

Review of: "On Purported Physical Realizations of So-called Quantum Information Technologies"

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Guang-Liang Li's manuscript entitled "On Purported Physical Realizations of So-called Quantum Information Technologies" provides a critical and very interesting viewpoint on the quantum mechanics foundations of quantum information technologies. The author, basing his argument on classical intuition, contends that the status of quantum mechanics remains incomplete and that qubits are physically unrealizable. This is a strong statement, and the author could be right; however, in my opinion, the author needs to address more crucial issues and arguments in favor of the proposed task.

Other points that, in my opinion, should be addressed:

- Despite the author's claim regarding the Hilbert space and the quantum superposition, he does not provide a rigorous mathematical justification for the misapplied quantum superposition argument.
- Lack of references to the latest developments in quantum mechanics. The balance in the critique of information needs to be implemented in the manuscript by introducing current research in quantum mechanics experimentally and theoretically.

Apart from delving further into the above points that, in my opinion, should be addressed, I would like to stress that the paper presents a clear historical overview validating the debate between Einstein and the scientists belonging to the quantum mechanics community at that time.

In conclusion, the author's claim on unrealizable quantum information technologies is a very interesting point which could be, in principle, true, but it is not enough supported by detailed experimental data or theoretical analysis. Therefore, the author needs to be more careful about dismissing it outright.