

Gravity – state of the art: where is the border between experimentally proven knowledge and the unknown?

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Motto - „Theory-Induced Blindness“ - “Once you have accepted a theory and used it as a tool in your thinking, it is extraordinarily difficult to notice its flaws. If you come upon an observation that does not seem to fit the model, you assume that there must be a perfectly good explanation that you are somehow missing. You give the theory the benefit of the doubt, trusting the community of experts who have accepted it.“ - Daniel Kahneman - „Thinking, Fast and Slow“

Abstract

The paper deals with a critical analysis of current knowledge in the field of gravity and compares it with experimentally verified facts.

It analyzes the limits and consistency in the currently accepted theory of gravity, i.e. the theory of relativity and Newton's law of universal gravitation.

Selected results of time transformation properties and limits analysis are presented including critical analysis of time transformation properties according to SRT (Special Relativity Theory).

It describes the results of selected cross-checks of the consequences of time transformation.

The results of selected analyzes of properties of Euclidean space-time are described; especially the practical implications of using space-time abstraction in experimental physics.

Selected results of the analysis of properties of Minkowski space-time are described, especially mathematical limits of applicability (area of validity) and physical impacts of using Minkowski space-time in experimental physics.

The paper presents examples of non-compliance of the basic assumption of GRT (General Relativity Theory) i.e. equivalence principle with reality.

The paper deals with the limits of Newton's law of universal gravitation and the potential impacts of gravity dynamics.

The paper will present the result of the analysis of the contradiction of experimental results with Newton's theory of gravity, more precisely experimental results that could not be explained by the application of Newton's law of universal gravitation.

The results of tide analysis and their comparison with theory, results of static pendulum measurements and preliminary results of gravitational interaction with electromagnetic radiation (electrogravity) measured by torsion pendulum will be presented.