Review of: "On Einstein-Bohr Debate and Bell's Theorem"

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Potential competing interests: No potential competing interests to declare.

Dear Editor of Qeios,

I have reviewed the article entitled "On Einstein-Bohr Debate and Bell's Theorem".

First, this is my summary of the article: The article presents a critical examination of quantum randomness, Bell's Theorem, and the implications of quantum information technologies. The author argues that the current interpretation of quantum randomness is flawed due to the omission of precise space and time coordinates. Additionally, the author questions the validity of Bell's Theorem and suggests that the logical relation between orthogonal vectors in Hilbert space should be disjunction rather than conjunction.

After a thorough examination of the manuscript, I cannot accept the paper as it is for two primary reasons:

1. **Improper Description of Standard Quantum Theory:** The author repeatedly asserts that "quantum randomness is an intrinsic property of the physical world." However, this assertion is misleading. Randomness pertains to the outcomes of experiments, not to the underlying physical world described by the state vector $|\psi(t)>$. The Schrödinger equation governs the evolution of the state vector deterministically. If the author intends to propose a theory where the physical world itself is random, new axioms for such a theory would be necessary.
2. **Relevance of Space and Time Coordinates in Bell-Type Experiments:** In Section 3, "Origin of Quantum Randomness," the author argues that the inability to obtain precise space and time coordinates is key to understanding quantum randomness. However, the relevance of precise space and time coordinates in Bell-type experiments, particularly concerning the measurement of the polarization of entangled photons, is questionable. This inconsistency raises concerns about the coherence of the author's arguments.

My Recommendations: While the article raises thought-provoking questions about the interpretation of quantum mechanics and the implications of Bell's Theorem, it requires significant revisions to address the issues highlighted above. The author should provide a more accurate depiction of standard quantum theory and clarify the relevance of space and time coordinates in the context of Bell-type experiments. Additionally, the manuscript would benefit from a more rigorous analysis of alternative interpretations and their implications for quantum information technologies.

Result: The article presents intriguing ideas but lacks clarity and precision in its treatment of standard quantum theory and the relevance of space-time coordinates in Bell-type experiments. With substantial revisions addressing these concerns, the manuscript has the potential to make a valuable contribution to the ongoing discourse on the foundations of

quantum mechanics.