

# Review of: "Some Aspects of Quantum Fields in Curved Classical and Quantum Background Space-Time Using the Quantum Effective Action Formalism"

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Potential competing interests: No potential competing interests to declare.

I have gone through the details of this manuscript and found it interesting.

In this manuscript, the author talks about the equal-time commutator/anti-commutator for various fields in the presence of a curved space-time background. The behaviour of the system under perturbation is also studied. Interacting fields have also been studied in homogeneous and isotropic space. The quantum effective action and its symmetry breaking are also discussed.

I have the following comments and suggestions for the author:

1. The list of references should be written and cited properly.
2. The conclusion should be before the appendix only.
3. Typos should be corrected (related to punctuation).
4. As the author talks about Hawking particles in the manuscript, he should also discuss the physical behaviour of these particles.
5. The author's claim about studies on quantum gravity should be re-evaluated and improved.
6. The problem related to the indefinite nature of the time evolution operator in the Wheeler-Dewitt equation, which arises due to the absence of Lorentzian symmetry and space-time association, as the author is using a four-dimensional conformally flat FRW background.

This manuscript can be accepted in the improved format based on the above recommendations.