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Mixed Inflaton and Spectator Field Models: CMB constraints and μ distortion

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We consider a model where primordial density fluctuations are generated both from the inflaton and the spectator field such as the curvaton. In general, the power spectra generated from different scalar fields exhibit a different scale dependence, thus it is possible that fluctuations sourced by one field dominates on large scales, while those from the other field can give a significant contribution on small scales.

Current observations of CMB can measure the fluctuations on large scales very precisely, however, those on much smaller scales can also be probed in the future, one of which is the CMB μ distortion. We first discuss the current constraint on the mixed source model from observations of CMB and LSS. Then, given the constraint, we study the CMB μ distortion in the model and discuss the prospects of how we can probe such a mixed model by using future observations of the μ distortion.

Summary

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