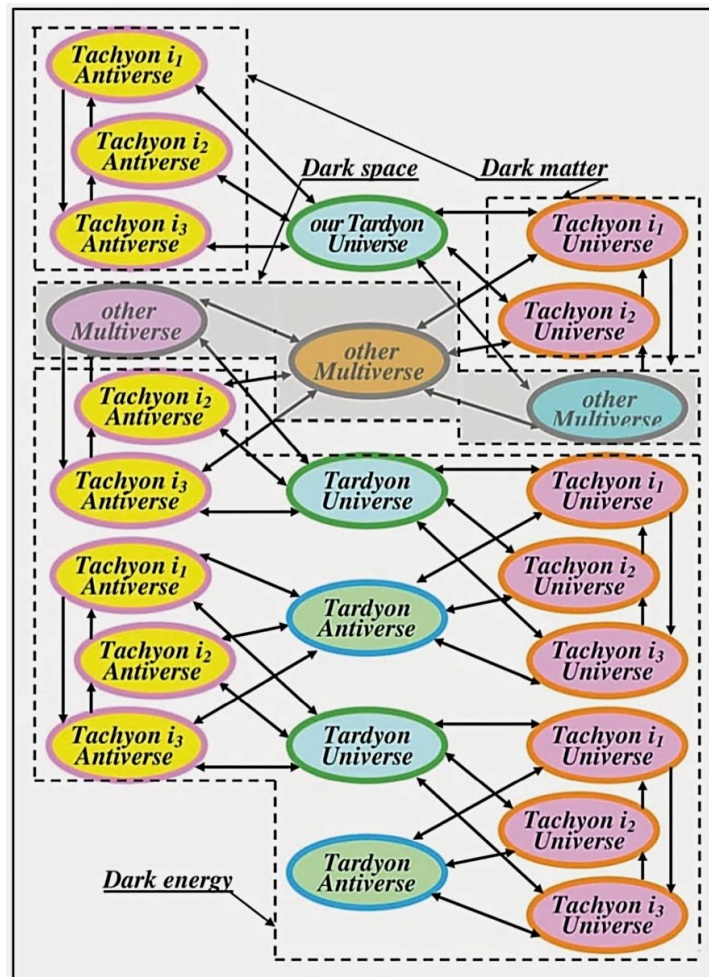


Fig 4: Possible quaternion structure of the hidden Multiverse containing twenty-two parallel universes, including six invisible universes adjacent to our visible universe.

Moreover, since all such hidden Multiverses correspond to its open screw structures, united through the corresponding portals with other Multiverses, then all together they form the Hyper-universe. In this case, the invisible universes adjacent to our visible universe give rise to the phenomenon of dark matter, the remaining invisible universes of the hidden Multiverse give rise to the phenomenon of dark energy, and the invisible universes located outside the hidden Multiverse give rise to the phenomenon of dark space.

PORTAL RESEARCH

Numerous universes actually existing in space - if they exist - forming a hidden Multiverse, drift and touch, slightly immersing themselves in each other. And these zones of mutual immersion of neighboring universes, through which it is possible to pass from one universe to another, are called portals [57], [58]. And portals exist (and this still needs to be experimentally proven - see below) only if there exist at least two parallel universes, between which the portals are located.

The entrances and exits to portals are called anomalous zones [59]-[62], since incomprehensible phenomena occur in them. In particular, people disappear in them, since the paths from the entrance to the exit in portals are invisible labyrinths, from which it is almost impossible to escape. Because of this, people avoid visiting anomalous zones. And there are more than two hundred thousand anomalous zones on Earth. But portals are of great scientific interest. And they can be studied without visiting, using unmanned vehicles.

How to See Invisible Universes?

The question of whether mutually invisible universes and portals between them exist in nature is fundamental. The answer to it determines whether the version of SRT presented in textbooks is correct or not. But since scientists, despite long theoretical debates, have not yet come to a consensus, the truth can be revealed by an experiment. Moreover, it is quite simple and clear.

And for this, it is not at all necessary to visit other universes. It is enough to at least look at them. As in order to be convinced that in addition to the room visible to us, in which we are now, there is a neighboring invisible room, it is enough to look from the corridor connecting these rooms into the neighboring room. The corridors connecting neighboring universes are portals [57], [58].

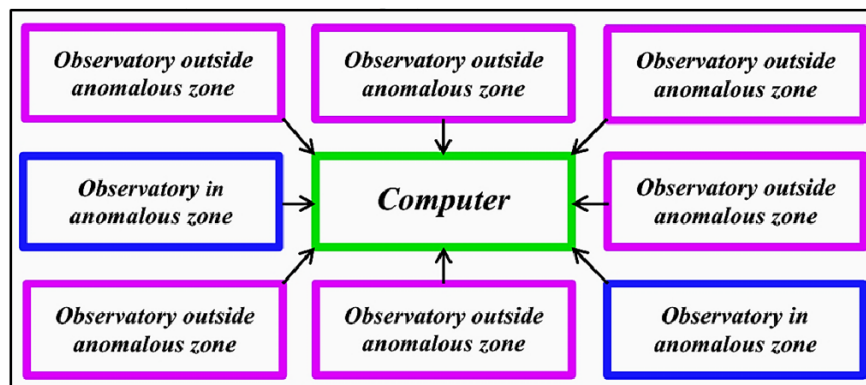


Fig 5: Scheme of an astronomical experiment to detect invisible universes

And in order to be convinced, while in the portals, that you are no longer in our universe, but on the way to the neighboring universe, you need to look from the portal through a telescope at the starry sky and see other constellations on it [63]-[68]. This is a very reliable experiment, since you can't draw constellations in the sky.

The Arrow of Time

Here are some quotes on this topic.

"Time is the most frequently used word in English and the third most frequently used word in Russian. It is in every other language, too, because synchronizing actions in time is as important as coordinating them in space. Without knowing the exact time, it is impossible to organize your life and plan it in advance. If in ancient times you could rely on natural cycles and an internal sense of time, then in our days you need to constantly have a watch or a phone with you. Time is the most important of the abstract concepts that we pronounce every day. Every thinking person has thought about the problem of time at least once in their life, and a huge amount of philosophical and scientific literature has been written on this topic. However, no one will say for sure what time is. Or prove that time is irreversible. Or maybe it only seems that way to us?" [70]

Here is what Stephen Hawking writes: "We can see a cup fall off a table and break into pieces, but we never see the cup put back together from those pieces and return to the table. The increase in disorder, or entropy, makes it possible to distinguish the past from the future and thus gives time a definite direction."

This phenomenon, known as the arrow of time, is one of the most amazing mysteries of physics. And the name "arrow of time" for this phenomenon was proposed at the beginning of the 20th century by the British physicist Sir Arthur Stanley Eddington. And it would seem that one cannot argue with such statements.

Anti-time

But we will nevertheless try to show that the concept of the arrow of time, used in the generally recognized incorrect version of the SRT, is refutable in its corrected version. To do this, let us return to Fig. 4. And note something unusual in it. A hypothetical journey along the structural diagram of the hidden Multiverse shown in the figure is, according to formulas (4)-(6), a journey not only in space, but also in time. Since the transition from our visible tardion universe to one of the neighboring tachyon universes or antiuniverses is accompanied by their movement not only in space, but also in time, since time in them is different.

And this can be proven using various routes of such movements. Let us cite one of the simplest. Let us assume that we moved through a portal from our visible tardion universe - using for this purpose some anomalous zone on the surface of the Earth - in a short time (for example, one day) to one of the neighboring tachyon universes or antiuniverses. And at the same time, naturally, we disappeared from the sight of our colleagues who saw us off at the edge of the anomalous zone. But we did not disappear anywhere in this neighboring tachyon universe or antiuniverse and carried out some research on it for a couple of months. Then, having carried

out the planned research, we again in a short time (for example, one more day) through the same portal safely returned to Earth. And since on Earth, relative to the neighboring invisible tachyon universe or antiuniverse, time flows (into the future or into the past) in a direction perpendicular to earthly time, then on Earth it seems to have stopped. Therefore, it seemed to our colleagues who met us on Earth that we had been absent not for two months, but only for two days. But we showed our unshaven beards for two months and thus proved that we had ended up in the past, since our colleagues who saw us off had moved into the future for two months. And in this past, we were beardless two months ago.

Of course, we won't be able to contradict Stephen Hawking with such an experiment and see the process of restoring a broken cup from its fragments. But the fictional travelers from our visible tardion universe to neighboring invisible tachion universes or anti-universes and back, nevertheless made a journey through time. And due to this, having returned to the past, they nevertheless turned the arrow of time by 180°.

And for those who are not convinced by this hypothetical experiment, below it is explained how to make it really physically feasible.

Geophysical Research of Portals

Oddly enough, geophysical studies of portals [71]-[80] can be much more productive in space exploration than astronomical studies of the visible starry sky. Indeed, astronomical observations allow us to study only our visible universe. And geophysical studies of portals, which are transitions to neighboring invisible universes, allow us to study invisible universes neighboring our visible universe. Moreover, as can be seen from Fig. 4, they allow us to study invisible universes, even those located outside the hidden Multiverse. They also allow, since there are more than two hundred thousand anomalous zones on Earth that are supposedly entrances to portals, having studied the portals, to perform the most detailed classification of invisible universes antiuniverses neighboring our visible universe. And to identify, and then even study some characteristics of invisible universes and atheuniverses, even those located outside the boundaries of the hidden Multiverse. Which will allow us to understand why they are not part of the hidden Multiverse. And it is possible that several other Multiverses neighboring our hidden Multiverse will be discovered. And with all this, geophysical research of space is much cheaper than astronomical research.

Moreover, geophysical research of portals will allow attempts to create time machines, with the help of which the research described in the previous section 4.3 can be transformed from hypothetical into real astrophysical ones.

Fermi Paradox

The Fermi paradox is a statement of a seemingly paradoxical situation in which, on the one hand, it is known that there are many stellar systems in space suitable for life, but on the other hand, despite all the efforts of scientists, no signs of life have been found in this space. And it would seem very strange [81]-[83]. But in fact, there is nothing strange about it [84]-[96]. After all, what are we looking for? What signs of life do we expect to see? The same as now on Earth? For the same radio stations to work as on Earth, which, when transmitting signals, spend most

of their energy on transmitting signals to nowhere due to an imperfect radiation pattern? For the inhabitants of supercivilizations to detonate atomic and hydrogen bombs? And so on.

But first of all, these are all defects of our imperfect civilization, which supercivilizations got rid of long ago. And therefore they are invisible. And secondly, why not assume that we do not see their ships in space also because they have different logistics as a result of using their super knowledge. Even on Earth, on the way to work in large cities, people now often use the subway. And therefore, such their movement from space is also invisible.

And then their activity can be proven by comparing two texts:

1. "Our contemporaries – *people of the Earth* – begin their working day, leaving *their homes*, by visiting the nearest *metro station "A"*. Then, invisible from space, they *travel in the tunnel "Aa"* underground to the transfer point "*ab*" *on our planet Earth*. After that, they travel through another *underground tunnel "bB"* to another *underground station "B"*, leaving which they rise to the *surface of the Earth* in the place they need."
2. "Our contemporaries – *inhabitants of supercivilizations* – begin their working day, leaving *their invisible home built using superstealth technology*, by visiting the nearest *anomalous zone "A"*. Then, invisible from space, they *move through the portal "Aa"* to the transfer point "*ab*" *in the neighboring universe*. After which, through *another portal "bB"*, they move to another *neighboring universe "B"* and exit the portal in the *anomalous zone* in the place they need.

As you can see, the same thing happens in both situations – invisible movement in space, with the replacement of terms of our civilization currently existing on Earth with similar terms in supercivilizations:

- "people of the Earth" with "inhabitants of supercivilizations";
- "housing" with "invisible housing built using superstealth technology";
- "metro station "A" with "anomalous zone "A";
- "riding in tunnel "Aa" with "moving through portal "Aa";
- "ab" on our planet Earth" with "ab" in the neighboring universe";
- "underground tunnel "bB" with "portal "bB";
- "underground station "B" with "neighboring universe "B";
- "the surface of the Earth" with "in the anomalous zone".

That is, in order for the movement of inhabitants of supercivilizations in space to become invisible, it is only necessary that they move between universes through portals, and that planets in star systems serve as transfer stations from one portal to another. And therefore, this circumstance will need to be taken into account during geophysical studies of portals. And the Fermi paradox must be recognized as yet another proof of the existence of portals and mutually invisible parallel universes, and, consequently, the incorrectness of the version of SRT studied in all physics textbooks.

CONCLUSION

Thus, the article experimentally proves and theoretically explains that the version of SRT, created in the 20th century, which is still studied in all physics textbooks, is incorrect, because:

- the relativistic formulas obtained in it are incorrect;
- these formulas are incorrectly explained using an incorrect postulate called the principle of not exceeding the speed of light;
- incorrect conclusions are made from these formulas about the physical unreality of imaginary numbers and the existence in nature of our only visible universe, in which everything is measured only by real numbers.

But in the corrected version of SRT, from the relativistic formulas obtained in it, it follows that in nature, in addition to our visible universe, there are many other mutually invisible universes and anti-universes. And they, drifting in space, touch each other, even slightly plunging into each other and forming transition zones called portals. Moreover, through portals, neighboring universes and anti-universes exchange their material contents according to the law of communicating vessels.

However, people avoid visiting portals, as they are invisible labyrinths. Therefore, if you accidentally get into them, it is almost impossible to get out of them. At the same time, portals are of significant scientific interest, as as a result of their astro-geophysical research, unlike astronomical research, they allow us to prove the existence of neighboring invisible universes and anti-universes and to obtain some information about them that cannot be obtained otherwise. They also allow us to carry out other interesting research - to prove the possibility of traveling in the Multiverse not only in space, but also in time and thereby prove the existence of anti-time, etc.

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