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# The physics theory of time travel

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Newtonian mechanics, or classical mechanics, was the first branch of physics to treat time and space scientifically. It was the only physical theory describing time and space for centuries. However, changes took place at the beginning of the 20th century, when two completely new physical theories describing time and space appeared - they were the theory of relativity and quantum mechanics.

One of the main claims of the theory of relativity is that time and space together form a single entity called "spacetime". This is proven by the constancy of the speed of light c in vacuum with respect to any observer. In the vicinity of large masses and also in case of extremely fast movement of masses in vacuum, time and space begin to change, i.e. transform, in which case time slows down and the lengths of bodies shorten relative to the external observer.

In quantum mechanics, it is possible to describe the physical state of bodies (i.e. particles) only probabilistically. This means that, for example, the physical parameters of the movement of bodies, such as speed, position or coordinate, etc., cannot be precisely known in advance, because so-called uncertainty relations apply. From the beginning of the 20th century until the present time, there has been no progress beyond these notions that could be experimentally proven. However, the physics theory of time travel presents new insights that try to explain the seemingly irrational physical phenomena found in the theory of relativity and quantum mechanics.

In the physics theory of time travel, such a science of physics is presented that would allow a person to move in real time to the past and the future. The development of time travel technology creates new opportunities for the study of human history and also for movement in space. The general research method and construction of the physics theory of time travel is similar to theoretical physics that thousands of scientists around the world are working on. For example, hypotheses are made that are derived theoretically, but at the same time, all these hypotheses are fully consistent with existing generally accepted physical theories.

In science, a "hypothesis" is an assumption that has not yet been proven. If the hypothesis has been confirmed, it is a scientific "theory". For the sake of simplicity and clarity, however, the hypotheses set forth in the physical theory of time travel are called theories, not hypotheses. The term "theory" is better known to the general public than the term "hypothesis".

In the physics theory of time travel, the topic of time travel is approached in a non-traditional way at the beginning, because it is concluded that the basis of time travel is the understanding of the physical system of ordinary space and hyperspace. This in turn shows the reality of wormholes and also its necessity for understanding time travel.

All existing physics theories, which deal with the real possibility of human travel in time, are based on the mathematical theories of wormholes, or tunnels in spacetime. The conclusions of the hypotheses established in the physical theory of time travel allow us to describe these wormholes very precisely, predicting their real existence. In the physical theory of time travel, possible further developments of existing generally accepted physical theories (for example the theory of relativity and quantum mechanics) are also presented, because without them it is not possible to physically understand time travel.

The physics theory of time travel reveals the surprising fact that a person's time travel (for example, to the past) is very possible in its nature and it is also technically completely feasible. This is also the most surprising conclusion in all of the physics theory, as time travel is generally considered impossible and absurd. Traveling through time turns out to be really possible only if the two main theories of modern physics are further developed: the theory of relativity and quantum mechanics. At the same time, it has been possible to develop even further than the physical theory of time travel. Time travel would inevitably change our current physical view of the universe. For example, time travel shows that time does not actually exist in the universe as we know it.

Until now, all physics theories of time travel were exclusively based on Albert Einstein's theory of general relativity. This theory predicts the existence of wormholes, or tunnels in spacetime. For example, two points in space (or also in time) are connected by a "tunnel in spacetime", through which it is possible to cross huge distances in space in a very short time. Wormholes allow bodies to move through space as well as time. This physical understanding of time travel still exists today. Marek-Lars Kruusen's Physics Theory of Time Travel does not refute such common understanding, but it does present new insights into wormholes and their significance in the physics of time travel. This means that older theories are further developed, in which the final result shows that a body teleports from one point in space to another or from one point in time to another by passing through a tunnel in spacetime. Teleportation of bodies is only possible outside of spacetime. Later it will be seen that teleportation in spacetime causes, for example, the probabilistic behavior of particles, i.e. the emergence of uncertainty relations in quantum mechanics.

In Marek-Lars Kruusen's physics theory of time travel, one of the basic physical foundations is the statement known from the theory of special relativity, that time and space together form a single whole, which is called spacetime. This is one of the basic claims of the special theory of relativity. However, the direct conclusion of this would be that if you move in time, for example to the past, you must also move in some kind of hitherto unknown spatial dimension. This means that time travel must be enabled by space travel. This space "exists" outside of our normal everyday perceived space. The equations of general relativity lose their validity when studying this space, because time and space no longer exist in such a space, which physically manifests itself in time dilation and length contraction. Therefore, the movements of bodies in such a space dimension no longer take time, and teleportation of bodies appears. According to it, it is possible to teleport to the past, the future and even "in the present". Teleportation in the present manifests as teleportation in normal space.

The cessation of existences of time and space occurs, for example, in black holes, in the centers of which the passage of time slows down to infinity and the lengths of space contract into infinitesimally small ones. In such a region of space and time, a person is able to move in time, that is, the phenomenon of teleportation can manifest itself, if a person could somehow get into the center of a black hole. More precisely, black holes exist as a "hole in spacetime" through which it is possible to enter a timeless and spaceless dimension, or outside spacetime. This dimension is called "hyperspace" in the physics theory of time travel. The dimension of hyperspace that allows time travel is very necessary to understand wormholes.

Currently, the world's top scientists are developing string theory, which is believed to be the best candidate for a "theory of everything". One of the central ideas in string theory is that spacetime has many more dimensions than four. For example, ten dimensions of space and one dimension of time are predicted. In total, this makes the 11-dimensional spacetime that string theory predicts for us based on the best of our current knowledge. However, the theories (i.e. hypotheses) derived in Marek-Lars Kruusen's physical theory of time travel prove the opposite: the dimensions of spacetime do not increase, but actually decrease, or cease to exist, when we try to understand the physics of time travel. For example, such a fact manifests itself when time slows down and length of bodies shortens in the immediate vicinity of large masses, or when mass moves more and more rapidly with respect to light.

The cessation of the dimensions of time and space is also very clearly manifested in the physical phenomena described in quantum mechanics. At the present time, it is fairly safe to say that the experiments known so far show that particles can exist "outside of spacetime". Physically speaking, time and space no longer exist outside of spacetime, which may at first seem like a philosophical utopia. However, the physical theory of time travel shows us quite convincingly that the wave properties of particles are the result of their continuous teleportation in spacetime. The theory shows that any particle is also a wave, since the physical parameters describing its wave coincide very precisely with the parameters of the body's continuous teleportation in time and space. It is known from history that wave properties of particles have been proven in diffraction and interference experiments.

The relativistic effects described in the theory of relativity result from transformations of time and space, i.e. changes in which the cessation of the dimensions of time and space are manifested. In general relativity, the slowing down of time and the shortening of the distance between two points in space is described by Riemannian geometry, which is caused by the presence of large masses in spacetime. The curvature of spacetime is the basis of all general relativity, as large masses warp the surrounding spacetime. The seemingly irrational effects described in quantum mechanics manifest themselves precisely because time and space no longer exist for particles, and therefore particle teleportation occurs in our perceived spacetime. All known effects in quantum physics result from the constant teleportation of particles in spacetime, and that is why it is necessary to learn about the physical basis of teleportation, which is also presented very precisely and demonstrably in the physical theory of time travel. All of this is completely consistent with the generally accepted theories of physics and the general interpretation of the physics of time travel.

Since all bodies in the universe move in time towards the future and all phenomena in the universe take place in time and space, it can therefore be said that the physical theory of time travel presents the fundamental foundations of the existence of the entire universe. Consequently, the physical theory of time travel must explain practically all physical phenomena in the universe: from the Big Bang of the universe to its hypothetical "death", from black holes to atomic physics, from various interactions to extra dimensions of spacetime, etc.

Therefore, it can also be argued that the physical theory of time travel is the world's largest physical theory and the most comprehensive physical science, as it includes all branches of fundamental physics, such as: classical mechanics, quantum mechanics, relativity, electromagnetism, quantum field theory, thermodynamics, astronomy, cosmology, particle physics, nuclear physics, black hole physics and more. Since the mentioned theory also contains a technical solution for time travel, the fields of engineering and electrical engineering are also presented in it. Therefore, the literary work is extremely voluminous, reaching more than 1300 pages today.

The physical theory of time travel exists as a "theory of everything", that is, a physical interpretation of the universe that tries to explain the functioning of the entire world.

Therefore, the physics theory of time travel is a great competitor to string theory, since string theory also claims to be the theory of the universe. If at the beginning of the 20th century, relativity theory and quantum mechanics emerged, which could not be combined, then it seems that the same situation will arise at the beginning of the 21st century: the physical theory of time travel and string theory cannot be combined either. However, both combine relativity and quantum mechanics in a unique way. It is safe to say that the physics theory of time travel is the biggest competitor to string theory.

The physics theory of time travel tries to explain how the whole world works.

The author of this theory confirms that the physical theory of time travel can achieve it relatively well, but even so, it should be noted that the dark matter of the universe and various time paradoxes are the only two big areas in which the truth of the explanatory theories cannot be completely certain. Only experiment or observation can provide certainty. In the author's opinion, the physical theory of time travel can cope relatively well and believably with explaining the rest of the physical aspects of the universe.

In the literary work describing the physics theory of time travel, there are quite a lot of repetitions, in which many chapters contain similar or even identical texts. There are three main reasons why such repetitions occur. One of the reasons is that the chapters in the said work could be read and studied independently, i.e. separately from the given work. Another reason may be that the mathematical formulas are not numerically counted or ordered throughout the work. The third reason is that with the publication of new versions of the said literary work, older versions of the chapters are presented at the same time, so the new and the old can exist simultaneously in the same work. This is how the historical development of the work can be seen. The said work is extremely voluminous, reaching more than a thousand pages today, so the table of contents above provides the best overview of this literary work.

In this work, the theory of quantum fields is presented in three different chapters, the contents of which do not differ greatly from each other, but were created during different time periods:

1. "Fundamentals of Quantum Cosmology and Introduction to Quantum Field Theory"

2. "Mathematics of Lagrangians"

3. "Effect of electric charge on spacetime metrics, unified field theory and quantum field theory"

Since this work was written over a very long period of time (more than 13 years), the physical concepts contained in it have developed a lot in the meantime. For example, the third point is the oldest of them, and therefore it may be an outdated theory today, in which the physical insights presented are no longer so adequate. Nevertheless, it has been presented and brought to the end of the sequence in this work in order to show the historical development of the physical theory of time travel. The second point is the most recent, which can be considered the most advanced and the most perfect. It does not contain contradictions with itself or with the basic principles of the physics theory of time travel. The first point is also quite important, although it is historically a bit older than the second point. The first point is important in the sense that it shows the connection between the physics of time travel and the physics of matter, which is basically also shown by the second point.

The simplicity and comprehensibility of the basic ideas of the physics theory of time travel is quite astounding. Throughout history, there has been a general understanding that time travel is very difficult to do or even impossible to create. However, new insights in fundamental physics suggest just the opposite. Modern physics defines "time" as "duration". In the theory of relativity, time passes more slowly when the speed of bodies increases relative to light or when large masses are in close proximity. One of the central ideas of the physics theory of time travel is that it is only possible to move through time if time does not exist, i.e. "outside of time".

It seems impossible at first glance, but there are regions in spacetime of the universe where time runs infinitely slowly, i.e. time has "stood still" there. This means that time no longer exists. Such regions of spacetime exist, for example, in the centers of black holes, which is now known as a scientific fact. In them, time travel turns out to be possible. More precisely, black holes represent themselves as "holes in spacetime", through which it is possible to enter a timeless and spaceless dimension, i.e. outside of spacetime. This dimension is called "hyperspace" in the physics theory of time travel. This is shown by the hypotheses derived in the mentioned theory, which are also fully consistent with generally accepted physics theories and are, in turn, their "supplements". A lot of innovations and additions occur in, for example, quantum mechanics.

It is safe to say that the physics theory of time travel can be combined with quantum mechanics and the theory of relativity. The theory of general relativity itself describes traveling in time with the geometry of curved spacetimes (for example, wormholes), but movement in time is also a teleportation phenomenon, since movement in time itself does not take time. All processes that occur outside of time and space no longer take time, and therefore bodies are able to teleport in time or space. This is also clearly seen in quantum mechanics.

For example, the quantum entanglement of particles described in quantum mechanics turns out to be possible only when time no longer exists. Particles teleport in spacetime that we perceive, and this also results in their uncertainty relations, which are also the basis for quantum entanglements of particles. Therefore, quantum mechanics actually turns out to be a special case of "teleport mechanics". Mathematically, teleportation can also be described with the metric used in general relativity. For example, the distance ds between two points becomes infinitesimally small in space (for example, in the centers of black holes), which also means bringing distant locations closer, where it is possible to reach a certain destination in only a few moments. From this it is possible to calculate the physical parameters of teleportation.

The beginning of the development of the physics theory of time travel can be considered to be 2006, but its prehistory actually goes back to 2005. In 2005, the physics of the universe was systematically and purposefully studied, but in 2006, the physical possibility of time travel was also systematically studied. This means that in the beginning, the research directions of the physics of time travel and the physics of the universe were separate from each other. However, in later years it was understood that the physics of time travel is also suitable for describing the physics of the entire universe. In 2026, the physics theory of time travel will be 20 years old. The physics theory of time travel was first released to the general public in January 2013, when the very first version of history came out. It was then seven years later than the beginning of the formation of the theory. Since then, a new version has come out almost every year. It is only one literary work, the volume of which has only increased over time, and each new version is more developed and improved than the previous one. For example, in 2013, the volume of this work was a little over 100 pages, but nowadays the volume of this work is already extremely large, reaching over 1300 pages. The mathematical analyzes alone (derivations and calculations) are hundreds of pages long. All versions are written in Estonian, but only recently (since 2022) has it been actively translated into English. In 2023, it will be ten years since this work will be publicly available to everyone. Various versions of the physics theory of time travel can be found on the Internet as follows:

The very first version was released in January 2013. Since the physics theory of time travel is part of a larger project entitled "World Perception", it was initially published as a single work:

https://www.calameo.com/books/0020405481885c2055286

The second version:

https://www.calameo.com/books/002040548b8d842597fe3

https://www.calameo.com/books/002040548874f3a9f4b07

The third version:

https://www.calameo.com/books/002040548c9719f44acee

The fourth version:

https://www.calameo.com/books/0020405484b6ca80121fb

https://www.calameo.com/books/0020405487e044994aee3

The fifth version:

https://www.calameo.com/books/0020405484fc17ab28a5b

https://www.calameo.com/books/002040548894aed5c417f

From the sixth version, the physics theory of time travel has also been published in the digital archive of the Estonian National Library:

https://www.digar.ee/arhiiv/en/nlib-digar:305084

The seventh version:

https://www.digar.ee/arhiiv/en/nlib-digar:321945

The eighth version:

https://www.digar.ee/arhiiv/en/nlib-digar:367409

Since the ninth version, The Physical Theory of Time Travel has been published in its own right, meaning that it has been published separately from the Perception of the World project:

https://www.digar.ee/arhiiv/en/nlib-digar:366636

https://www.digar.ee/arhiiv/en/nlib-digar:367401

https://www.digar.ee/arhiiv/en/nlib-digar:367400

The tenth version:

https://www.digar.ee/arhiiv/en/nlib-digar:435320

In the eleventh version, for the first time in history, the literary work's length exceeded a thousand pages:

https://www.digar.ee/arhiiv/en/nlib-digar:624677

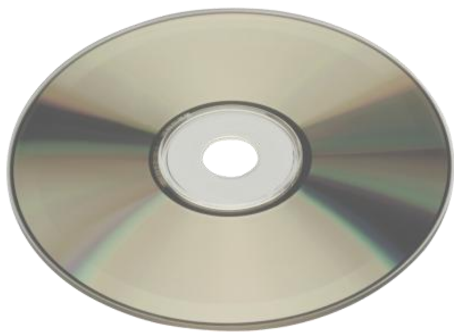
The twelfth version:

https://www.digar.ee/arhiiv/en/nlib-digar:667381

New versions will continue to be released in the future.

Different versions of the physics theory of time travel by Marek-Lars Kruusen (including versions to be published in the future) can also be found as files on the network drive:

https://drive.google.com/drive/folders/1l1p7BLl88jI5vd0B9nrP1pYkhxlb5BPG?usp=sharing



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Marek-Lars Kruusen's

technology and science