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Non-thermal dark matter at reheating: production & evolution

The momentum distribution of the non-thermal dark matter produced during reheating is assumed to be the same as that at production, red-shifted at later times due to the expansion of the Universe. In this talk we show that, in such a scenario, DM self scatterings as well as scatterings with the SM bath via inflaton mediated processes are inevitable, which can have substantial impact on the momentum distribution of the dark matter, thereby changing its free-streaming length by considerable amount.

Primary author: Dr GHOSH, Avirup (Indian Association for the Cultivation of Sciences (IACS))

Presenter: Dr GHOSH, Avirup (Indian Association for the Cultivation of Sciences (IACS))

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