

Inflation with an oscillating field

We propose that if there is a massive scalar field oscillating at its vacuum during the slow-roll inflation, its settlement will distort the primordial power spectrum from the simple power law. At the scales which exit the Hubble radius during the oscillation, the power of curvature perturbations oscillates on top of the nearly scale-invariant spectrum. Assuming that the last stage of inflation goes like the chaotic inflation at the energy of 10^{16} GeV, we find that a scalar field oscillating at about 60 e -folds before the end of inflation will impose some wiggles to the lower modes of the cosmic microwave background temperature spectrum, therefore relieving the persisting tension between the low- ℓ and high- ℓ spectra. The comparison to the Planck observation and the likelihood are given.

Primary authors: Prof. CHEN, Pisin (Graduate Institute of Astrophysics, National Taiwan University); Mr LIN, Yu-Hsiang (Department of Physics, National Taiwan University)

Presenter: Mr LIN, Yu-Hsiang (Department of Physics, National Taiwan University)

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