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Unique observational constraints on generalized Starobinsky inflationary model

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The inflationary paradigm of the early universe has been extraordinarily consistent with the observations of the cosmic microwave background radiation,however, we still haven't found a specific model of inflation that fits well within a high-energy theory. Analysis of recently Planck data shows that many previously popular field theoretical models like quadratic and quartic models of inflation ruled out by constraints of CMB observations. Among these models, the R^2 inflation model given by Starobinsky is strongly favored by observational data. The first self-consistent model of inflation was proposed by Starobinsky in 1980, where inflation is achieved by 1/M^2 R^2 interaction, R being the Ricci scalar, in the Einstein-Hilbert action without additional scalar field. In this talk, I will focus on the Starobinsky model and its generalization. I will discuss the generalization of Starobinsky inflation by considering a power law correction to the Einstein-Hilbert action. Further, we identify any deviations from power law inflation that are consistent with the latest Cosmic Microwave Background (CMB) and Large Scale Structure (LSS) observations.

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