

Cosmological particle production and PBHs

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Among many mechanisms that produce particles via gravitational interactions, the production of particles from the expansion of the universe represents a simple and irreducible source of particles from the early universe, that can account for the present abundance of dark matter. Another feasible and interesting mechanism is to have a population of primordial black holes that, through evaporation, produce the correct amount of dark matter. Since these black holes can alter the cosmological history, inject entropy and emit particles on their own, they can non-trivially impact the gravitational production of particles from the expansion and change the predicted fraction of dark matter. In this talk, I will discuss the interplay between these two mechanisms, while highlighting how the final abundance of dark matter changes in the presence of the primordial black holes. We discuss possible constraints and also investigate the possibility of the dark matter produced from the expansion to generate primordial black holes by gravitational collapse, thus providing a novel production mechanism for the latter.

Title of the Poster/Talk

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