

Review of: "On the existence of precession of planets' orbits in Newtonian gravity"

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The paper should be of great interest to anyone interested in gravitational effects on astronomical bodies. In recent years, there has been an increased interest in the precession of Mercury in relation to Newton's theory and modified Newtonian theory. It is of great importance to delve into the predictions of modified Newtonian theories and uncover their implications. This could potentially provide significant insights into the general theory of relativity and also demonstrate how far one can get with modified Newtonian theories.

The paper appears to be well-written and sound. However, there are possibly more points that can be discussed here. For instance, the recent paper by Vossos et al. comes to mind:

S. Vossos, E. Vossos, and C. G. Massouros. "New central scalar gravitational potential according to special relativity and Newtonian physics explains the precession of Mercury's perihelion, the gravitational redshift, and the rotation curves in galaxies, eliminating dark matter." *Journal of Physics: Conference Series*, 1391: 012095, 2019. URL <https://doi.org/10.1088/1742-6596/1391/1/012095>.

The author should consider the potential to extend the paper to explore additional modifications in Newtonian theory, or perhaps leave it for more papers on the same topic. For example in general relativity theory, Lorentz relativistic mass is disregarded and considered invalid. However, some researchers, such as Bagge and Phipps, have suggested its incorporation. Wang has recently proposed that mass in Newton's theory can also be interpreted as energy, as we naturally have $m=E/c^2$.

Overall, the paper is undoubtedly an important contribution to the ongoing discussion on the precession of Mercury. An intriguing question to consider is whether general relativity theory exclusively predicts a single answer to this question? I have, at times, made the mistake myself of stating that general relativity theory predicts this or that. However, Einstein's field equation has multiple solutions and various metrics. Therefore, it could be crucial to exercise caution and specify which solution, along with its underlying assumptions used in general relativity theory, that predicts specific outcomes. I am unsure if general relativity, with its multiple metrics, can also yield different predictions for Mercury's precession? For example, is the current prediction of Mercury's precession in general relativity linked to the Schwarzschild metric? If so what about other metrics from general relativity theory?

