

**Review Form 1.6**

Journal Name:	<a href="#">International Astronomy and Astrophysics Research Journal</a>
Manuscript Number:	Ms_IAARJ_84443
Title of the Manuscript:	A Relation Between Different Physical Parameters of a Planet and Its Consequences
Type of the Article	Original Research Article

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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**PART 1:** Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<b>Compulsory</b> REVISION comments	<p><b>CRc1)</b> As known, the Solar System is chaotic over million- and billion-year timescales, with the orbits of the planets open to long-term variations. One example of this chaos is Earth's axial tilt, which, due to friction raised within Earth's mantle by tidal interactions with the Moon is incomputable from some point between 1.5 and 4.5 billion years from now. This means that the position of a planet along its orbit ultimately becomes impossible to predict with any certainty, but in some cases the orbits themselves may change dramatically. In addition, such chaos manifests most strongly as changes in eccentricity, with some planets' orbits becoming significantly, more or less, elliptical. Eq. 1) is a deterministic equation. How does the author reconcile the validity of his "parent equation" with the Solar chaotic System?</p> <p><b>CRc2)</b> Quantum-like models of gravitational system have recently been proposed in the literature to explore the formation of the solar system structure. In these models, the chaos behaviour of a large number of original nebular particles in a gravitational field can be described in terms of the wave function satisfying formal Schrödinger equation, in which the Planck constant is replaced by a constant on cosmic scale. The author claims that his approach may be used to model the early planets during planetary formation. This sentence is quite unclear to me. The author is invited to enter more in deep in the discussion by explain how the RPP is suffice to avoiding the laws of quantum mechanics and general relativity.</p> <p><b>CRc3)</b> All the equations proposed in this model are purely classical, in the sense that they do not take into account neither of the quantum effects (at the base of models useful to describe planetary orbits) nor of the relativistic effects. In particular, relativistic effects generated by the Sun or by the central star are the most relevant ones and produce evident modifications in the secular dynamics of the inner solar system. The Kozai mechanism, for example, is modified due to the relativistic effects on the argument of the perihelion. In Section 2.1.5 "Limitations of RPP", the author is invited to mention and briefly discuss the limits of his (classical) model which neglects relativistic and quantum effects as well as the stochastic effects deriving from the chaotic dynamics of the solar system.</p>	<p>Thank you for your comments.</p> <p><b>Reply to CRc1)</b> In the manuscript, while verifying the parent equation via substitution we use the values of physical characteristics of planets that they currently possess. Hence, we know the parent equation is valid only for the current scenario where all planets are stable. That's why commenting on the initial stages of the chaotic solar system would be difficult. Also, when we theoretically obtain the parent equation, we have assumed all quantities to be a constant. Hence, we don't know if it stays valid in the changing environment. We have added a line about this in the subsection of 'Limitations of RPP'</p> <p><b>Reply to CRc2)</b> Currently we are not suggesting that the RPP equation can suffice for the quantum mechanical and relativistic effects. We were suggesting that RPP can come to play later in the planetary formation and not during the protoplanetary disk stage. We can apply RPP during the calmer and relatively stable solar system. We thought that, as the all the major parameters of a planet are included in the RPP, we can understand the change in other quantities as an affect of change in one. We didn't put this point very clearly in the manuscript. Now, the changes have been made and highlighted.</p> <p><b>Reply to CRc3)</b> Agreed, added a line in the subsection 'limitations of RPP' regarding the same.</p>
<b>Minor</b> REVISION comments	<p><b>MRc1)</b> The work is not well placed in the context of the works in the matter recently appeared in the literature.</p> <p><b>MRc2)</b> The references cited in the manuscript are not exhaustive and the list should be largely completed.</p> <p><b>MRc3)</b> It is suggested to produce a short review-section where the present work is placed and it is well framed.</p>	<p><b>Reply to MRc1)</b> RPP is a completely new concept hence, we wanted this paper to be completely on it so that reader understands it and then we planned to place it with the ongoing research.</p> <p><b>Reply to MRc2)</b> We tried to cover all the possible references we could find. If you have any more, please do suggest us.</p> <p><b>Reply to MRc3)</b> In this paper we want to focus just on RPP. We are planning to write another paper in the future to place it well in the current scientific world.</p>
<b>Optional/General</b> comments	<p>The work is interesting and clearly written. However, there are some points that need to be clarified (e.g., those mentioned in the above section "<i>Compulsory REVISION comments</i>"). Furthermore, the statement that this work has opened new horizons in planetary research needs clarification and should be motivated perhaps with the help of concrete considerations and/or examples.</p> <p>The author is advised to take into account the suggestions expressed in the two sections above. In my opinion, this will help to attract the reader's interest more.</p>	<p>All of the changes suggested by you are accounted for and changes have been made to manuscript.</p>

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**PART 2:**

	Reviewer’s comment	Author’s comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Are there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	