



Curvature perturbation spectra from waterfall transition, black hole constraints and non-Gaussianity

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We carried out numerical calculations of a contribution of the waterfall field to the primordial curvature perturbation (on uniform density hypersurfaces) ζ , which is produced during waterfall transition in hybrid inflation scenario. The calculation is performed for a broad interval of values of the model parameters. We show that there is a strong growth of amplitudes of the curvature perturbation spectrum in the limit when the bare mass-squared of the waterfall field becomes comparable with the square of Hubble parameter. We show that in this limit the primordial black hole constraints on the curvature perturbations must be taken into account. It is shown that, in the same limit, peak values of the curvature perturbation spectra are far beyond horizon, and the spectra are strongly non-Gaussian.

Comments: v2: 16 pages, 6 figures. Several references and 1 figure added

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