2021 Meeting of the Division of Particles and Fields of the American Physical Society (DPF21)

Contribution ID: 153

Type: talk

Polynomial Inflation and Dark Matter

Tuesday 13 July 2021 16:15 (15 minutes)

We present a minimal UV complete framework to embed inflation and dark matter by extending the standard model with a singlet real scalar field (the inflaton) and a singlet fermonic field acting as dark matter. The inflaton features the most general renormalizable polynomial up to quartic order, which is flat due to the existence of a perturbed inflection-point, comfortably fitting CMB measurements. We also analyze (p)reheating by considering the Higgs production via inflaton decay. In the early universe, dark matter can be generated by the mediation of gravitons or inflatons. However, the production via the direct decay of the inflatons dominates, making viable a large range of dark matter masses, from $\mathcal{O}(10^{-5})$ GeV to $\mathcal{O}(10^{11})$ GeV.

Are you are a member of the APS Division of Particles and Fields?

No

Authors: BERNAL, Nicolás (Universidad Antonio Nariño); XU, Yong (Bethe Center for Theoretical Physics, Universität Bonn)

Presenter: XU, Yong (Bethe Center for Theoretical Physics, Universität Bonn)

Session Classification: Astoparticles and CMB

Track Classification: Astroparticles & CMB