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A strike of luck: the KM3Net neutrino produced by evaporating burdened PBHs

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Primordial black holes (PBHs) may constitute part of all the Dark Matter, and as they evaporate they should emit an all particle spectrum, including neutrinos. The recently suggested theoretical framework of "memory burden" would allow the survival until today of PBHs with masses low enough to evaporate into particles of energy at the PeV and above.
In this talk we explore the scenario in which the ultra-high-energy neutrino event recently detected by KM3NeT could have originated from an evaporating PBH. Using the IceCube data, we place constraints on the combined parameter space of PBH masses and memory burden effects, by systematically scanning the parameter space of burdened PBHs.
We predict the occurrence rate of events similar to the KM3Net ones under current constraints on PBH dark matter fraction.
Future neutrino telescopes such as IceCube-Gen2 and GRAND will provide crucial tests of these scenarios, with the potential to probe
highly suppressed evaporation regimes and light PBH masses.

Primary author(s) : BOCCIA, Andrea (Scuola Superiore Meridionale)

Presenter(s) : BOCCIA, Andrea (Scuola Superiore Meridionale)

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