

Reheating and Post-inflationary Production of Dark Matter

Thursday, 10 September 2020 12:00 (6 minutes)

In this talk I will present a systematic analysis of dark matter production during post-inflationary reheating. The damped oscillations of the inflation as it decays, the thermalization rate of its decay products, and the evolution of the temperature of the subsequently thermalized radiation determine the production rate of dark matter, and they are in turn dependent on the shape of the inflation potential. I will show that dark matter production is sensitive to the inflation potential, and depends heavily on the thermalization rate when the potential is not quadratic near the minimum. I will also discuss how to exploit dark matter as a probe of the dynamics during reheating, through smoking-gun signals such as monochromatic neutrinos or gamma ray lines for super-GeV dark matter masses, or through Lyman-alpha data for sub-GeV dark matter.

Primary author: Dr GARCIA GARCIA, Marcos A. (Instituto de Fisica Teorica UAM)

Presenter: Dr GARCIA GARCIA, Marcos A. (Instituto de Fisica Teorica UAM)

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