The trouble with times.

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It is known that space and spatial relationships are studied by people for thousands of years. And along with the distance, for a long time humanity has learned to measure time. Despite this, in mathematics there is still no specialized section on time and its direction and no clear idea of the time. In the best case, it is considered as one of the coordinates. However, this geometric approach does not reflect the important feature - its flowing from the past to the future.

Problem. *Mathematics of time.*

It should be noted that in science there is no explicit concept of time. Its nature for fundamental physics is one of the major mysteries. Any of the following questions in the **physics of time** is still not resolved.

Problem. *Time flowing.* Why does time flow?

Problem. *Time anisotropy.* Why time is always flowing in the same direction, from the past to the future?

Problem. *Time quanta.* Are there time quanta?

Problem. *One-dimensionality of time.* Why time is one-dimensional?

Problem. *Existence of time.* Does time exist?

There is no scientific theory that was able to answer any of these questions. In the special theory of relativity time is coordinate of spacetime, that's contribution to the Lorentzian metric is distinct from the contribution of the spatial coordinates. The theory of relativity can not explain why time behaves differently than the space and why time is only one-dimensional.

Problem. *Metric features of time.*

In some solutions of Einstein's equations (i.e. equations of general relativity those describe the curved spacetime metric) there are closed timelike curves (CTC), those are world lines in a Lorentzian manifold that is "closed", returning to its starting point. This possibility was first raised by Kurt Gödel in 1949, who discovered a solution to the equations of general relativity (GR) allowing CTCs known as the Gödel metric.

This demonstrates the incompleteness of the geometric description of time and the need to supplement the general relativity with axioms those specify the properties of time as a order relationship. So time and its axioms are things missing theory of relativity. It is powerless before the time.

Problem. *Closed timelike curves.*

Problem. *Relativistic axioms of time.*

The similar situation is in quantum mechanics, introduction of time operator is problematically. In quantum experiments, time is irreversible, due to the interaction of the quantum-mechanical object with the measuring instrument in the process of measuring. The measurement process in quantum mechanics is asymmetric in time. In relation to the past, it gives probabilistic information about the object. With respect to the future it creates a new state.

Problem. *Quantification of time.*

Moreover, both theories - quantum and general relativistic - contradict each other in a matter of time. CTC models can theoretically violate Heisenberg's uncertainty principle (phys.org/news/2013-02-spacetime-violate-heisenberg-uncertainty-principle.html). General relativity and quantum theory are incompatible, no one can combine them together, that may indicate that both quantum mechanics and relativity theory require any significant additions or complete replacement. New theories or changes to the existing must answer all these questions.

Problem. *Unification of gravity and quantum.*

The unification of gravity and quantum into quantum gravity is problematically because geometry of relativistic spacetime must be quantized. But physics-mathematics meaning of this quantization is absolutely unclear. No one successful attempt to quantize it.

Problem. *Quantization of relativistic spacetime.*

Hypothesis has already appeared on the subject. Some physicists speculate that the CTCs which appear in certain GR solutions might be ruled out by a future theory of quantum gravity which would replace GR, an idea which Stephen Hawking has labeled the chronology protection conjecture. It is confirmed by research of scientists from the University of Maryland who modeled world lines of massive particles which propagate in a flat (2+1) Minkowski spacetime. (arxiv.org/ftp/arxiv/papers/1104/1104.0561.pdf) Theoretical physicist Smolin argued for idea that time is real. "Time is paramount," he said, "and the experience we all have of reality being in the present moment is not an illusion, but the deepest clue we have to the fundamental nature of reality." (livescience.com/29081-time-real-illusion-smolin.html)
The union of quantum mechanics and general relativity, and the "theory of everything", is impossible as long as the modern physical science does not revise its view of time - "More and more, I have the feeling that quantum theory and general relativity are both deeply wrong about the nature of time. It is not enough to combine them. There is a deeper problem, perhaps going back to the beginning of physics." (The Trouble with Physics)

Solution.

Years ago I proposed my theory of everything, in which time plays fundamental role, and published it on my websites and other web-resources.
My scientific theory unified space, time, matter and fields into one notion - set of times. I found that the space-time can be represented as set of times. This is my time geometry. In physics, especially in theory of relativity there was spatial approach when time was considered as one of coordinates of non-Euclidean space.
I did the opposite. I can say that I create my new theory of relativity based on times and my time geometry. And in this way I find solving of many scientific problems.

It is known that the unification of gravity and quantum into quantum gravity is problematically because geometry of relativistic spacetime must be quantized. But physics-mathematics meaning of this quantization is absolutely unclear. No one successful attempted to quantize it. But I quantized spacetime of relativistic theory, changing it to my new theory of relativity based on times and then quantazing only times. Using my theory I can prove existense and basical significance of time.

My theory offers solutions to the following problems.
Existence of time. Nature of time.
One-dimensionality of time.
Anisotropy of time.
Flowing of time.
Metric features of time.
Closed timelike curves.
Unification of gravity and quantum mechanics.
Dark energy and matter.
Baryonic asymmetry.
Appearance of matter in spacetime.
Supersymmetry and its breaking.
Asymmetry in nuclear weak interaction.
Cause of Big Bang and metric expansion of University (caused by time).
Superunification of fundamental interactions.

My theory proves that all Universe consists of 1-dimensional times instead of 1-dimensional strings (or similar to 1-dimensional) and times perfectly fulfill their role as a fundamental principle of all things.