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Not peer-reviewed version

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Posted Date: 4 June 2025

doi: 10.20944/preprints202506.0266.v1

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Fictitiousness of Einstein's Field Equations

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Abstract: Einstein's field equations are considered one of the greatest intellectual achievements of physics. Their weak point is that they do not have a physical meaning. Einstein's field equations are figurative mathematics meant to describe the gravitational force and cannot be used to calculate it, for example, between the Moon and the Earth. The curvature of space is a mathematical formulation of gravity that should be replaced by the energy density of space.

Keywords: Einstein's field equations; curvature of space; variable energy density of superfluid space

1. Introduction

The famous Einstein's field equation

$$G_{\mu\nu} = 8\pi G T\mu\nu \quad (1) \quad [1],$$

has a weak point, namely, by this equation (1), we cannot calculate the gravitational force between two stellar objects. Also, after more than 100 years of its creation, it is still not clear what units this equation has [2]. The gravitational force we measure with Newton's and Einstein's field equations does not use Newton as a unit. Because of this phenomenological weakness, geometrization of gravity led to the idea that gravity is not a force. Einstein's field equations are "figurative mathematics" that have no physical meaning. Newton's equation has a physical meaning and a bijective correspondence with the physical world. Every element in the equation corresponds to exactly one element in physical reality, see Eq. (2) below:

$$F_g = \frac{m_1 m_2 G}{r^2} \qquad (2).$$

The curvature of space in Einstein's Relativity is a mathematical theory that needs to be developed into a physical theory. This can be achieved by extension of the mass-energy equivalence principle on the universal space, which has a physical origin in the superfluid quantum space. Every physical object diminishes the energy density of superfluid quantum space in its center accordingly to its mass and corresponding energy. This is expressed in Eq. (3) below:

$$E = mc^2 = (\rho_{PE} - \rho_{cE})\, V \qquad (3) \quad [3],$$

where m is the mass of the object, ρ_{PE} is the Planck energy density of superfluid quantum space in intergalactic areas, ρ_{cE} is the energy density of superfluid quantum space in the center of a given physical object, and V is the volume of the object.

The gravitational force between two massive objects is the result of a pushing force of superfluid space, see Figure 1 below:

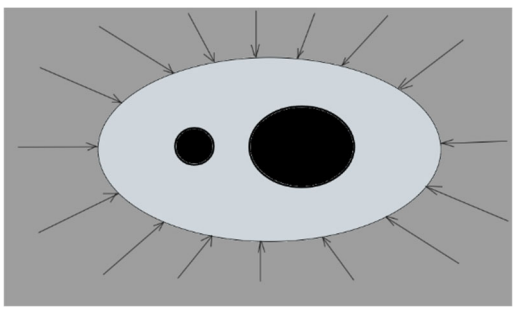

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Figure 1. The gravitational force is carried by the variable energy density of superfluid space.

Superfluid space is 4D, and physical objects are 3D. They follow the gravitational vectors that are in the direction from higher to lower energy density of superfluid space [4]. Inertial mass and gravitational mass have their origin in the variable energy density of superfluid space as presented in Eq. (4) below:

$$m_i = m_g = \frac{(\rho_{PE} - \rho_{cE})\,\mathrm{V}}{c^2} \qquad (4).$$

The gravitational force between two physical objects is calculated by Eq. (5) below:

$$F_g = \frac{m_{g1} m_g G}{r^2} \qquad (5).$$

In the Einstein model, physical objects curve space, and the curvature of space tells them how to move. In the model presented here, physical objects diminish the energy density of space, which generates gravity.

2. Discussion

NASA measured in 2014 that the universe has an Euclidean shape [5]. The sum of the inner angles of a triangle that is formed by three stellar objects is 180^0. Bending of light does not prove that space is curved [6]. Light is bending because the variable energy density of superfluid quantum space changes the refractive index of light [3].

Based on GR, Penrose predicted the existence of gravitational singularities [7]. Gravitational singularities as a result of extreme curvature of space are fictitious. Penrose's idea that gravity in the center of the black hole is infinite is false. Gravity inside black holes obeys Newton's shell theorem [8].

Also, the initial singularity of the Big Bang [9] is fictitious and should be abandoned from cosmology. Mathematical point is dimensionless, and a dimensionless entity cannot have physical attributes. Energy cannot appear from a mathematical point [10].

With Einstein's Theory of Relativity, physics entered a new paradigm where mathematics overruled physics. Today is most important that a model is mathematically correct and nobody is interested in whether it has physical meaning. This led physics into a deep crisis that can only be surpassed by the new paradigm, where the introduction of new elements in the theory is allowed only when an element is observed or measured. Time as a 4th dimension of space was never observed and measured, and still, physics is convinced that it exists. It does not; universal space is time-invariant. There is no physical past and no physical future. Events in the universe run in superfluid quantum space, which is time-invariant. Time as duration enters existence in the process of measurement [11].

Superfluid space (the old name is ether) moves and rotates with the Earth. 280 m/s is the velocity of ether motion in the direction of Earth's rotation at the latitude of 72 of San Francisco and New York, which is about 39 degrees north. Velocity 280 m/s is velocity 1008 km/h. At 39 degrees, north velocity of Earth's surface rotation is 1301 km/h. This means that at the Earth's surface at 39 degrees north, the ether is rotating with 77.5 % of the Earth's surface velocity [8]. Because of this, the Michelson-Morley experiment [12] gave a null result. It was carried out with the preposition that Earth moves through the stationary ether, which is not the case.

Einstein's idea that light can move through a space deprived of physical properties is counterproductive and against the fact that light is energy and that energy can move only in a medium that has attributes of energy. Also, his idea of relative motion leads to contradictions [13]. In 1920, Einstein was aware that physics without ether is unthinkable. In his speech at the University of Leiden 5th of May 1920, he had a speech where he admitted: "Recapitulating, we may say that according to the general theory of relativity space is endowed with physical qualities; in this sense, therefore, there exists an ether. According to the general theory of relativity space without ether is

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unthinkable; for in such space there not only would be no propagation of light, but also no possibility of existence for standards of space and time (measuring-rods and clocks), nor therefore any space-time intervals in the physical sense" [14]. Mainstream physics never accepted his view. Still today, the idea of an empty curved space deprived of physical properties that carries gravity is the official teaching in physics classes. This idea is one of the main obstacles to physics' progress. Physics without ether has been marching for 100 years in the wrong direction. In 1920, Einstein corrected his cardinal mistake, but physics did not take it seriously. Curvature of space as a carrier of gravity is still popular because it is not logical and introduces esoteric thinking based on the figurative mathematics of Einstein's field equations. The human mind likes most what it cannot fully understand.

3. Conclusions

Mathematics is an indispensable tool of physics, but it cannot be the ruler of physics. Mathematics' natural role is that it is a servant of physics. Einstein's field equations are the milestone when physics was overruled by mathematics. It is clear today that Einstein's field equations are a fictitious mathematical model and have no correspondence with the physical world. Gravity is the fundamental force of the universe and is real. To progress physics, this has to be fully understood.

References

1. Chris Ormel, Einstein Field Equations, NASA https://spsweb.fltops.jpl.nasa.gov/portaldataops/mpg/MPG_Docs/Source%20Docs/Einstein's%20Field%20Equations.pdf (2001)
2. P G L Porta Mana, Dimensional analysis in relativity and in differential geometry, European Journal of Physics, 42 (2021), no. 4. https://doi.org/10.1088/1361-6404/aba90b
3. A. Sorli, N. Gorjup, R. Gorjup, Replacement of space-time with superfluid space and restoration of Newton's dynamic ether, Rep. Adv. Phys. Sci., 7 (2023), 2350005. https://doi.org/10.1142/s2424942423500056
4. Amrit Sorli, Gravity as a vector of superfluid space and universe expansion, Advanced Studies in Theoretical Physics, Vol. 19, 2025, no. 1, 21-29 https://www.m-hikari.com/astp/astp2025/astp1-4-2025/92245.html
5. NASA, Our Universe https://wmap.gsfc.nasa.gov/universe/uni shape.html (2014)
6. Oscar del Barco, An accurate equation for the gravitational bending of light by a static massive object, *Monthly Notices of the Royal Astronomical Society*, Volume 535, Issue 3, December 2024, Pages 2504–2510, https://doi.org/10.1093/mnras/stae2277
7. Penrose, R. Gravitational collapse and space-time singularities, Physical Review Letters, 14 (1965), no. 3, 57. https://doi.org/10.1103/physrevlett.14.57
8. Amrit Srecko Sorli, Rado Gorjup, Niko Gorjup, Tomaz Makovec, Akash Saroj, Akash Ranjan, Piyush Singh, Re-examination of Penrose's and Kerr's singularities and the origin of protons in astrophysical jets, Advanced Studies in Theoretical Physics, Vol. 18, 2024, no. 2, 61-82 https://www.m-hikari.com/astp/astp2024/astp1-4-2024/92117.html
9. J. B. Hartle and S. W. Hawking, Wave function of the Universe, Phys. Rev. D 28 (1983) 2960, https://doi.org/10.1103/PhysRevD.28.2960.
10. Sorli, A., Jafari, S., Fiscaletti, D., Gorjup, N., Gorjup, R., & Makovec T. (2023 b). Evidence-Based Cosmology – Black holes are rejuvenating systems of the universe. Reports in Advances of Physical Sciences, 7, 2350012. https://doi.org/10.1142/s2424942423500123

 doi:10.20944/preprints202506.0266.v1

11. Amrit Sorli, Implications of Time-Invariant Superfluid Quantum Space Model in Fundamental Physics and Cosmology, Applied Physics Research (2025) https://ccsenet.org/journal/index.php/apr/article/view/0/51593
12. Michelson, Albert A.; Morley, Edward W. (1887). "On the Relative Motion of the Earth and the Luminiferous Ether" . *American Journal of Science*. **34** (203): 333–345. Bibcode:1887AmJS...34..333M. doi:10.2475/ajs.s3-34.203.333. S2CID 124333204.
13. Amrit Sorli, Stefan Celan, Niko Gorjup, Physical origin of the relative rate of clocks in GPS and errors of relative motion concept, Advanced Studies in Theoretical Physics, Vol. 16, 2022, no. 4, 191-200 https://www.m-hikari.com/astp/astp2022/astp1-4-2022/91893.html
14. Einstein, A. (2007). Ether and the Theory of Relativity. In: Janssen, M., Norton, J.D., Renn, J., Sauer, T., Stachel, J. (eds) The Genesis of General Relativity. Boston Studies in the Philosophy of Science, vol 250. Springer, Dordrecht. https://doi.org/10.1007/978-1-4020-4000-9_34