

New Horizons in Primordial Black Hole physics (NEHOP)



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Black Hole Explosions Beyond the Standard Model

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The observation of an evaporating black hole would provide definitive information on the elementary particles present in nature. In particular, it could discover or exclude particles beyond those present in the standard model of particle physics. We consider a wide range of motivated scenarios beyond the standard model and identify those which would be best probed in the event of an observation. We characterise the photon spectra as a function of time for representative models and show that observation of an evaporating black hole at a distance of 0.01 parsecs could probe dark sector models containing one or more copies of the Standard Model particles, with any mass scale up to 300 TeV.

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