Qeios

Peer Review

Review of: "Restoring Heisenberg-Limited Precision in Non-Markovian Open Quantum Systems via Dynamical Decoupling"

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Qeios review

Restoring Heisenberg-Limited Precision in Non-Markovian Open Quantum Systems via Dynamical Decoupling

Review the English of the manuscript.

For easy comprehension, introduce the algebra leading to equations on pages 3 and 4.

Considering the first three lines on page 4 from the top of the page, it is unclear how the system achieves the HS with respect to time, with the QFI scaling as t^2 .

From equation 10, page 5, the Hamiltonian is time-dependent. Lines 4 and 5 below equation 10 are ambiguous. If the Hamiltonian in equation 10 were time-independent, then the operations on lines 4 and 5 could make it obviously time-dependent when moving from the Schrödinger to the Heisenberg picture.

Equations 15 and 16 show decoupling the system from the environment as suggested. Initially, noise fields are absent apart from the global indication of the environment. It is important to show the noise fields and the parameter characterizing them.

For better comprehension, show the algebra leading to equations 21 and 22.

I recommend the manuscript for publication when the above-mentioned concerns are addressed.

Declarations

Potential competing interests: No potential competing interests to declare.