

Review of: "Filtering Out Electromagnetic Noise Caused by the Interaction of the Classical Field with the Fiber Phonons from the Quantum Field in an Optical Fiber"

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Potential competing interests: No potential competing interests to declare.

1. Greater conciseness is needed in the abstract to highlight the main contributions and findings of the paper.
2. The introduction should clarify the objectives and significance of the study more explicitly to guide readers into the complexities of quantum-optical interactions in optical fibers.
3. Streamlining the abstract to provide a concise overview and ensuring the introduction clearly sets up the context, problem statement, and objectives is necessary.
4. The paper delves into complex theoretical frameworks such as quantum stochastic calculus and optimal control algorithms.
5. Ensuring comprehensive and clear explanations of these methods, especially for readers unfamiliar with advanced quantum mechanics and information theory, is crucial. Additional explanatory notes or figures should be provided where necessary to aid understanding of the theoretical underpinnings and methodologies employed.
6. A more detailed comparison with existing studies would strengthen the manuscript's contextualization, despite references to previous work.
7. Thorough referencing and discussion on how the proposed methods build upon or differ from previous approaches in addressing classical-photon-phonon interaction noise is essential. Including a dedicated section for comparative analysis with relevant literature, highlighting advancements and gaps addressed by the current study, is recommended.
8. Promising results are presented, but they appear limited in scope and depth. The need for more extensive simulations or experimental validations to substantiate the effectiveness and robustness of the proposed methods is evident.
9. Proofreading the manuscript thoroughly for clarity, coherence, and technical accuracy to enhance readability and understanding should be prioritized.
10. The manuscript demonstrates a commendable depth of theoretical analysis, particularly in applying quantum stochastic calculus and optimal control algorithms to address classical-photon-phonon interaction noise.

11. While the abstract provides a detailed overview, it could benefit from a more concise structure to effectively highlight the main contributions and findings of the study. Similarly, the introduction should clarify the objectives and significance more explicitly to guide readers into the complexities of quantum-optical interactions in optical fibers.

12. The manuscript references previous literature but lacks a detailed comparative analysis with existing studies. Strengthening the contextualization by discussing how the proposed methods build upon or differ from prior approaches would enhance the manuscript's theoretical foundation and relevance.

13. The simulation results are promising; however, the manuscript lacks validation against experimental data. Integrating experimental validation or comparing simulation outcomes with existing experimental data would significantly bolster the manuscript's credibility and applicability.

14. The paper briefly touches on future research directions but would benefit from a more robust discussion. Clear articulation of specific avenues for future research, such as exploring alternative control algorithms or extending analysis to different particle types beyond photons, would enhance the manuscript's completeness and potential impact.

I look forward to seeing the revisions that will address these points and further elevate the quality and impact of this study.

****Recommendation:**** Major revisions required for resubmission.
