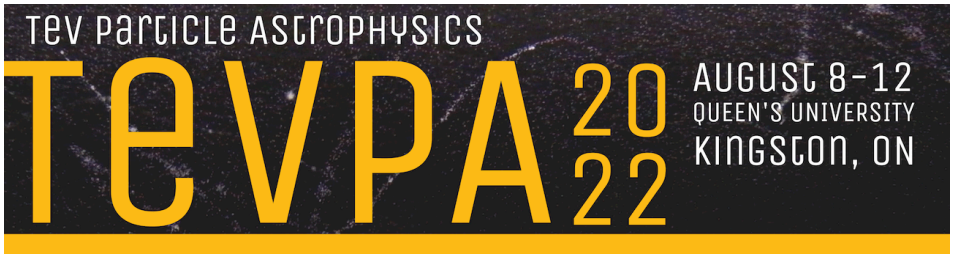

Contribution ID: **14** Type: **Parallel Talk**

Direct detection of light new species from evaporating primordial black holes

Tuesday 9 August 2022 16:10 (20 minutes)

The direct detection of sub-GeV dark matter interacting with nucleons is hampered by the low recoil energies induced by scatterings in the detectors. This experimental difficulty is avoided in the scenario of boosted dark matter where a component of dark matter particles is endowed with large kinetic energies. In this talk, I will show that the current evaporation of primordial black holes with masses from 10^{14} to 10^{16} g is a source of boosted light dark matter with energies of tens to hundreds of MeV. Focusing on the XENON1T experiment, these relativistic dark matter particles could give rise to a signal orders of magnitude larger than the present upper bounds. Therefore, this allows to significantly constrain the combined parameter space of primordial black holes and sub-GeV dark matter. In the presence of primordial black holes with a mass of 10^{15} g and an abundance compatible with present bounds, the limits on DM-nucleon cross-section are improved by four orders of magnitude. I will also discuss the case of DM-electron interactions.

Collaboration name

Primary author: Dr CHIANESE, Marco (University of Naples Federico II & INFN)

Presenter: Dr CHIANESE, Marco (University of Naples Federico II & INFN)

Session Classification: Dark Matter

Track Classification: Dark Matter