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Analytical Approximations for Curved Primordial Power Spectra

Tuesday 15 December 2020 16:00 (30 minutes)

Whilst interpretations of the level of experimental support for a curved present-day universe differ, universe models with percent-level spatial curvature remain compatible with CMB datasets. The inflationary framework successfully predicts the minimal present-day curvature. However, if one is to study inflation in a complete manner, one cannot assume a flat universe at the start of the expansion. There are also other theoretical reasons to consider the effect of curvature; particularly for the studies of inflation exits and quantum gravity.

This motivates us to study the effects of primordial curvature. In this work, we generalize the potential-independent inflationary model, popularized by Contaldi et al., to the curved case. We demonstrate that the Contaldi approximation still holds for the case of curved universes, and allows us to clearly illustrate the generic cut-off and oscillatory effects seen in numerically computed curved primordial power spectra. Through our analytical solutions, we are able to gain a better insight into the physics of curved inflating universes. We also discuss the possibility of developing our framework to include potential dependence.

<https://arxiv.org/abs/2009.05573>

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Will you be pre-recording your talk?

No

Length of talk

15-25 minutes

Are you happy for your talk to be recorded?

Yes

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