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Corrections to Hawking Radiation from Asteroid Mass Primordial Black Holes: I. Formalism of Dissipative Interactions in Quantum Electrodynamics

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Primordial black holes (PBHs) within the mass range 10^{17} - 10^{22} g are a favorable candidate for describing part of or all the dark matter in the Universe. Towards the lower end of this mass range the Hawking temperature is approximately 100 keV or higher, allowing for the creation of electron - positron pairs; thus making Hawking radiation a useful constraint for most current and future MeV surveys. This motivates the need for realistic and rigorous accounts of the distribution and dynamics of emitted particles from Hawking radiation in order to properly model detected signals from high energy observations. In this talk, we discuss the first in a series of papers to account for the $O(\alpha)$ correction to the Hawking radiation spectrum on a Schwarzchild spacetime.

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