

Primordial Non-Gaussianity using combined CMB Temperature and E-Polarization data

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1. Motivation

- Characterization of primordial non-Gaussianity constrains models of the early universe
- Currently all the constrains come from T data alone
- The upcoming CMB experiments will characterize polarization anisotropy to high accuracy
- Combined CMB T+E polarization informations information improves the sensitivity to primordial fluctuations

2. Bispectrum estimator of primordial non-Gaussianity, f_{NL}

(Yadav et al. 2007a, 2007b)

- Estimator is tested in the presence of the realistic effects such as
 - inhomogeneous noise
 - finite resolution
 - partial sky coverage

3. Non-Gaussian CMB temperature and polarization map making

(Liguori et al. 2007)

- Developed an algorithm for generating non-Gaussian CMB temperature and polarization maps
- Estimator is tested against non-Gaussian maps
 - unbiasedness of the estimator

4. 2.89σ Detection of f_{NL} in WMAP 3-year temperature data

(Yadav et al., submitted PRL)

- Simple case: estimator can also be applied to CMB temperature data
- We have applied the estimator to WMAP 3-year data