Review of: "Modified Hawking radiation of Schwarzschild-like black hole in bumblebee gravity model"

Behnam Pourhasn Pourhassan[1]

1 Mazandaran University of Iran

Potential competing interests: No potential competing interests to declare.

This article investigates the Hawking radiation of the Schwarzschild black hole using the bumblebee gravity model (SBHBGM). The Hawking radiation of SBHBGM is computed using classical approaches such as Killing vectors and the standard Hamilton-Jacobi method. To gain a better understanding of the gravitational behavior around massive objects like black holes, alternative coordinate systems such as Painlevé-Gullstrand, ingoing Eddington-Finkelstein, and Kruskal-Szekeres are introduced. By incorporating the Generalized Uncertainty Principle (GUP) into the Hamilton-Jacobi equation, a modified equation is derived to describe the behavior of particles near the event horizon. The modified action is then used to calculate the tunneling probability and consider the GUP-induced modifications to the emitted particle's behavior, resulting in the derivation of the modified temperature of the SBHBGM. Additionally, the quantum-corrected entropy of the SBHBGM is studied, and the findings are discussed along with potential future projects.

I recommend acceptance of this paper after the following revisions:

1- There are some missed references about the Hawking radiation like [Sumeet Chougule; Sudhaker Upadhyay; Himanshu Kumar Sudhanshu; Sunil Kumar. "Hawking radiation as tunnelling from dilatonic BTZ black hole". *Journal of Holography Applications in Physics*, 3, 3, 2023, 45-52. doi: 10.22128/jhap.2023.727.1057]

2- End of Ref. 34 needs a)

3- Important: The main result (70) should be compared with the logarithmic corrected entropy of black holes which already obtained usind different methods. Some comments about those together relevant references is useful.