**SDI FINAL EVALUATION FORM 1.1**

**PART 1:**

| Journal Name: | **Physical Review & Research International** |
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| Manuscript Number: | **2013_PRRI_6994** |
| Title of the Manuscript: | **Two-Body Dirac Theory** |

**PART 2:**

| FINAL EVALUATOR'S comments on revised paper (if any) | Authors' response to final evaluator's comments |
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| The authors have considerably improved the formatting of the paper and it is much easier to read now. However, the authors have not addresses the majority of my comments from the first version, either implicitly or explicitly. Nor was there any highlighting in the manuscript of the changes made, as required by the journal.<br><br>10 of my comments have been answered implicitly in the text by the format improvements but no response was given, or highlighting used. I have removed these from the list. A further 4 comments were addressed explicitly by the authors and I have removed then from the list, although I am unsatisfied with one. I thus reproduce the remaining unaddressed comments from the first version of the paper. In addition, I have the following new comments based on the revised draft.<br><br>- page 3, paragraph 2: what does it mean "electron has zero photons"? How does an electron HAVE photons? Please rewrite.<br>- Suggestion. Often you use \omega by itself. So sometimes you are talking frequency and other times energy. I would suggest using \hbar \omega so that you are always talking about energy (apples with apples).<br>- Page 4, first paragraph: I would suggest a new paragraph at "What is the ground state?" or somewhere in this paragraph. You are introducing new ideas and hence you should create a new paragraph for each idea.<br>- Page 5, first paragraph: please remove italics unless it obvious why italics is used.<br>- Page 5, first paragraph: "do not lie empty". This makes it sound like all the states are empty, where I think you mean at least one state is empty.<br>- Page 5, first paragraph: "and absent electron…" should be new sentence.<br>- "N" and "E" should be in math font throughout the paper<br>- Page 17, paragraph 2: "In the present application A = 0". This implies your derivation is not general. So could you please comment in the text on the consequences to your result that it is not totally general?<br>- Page 18, eigenvalue equations. Could you please use a different notation for the operator and its eigenvalue? 3 occurrences.<br>- I believe some of the information in the conclusion should be in the abstract. The abstract now says what you will do but not the result your obtained.<br><br>Unaddressed comments:<br><br>4) Remove the comma at the end of Eq. (II-1).<br>6) Many references to equation numbers are wrong. For example, L414 (I-4) does not exist. L424 (I-4) does not exist.<br>7) L432-436: Why is the exchange of a photo incompatible with Lorentz invariance? This sentence is not clear.<br>8) What does L426-447 have to do with the above calculation? It seems out of place and should not go here. It is largely repeat of the concepts in the introduction.<br>16) L654-658 is an important statement to this paper and you should cite a reference rather than just stating it.<br>17) L664: What is equation (4), it does not exist.<br>18) "where" should be replace by "which is".<br>19) L682: "can be written down and solved". Please write it down since you us it.<br>20) L682-684: What is the difference between fully relativistic and Lorentz invariant? The Dirac equation is invariant under a Lorentz transformation | |

(Lorentz group). It can describe a relativistic particle (non-relativistic too).

22) L696: Define what \kappa and \mu are.

23) L698: G and F are functions of r, since you explicitly write this for most of the occurrences of G and F, please write it for all.

24) Put a comma after equation (III-2).

25) L692-705 is a run-on sentence; please brack it up into more than one sentence.

26) The equations in L701-705 are using the same symbol for the operation and its eigenvalue. Please use a different symbol, and define them in the text.

27) "w" in L713 and elsewhere should be in math font. In general all mathematical symbols in the text should be in the same font they appear as in the equations.

29) The figures should be referenced in the order in which they are referenced in the text. L732 mentions figure 4 but we have not encountered figures 2 or 3 yet.

30) L732: How do you know the agreement is 99.6%? Please explain this.

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1) The title is too general. The paper really presents a solution to the positronium problem using the Hartree-model. In this sense the abstract could also be shorten to just tell what is done in the paper.

2) After reading a lengthy introduction, I have no idea what this paper is going to do. The calculation in the paper has to be motivated by the introduction. In the introduction, clearly state what will be done in the paper and why it is important.

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1) A lot of concepts are repeated. For example, the idea in L74-76 is already stated. L365-369 is a repeat of the previous sentence. L377-379 is a repeat of the previous sentence.

2) I'm not sure the old hole-theory is still taken as seriously as the authors lead on.

3) Are figures 2,3,5,6 useful? What do I learn from them? If they are useful please state in the text why.

4) L806-810 seem rather obvious to me already.

5) Ref. [10], why is the DOI give for this reference but non of the others?

6) I would remove Ref. [15]. Anyone able to understand this paper already knows that the dot product of two 4-vectors is a scalar under a "special" Lorentz transformation.

**Note: Anonymous Reviewer**