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Modifying Hawking Radiation in 2D-Approximated Schwarzschild Black Holes near the Event Horizon

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Abstract : Starting from a 4D spacetime model using a partially negative dimensional product manifold (PNDP-manifold), which emerges as a 2D spacetime, we developed an analysis of tidal forces and Hawking radiation near the event horizon of a Schwarzchild black hole. The modified 2D metric, incorporating the effects of the four-dimensional Weyl tensor, with the dilatonic field and the newly derived time relation $2\alpha t = \ln \epsilon$, can enable a deeper understanding of quantum gravity. The analysis shows how the modified Hawking temperature and distribution of emitted particles are affected by additional fields, providing potential observables for future experiments.

Keywords : black holes, Hawking radiation, Weyl tensor, information paradox
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