

Primordial Black Holes and warm dark matter constraints

Wednesday 19 May 2021 14:15 (15 minutes)

Primordial Black Holes (PBHs) formed in the early universe could have an impact on all cosmological era from Big Bang Nucleosynthesis to the Cosmic Microwave Background and even galaxy formation, thus they are subject to a very stringent set of constraints over an extended mass range from 10^9 to 10^{50} g. However, PBHs lighter than 10^9 g are at present practically unconstrained, evaporating before BBN. An interesting possibility is that those light PBHs produce, on top of Standard Model radiation, some light dark matter (DM) particle – warm DM. We will demonstrate how the modification of the public code BlackHawk to compute Hawking evaporation of light PBHs into warm DM, as well as the use of CLASS to implement structure formation constraints, allow us to place constraints on warm DM (of all spins) originating in PBH evaporation.

Primary author: JÉRÉMY, Auffinger (Institut de Physique des 2 Infinis - Lyon - FRANCE)

Co-authors: Mrs MASINA, Isabella (Ferrara U. and INFN, Ferrara); Mr ORLANDO, Giorgio (U. Groningen, VSI)

Presenter: JÉRÉMY, Auffinger (Institut de Physique des 2 Infinis - Lyon - FRANCE)

Session Classification: Primordial Black Holes