

Review of: "Geodesics as Equations of Motion"

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Potential competing interests: No potential competing interests to declare.

There are some critical problems in this article, namely:

1) The author seems to not understand the concept of diffeomorphism invariance in general relativity. This implies that we cannot define physical observables which depend on the choice of a coordinate system. In particular, while we often set up a set of coordinates for practical calculations, this is a mere choice in the description which do not affect the physical evolution of the system and its observables. I suggest to read an introduction of some standard general relativity textbooks for a discussion of this story, for example "A first course in General Relativity" by B.Schutz or "Spacetime and Geometry: An Introduction to General Relativity" by S.Carroll.

2) The perihelion shift (in particular of Mercury) is one of the key experimental tests of general relativity. Even if there are deviations from the geodesic motion, these are small and the geodesic description is very reliable as a first approximation. See sections 40.5 and 40.9 of the standard textbook "Gravitation" of Misner, Thorne and Wheeler. Moreover, the Newtonian limit of such geodesic is also well-understood and it does not pose any conceptual challenge; see section 25 of the same textbook.

In light of these concerns, the conclusions of the paper are incorrect. I would recommend the author to study some of the standard GR literature on the subject before revisiting this problem.