Review of: "The structured vacuum theory"

Danielewski Marek[1]

1 AGH University of Science and Technology

Potential competing interests: No potential competing interests to declare.

General relativity predicts the singularities showing the infinite energy density and gravitational forces. They are unphysical and indicate a breakdown of the theory, show that the general relativity would have to be replaced with a more fundamental theory. The collapse of the particle wave function predicted by the quantum mechanics shows that it should also be replaced with a more fundamental theory. Definitely there is a place for new hypothesis.

Paper has form of a story, it's not the theory. "The structured vacuum…"- title is relevant to aether concept, geometry and dimensions. The first author conclusion:

"…a perpetual motion of superfluid substance. The substance flows are shaped as double-helical streamlines and vortices…"

Neglects e.g., the Navier equation. How the explosion of the distant star could not create the turbulence in superfluid substance? It requires comment. The relevant hypothesis was considered as e.g., by

B. L. Hu: Can Spacetime be a Condensate?

Author should mention and compare the concepts of the aether and the role of the Planck scale phenomena by:

H. Kleinert, Ann. Phys. 44, 117 (1987).

H. Kleinert and J. Zaanen, Phys. Lett. A 324, 361(2004).

The discreteness of the space presented in author work is not confronted e.g., with:

Deb, S.; Das, S.; Vagenas, E.C. Discreteness of Space from GUP in a Weak Gravitational Field. *Phys. Lett. B* 2016, *755*, 17–23.

Ali, A.F.; Das, S.; Vagenas, E.C. Discreteness of Space from the Generalized Uncertainty Principle. *Phys. Let. B*, 2009.

Author should seriously confront his concepts with other authors.