

Review of: "Re-Examination of Penrose's and Kerr's Singularities and the Origin of Protons in Astrophysical Jets"

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Potential competing interests: No potential competing interests to declare.

By considering NASA's recent measurements regarding the Euclidean shape of universal space, Sorli suggests that the geometrization of gravity associated with the deformation of space caused by stars is a mere mathematical model that describes some fundamental physical properties of superfluid universal space. In his paper, Sorli proposes an interesting alternative model of gravitational space intended as a superfluid space, where the curvature predicted by general relativity is not a primary physical reality but exists only as a mathematical description of a more fundamental energy density of the superfluid universal space. Sorli's model introduces the insight that stellar bodies are a diminishing energy density of space and that black holes tend to shrink because, in their centres, matter is transformed into fresh energy that forms astrophysical jets. In this picture, appealing perspectives could be opened. On one hand, the extremely low energy density of superfluid space in the center of black holes could cause electromagnetic forces between the nucleus of the atom and orbiting electrons to become too weak and atoms to fall apart into elementary particles. On the other hand, Schwarzschild's collapse of black holes could be not due to the infinite gravity in the centre, but could be provoked by the extremely low energy density of superfluid space in their centre. Moreover, interesting is the prediction of Sorli's model regarding the stability of protons also in the centre of black holes (which is associated with the extremely low energy density of space inside the proton).

Finally, in the second part of his paper, Sorli makes a criticism of the singularity of space-time curvature invoked by Penrose, shows in what sense Kerr's considerations on gravitational singularities are a clear signal of the necessity of a revision of the model of curvature of space as a carrier of gravity, and claims that singularities are above all speculations, mathematical artefacts that exist in our minds and, therefore, that the progress of cosmology requires the abolishment of singularities.

Despite some aspects of the model obviously being speculative and needing to be further cleared and improved (both conceptually and mathematically), the scenarios opened by Sorli's model deserve attention.