



SDI Review Form 1.6

Journal Name:	Physical Science International Journal
Manuscript Number:	Ms_PSIJ_24355
Title of the Manuscript:	A 2D formulation for the helium atom using a four-spinor Dirac-like equation and the discussion of an approximate ground state solution.
Type of the Article	Original Research Article

General guideline for Peer Review process:

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:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)



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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)
<u>Compulsory</u> REVISION comments		
<u>Minor</u> REVISION comments	<p>It is a good paper but it suffers with some short comings, some grammatical mistakes and some typographical errors. In view of these observations it should be revised by incorporating the following points:</p> <ul style="list-style-type: none"> i) The section of introduction contains well known facts up to line-34 and this matter must be removed and replaced by the specific motivations for the work reported in this paper. ii) Equations -3 of second section give the well known Dirac's representation of Dirac operators. The preference for this choice in this work over another more frequently used representation (Majorana representation) should be justified. 	<p>A linguistic revision has been carried out, anyway the authors apologize for remaining mistakes. With respect to the specific points pointed out by this Reviewer we should make the following comments:</p> <ul style="list-style-type: none"> i) The lines 16-34 of the Introduction were removed according to the Reviewer comments and some modifications in the remaining text were done. ii) We have added a foot note in the text after the Equations (3) to explain briefly why they were written in the Dirac basis instead any other one, like the Majorana basis. We reproduce it below in italics: <i>There are several possibilities of defining these matrices according to the rules of the Clifford Algebra; we have chosen the only one that makes all products $\gamma^\mu \gamma^\nu$ to be real and positive along with γ^μ be diagonal for $\mu = 0$ and anti-diagonal for $\mu > 0$. These conditions will be seen</i>



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	<p>iii) Non-commutation of orbital angular momentum operator of Dirac particle with its Hamiltonian is well known and it has been the basis for the automatic incorporation of spin of Dirac particle. This very well known fact has been discussed in lines 138-147. This material should be removed by referring the above mentioned fact.</p> <p>iv) Unconventional words like 'manageability' (line-36), 'operacionality' (line-37), 'invidualities' (line-85) must be avoided.</p> <p>v) Word 'conducted' (line-46) must be replaced by the word 'carried'</p>	<p><i>to be necessary for the Eq.(6b) and Eq.(8) below reduce to the one electron 2D Dirac equation [11] when $\sigma \rightarrow 0$, which is a fundamental contour condition of our approach.</i></p> <p>We hope the explanation above be enough without entering in more technicalities involving the metrical tensor because at the end the choice of a specific basis is nothing but an algebraic game.</p> <p>iii) The material contained in lines 138-47 was revised and from it remained the minimum necessary in order the reader can understand the connection between the Hamiltonians (4) and the total angular momentum (5) for the two-electron system, including their spin matrices.</p> <p>iv) They were all removed or substituted by other equivalent.</p> <p>v) It was removed or substituted.</p>
<u>Optional/General</u> comments	The paper should be reviewed again after its revision incorporating above mentioned points	