

Seminário, Terça 19/09/2023 15:00h

Local: Auditório: Méson Pi - DRCC

Sujay Shil, USP

**Title:** Dark matter production the presence of primordial black holes

**Abstract:** The Littlest Seesaw model is a very well-motivated dark matter model. Here we consider an extension of that model with an additional scalar and an additional fermionic particle under the freeze-in scenario. Formation of black hole of a certain mass range at primordial times can act as an alternate production mechanism for the dark matter particles as it evaporates via Hawking radiation. Furthermore, the presence of primordial black holes with substantial energy density gives rise to non-standard cosmology which also modifies the freeze-in production. In this paper, we have investigated the extended Littlest Seesaw model under the freeze-in scenario in the presence of a primordial black hole for various interesting cases and constrained the parameter space accordingly. If the universe is primordial black hole dominated at any point in the evolution of the universe, we find that the final relic in that case is dominated mostly by the evaporation component for a high dark matter mass and by the freeze-in component for a low dark matter mass.