Review of the Ms-PSIJ-38034

In this paper author has solved Schrödinger equation for a particular q-deformed potential model combination, obviously this kind of study is important if the study is expressed in a proper way. To me present paper is interesting but presentation of this paper is not up to the mark. The paper needs a major revision. It is up to the author if he/she wants to do it or not. To me without the following changes, I am strongly against this paper.

Comments and suggestions

- 1. Schrödinger should be Schrödinger. Author should find all such errors throughout the paper and rectify accordingly.
- 2. Line-6: Is it one dimensional treatment? Check it.
- 3. Line 9-11: Author should change the line and stick with the present paper. If this potential is solvable for Dirac or KG equation, then why this paper is important?!
- 4. Keywords: coulomb should be Coulomb.
- 5. In introduction section and as well as in other places the short names of the different potentials are not written uniformly. For example denoting MEISP 'potential' starts with capital P but for other cases it appears as small letter p. Check all these cases and rectify throughout the paper in a uniform way. Same is true or Wood-Saxon term.
- 6. No comma or full stop after the mathematical equation!!. Author should rectify accordingly. Next line after any equation should start according to comma or full stop. For example 'Where' should be 'where' after the equation that ends with comma and so on.
- 7. Line 56: Rewrite it to introduce the Eq.(1). Define properly. What is s? Is it any transformed variable?. What is 'n'? Mention about Ψ' or Ψ'' ...that is they are derivatives....mention order..etc...etc. Author should consult more authentic paper to introduce the equation and mention the same in the reference.
- 8. Eq(6) What is capital 'S'?.

- Line 82,83: It should be radial Schrödinger equation. Omit the term 'vector'. Mention all other symbols in Eq.(9). Mention the restriction on ℓ. 1-state should be replaced by ℓ state.
- 10. Line 84: Change it as energy eigenvalue.
- 11. Line 85: Author should mention the origin of this potential briefly. How this potential is related to the atomic or molecular physics? Is it any random potential? 'Attractive Radial Potential' should be 'attractive radial potential'.
- 12. Line 86: Is there any range of q. Is it only 1 OR > 0? q = -1 possible?
- 13. Line 93: Coulomb potential appears suddenly. Make it appear in a proper way. Why author is adding this potential with the previous one ?.....Should need a proper explanation. Is Coulomb potential is also q deformed?
- 14. Line 98: Pekeris approximation...... prove it in a simple way. Mention the condition for which it is valid.
- 15. Line 129: What is $\rho(s)$? Is it any weight function? Mention with proper information.
- 16. line 129-145: Author should write the whole writing systematically. It seems author wants to finish the paper quickly.
- 17. Find the normalization constant N_n . At least author should furnish some sort of method/integration, related formula for deriving the normalization constant. It will help the readers.
- 18. In discussion section author should write the eigenfunction along with the energy eigenvalues for each cases. Only energy eigenvalue is not enough and good for the paper.
- 19. Author should verify his results for Mie-type potential OR (Coulomb plus inverse square law potential) by taking $V_1 = V_2 = 0$ in V(s) with q = 1 obviously if selected Pekeris approximation is right in the calculation. This result should be close to the earlier work in this topic. Add reference accordingly.

- 20. Author should discuss the case for q = -1 if it is allowed in their calculation. Only q = 1 has no interest. Draw the potential graph for q = 1 and q = -1 and discuss these situations briefly.
- 21. Line 137: What are U and V? Are they different from u, v? If so, mention.
- 22. Eq.8: P_n should be written as $P_n(x)$.
- 23. Line 87: How author obtained the $V_{1,2,3}$ in terms of A. What is A? Is it related with Coulomb parameter in Eq.12?
- 24. Line 134: correct X caps letter.