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Revisiting Hawking Radiation via Generalized Uncertainty Principle

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The generalized uncertainty relation is expected to be an essential element in a theory of quantum gravity. We examine its effect on the Hawking radiation of a Schwarzschild black hole formed from collapse by incorporating a minimal uncertainty length scale into the radial coordinate of the background. This is implemented in both the ingoing Vaidya coordinates and a family of freely falling coordinates. We find that, regardless of the choice of the coordinate system, Hawking radiation is turned off at around the scrambling time. Interestingly, this phenomenon occurs while the Hawking temperature remains largely unmodified.

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