



SDI FINAL EVALUATION FORM 1.1

PART 1:

Journal Name:	Physical Science International Journal
Manuscript Number:	Ms_PSIJ_28572
Title of the Manuscript:	A New Quantum Paradox
Type of Article:	Original research papers

PART 2:

FINAL EVALUATOR'S comments on revised paper (if any)	Authors' response to final evaluator's comments
Again, I must emphasize that the derivations of the equations presented in this manuscript are correct. However, what is not correct is the author's argumentation leading to his conclusion that the particular gauge transformation (9) acting on the state of the free electron somehow produces "... the solution of (12), where the electron is bound to the hydrogen atom and its wave function decreases exponentially with the distance r from the origin." The state of a free electron and its gauge transformed state differ, as the author correctly remarks, only by "a phase factor whose absolute value is unity." Therefore, if we consider the free electron in an energy – momentum eigenstate, or even in a state described by a wavepacket traveling in space and consisting of a superposition of such eigenstates, the gauge transformation (9) acting on such a free electron state can not produce a bound state, exponentially decreasing. Moreover, the equations presented in this manuscript, in my opinion, can be correctly interpreted only within quantum field theoretic context. However, the author did not introduce quantum field theoretic ideas (field quantisation, etc.) and did not try to give an explanation of the apparent paradox which he discusses based on such ideas.	The paper is revised as follows. The last section has been modified and now it contains a new text which explains the conclusions. The paragraph that contains (13) and (14) has also been changed. Few words are added to the abstract. The following lines refer to specific points included in the Referee's remarks. The discussion of (12) abides by mathematical laws which say that if two differential equations are identical and if they have the same boundary conditions then they also have the same solutions. The discussion in the paragraph that contains (13) and (14) proves that the same problem is found on the left hand side of (12). The additional text of the last section proves that the problem also exists within quantum field theory. In general, I think that the present form of the paper contains an adequate amount of new results which justify its publication.