Review of: "Consistent Interpretation of Quantum and Classical Mechanics"

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In this study the author made an attempt to re-formulate the interpretation of quantum mechanics. Certain problems of the existing interpretations were discussed, and new postulates were proposed to establish a new way of interpreting quantum mechanics. The interpretation of quantum mechanics is definitely important in the fundamental understanding of the universe, and the courage to challenge existing theories and formulate new ones should certainly be praised. However, many points and reasonings in the manuscript are either incorrect or not well-defined, making it hard to follow the arguments and support the new ideas. A few examples are given below:

1. The paper claims that the Heisenberg uncertainty principle only applies for “r” smaller than a “delta_r”, which is not true. The Heisenberg uncertainty principle is a fundamental property derived from the wave-particle duality. The wave-particle duality is the result of a mathematical concept called the “Pontryagin duality” that is the consequence of much more fundamental properties of the Abelian groups. Unless the underlying mathematical structure of quantum mechanics is changed when some arbitrary observable r is smaller than an arbitrary “delta_r”, the Pontryagin duality always exists and so does wave-particle duality, so the Heisenberg uncertainty principle will apply too.
2. The paper claims that there are “quantum observables” and “classical observables”, which is incorrect. The physical world is one, and there is no distinction between “quantum observables” and “classical observables”. The reason we study quantum physics and classical physics separately is because in certain physical range (macroscopic range) quantum effects are very small and thus not very important for engineering applications, but that does not mean quantum effects have disappeared.
3. Under Eq.(1), the paper says we cannot measure the position confined to a point, and can only measure the whole radial distribution function curve in one go. This is incorrect. The reason why we calculate the radial distribution function for some simple atoms is because they have spherical symmetry such that the results are simple in the radial distribution function. We can definitely calculate the probability of the electron getting measured in a small neighborhood of (x,y,z), just the result will probably not be a clean one. Note we cannot pinpoint the single point of (x,y,z), but we can have a probability density at that point, and this has nothing to do with the uncertainty principle, rather this is related to how to evaluate probability in a continuous space.

There are many more examples like the above three. Again the courage of the author to think about such a deep topic and challenge existing interpretations should be praised. However, scientifically the paper is not well-written with flawed definitions and reasonings, and thus the results and arguments cannot be supported.