

Dissipative effects during inflation

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Introducing an energy transfer between the inflaton field and a thermal bath modifies the primordial power spectrum $\mathcal{P}_{\mathcal{R}}$ due to the thermal fluctuations acting as a stochastic source for the curvature perturbations. We propose a fast and accurate method to compute $\mathcal{P}_{\mathcal{R}}$ in this context based on the Fokker-Planck equation, and verify its consistency with a Montecarlo stochastic approach and a fully analytical approximation. We apply these techniques to two different scenarios: 1. Warm inflation, for which we compute the inflationary CMB observables of several models. We find that some models currently ruled out become compatible with experimental constraints when taking dissipation into account. 2. Inflation with a transient dissipative phase, for which we compute the enhancement in the abundance of asteroid-mass primordial black holes (which are dark matter candidates) and the corresponding peak in the primordial gravitational wave background.

Would you be interested in presenting a poster? (this will not impact the decision on your talk)

yes

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