

+ Observational constraints + on assisted k-inflation

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Three inflationary observables

★ **Spectral Index :** $n_s = 0.963 \pm 0.012$ (68% CL)

Scale dependence of primordial scalar perturbation $P_S \propto k^{n_s-1}$

★ **Scalar-Tensor Ratio :** $r < 0.20$ (95% CL)

The ratio of scalar and tensor power spectrum $r \equiv P_T/P_S$

★ **Non-Gaussianity :** $f_{nl} < 26 \pm 140$ (68% CL)

Non-linearity of primordial density perturbation

observational constraints (WMAP 7 year)



Standard slow-roll inflation

Action

$$S = \int d^4x \sqrt{-g} \left(\frac{R}{16\pi G} + \underbrace{X - V(\phi)} \right) \quad \gg \gg \quad f_{nl} \ll 1$$

$$X = -1/2 g^{\mu\nu} \partial_\mu \phi \partial_\nu \phi$$

K-inflation

Action

$$S = \int d^4x \sqrt{-g} \left(\frac{R}{16\pi G} + \underbrace{p(X, \phi)} \right) \quad \gg \gg \quad f_{nl} \gg 1$$

There is a possibility that

general form of Lagrangian density

Assisted k-inflation

Action

$$S = \int d^4x \sqrt{-g} \left(\frac{R}{16\pi G} + \underbrace{X g(Y)} \right) \quad \gg \gg \gg$$

$$Y = X e^{\lambda \phi}$$

assisted Lagrangian density

We evaluate
three observables :
 n_s , r , and f_{nl} .