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Constraints on modified form of quadratic chaotic inflation through reheating

The era of Reheating is an interesting phase of inflationary Universe and it can be parameterized by various parameters like reheating temperature $T_{\rm re}$, reheating duration $N_{\rm re}$ and average equation of state parameter $\overline{\omega}_{\rm re}$, which can be constrained by observationally viable values of scalar power spectral amplitude $A_{\rm s}$ and spectral index $n_{\rm s}$. In our work, we have done the reheating study of a slightly modified form of quadratic chaotic potential in order to put some limits on parameter space of model. By investigating the reheating epoch using Planck's 2018 data, we show that even a slight modification in the quadratic chaotic model can make it consistent with latest cosmological observations. We also find that the study of reheating era helps to put much tighter constraints on model and effectively improves accuracy of model.

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