

Inflationary flavour oscillations and the cosmic spectroscopy

Inflationary scenarios motivated by high-energy physics generically contain a plethora of degrees of freedom beyond the primordial curvature perturbation. The latter interacts in a simple way with what we name inflationary flavor eigenstates, which differ in general from freely propagating inflationary mass eigenstates. We show that the mixing between these misaligned states results in a new striking behavior in the three-point function of the primordial curvature perturbation. Indeed, depending on the mass spectrum but also on the mixing angles of the theory, its squeezed limit displays either modulated oscillations, a broken power law, or a transition from oscillations to a power law, thus offering a detailed cosmic spectroscopy of the particle content of inflation.

Based on: <https://arxiv.org/pdf/2112.05710.pdf>

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