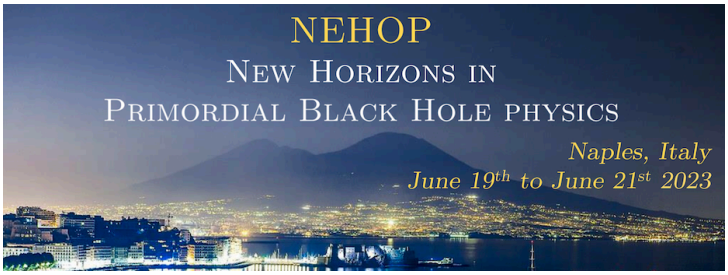


Contribution ID: **37** Type: **Highlight talk**

# Primordial Black Holes as laboratories for Physics beyond the standard scenarios

*Tuesday, 20 June 2023 17:50 (10 minutes)*

We use the evaporation of Primordial Black Holes as a laboratory to investigate Physics beyond the Standard Model of particles and to probe the structure of black holes.
We show that PBHs develop non-negligible spins through Hawking's emission of many axion-like particles yielding a unique probe of the total number of light scalars in the fundamental theory, independent of how weakly they interact with known matter. We propose a distant-independent method to determine the mass and spin of PBHs based on measuring specific features in the photon Hawking emission spectrum. We study a regular rotating black hole, described by the Kerr-black-bounce metric, and evaporating under the Hawking emission of a single scalar field and compare it with a Kerr black hole evaporating under the same conditions. We show that the regularizing parameter affects the evolution of the PBH and comment on the possibility of investigating the beyond-the-horizon structure of a black hole by exploiting its Hawking emission.

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