

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
DEPARTMENT OF ASTRONOMY & ASTROPHYSICS

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Title : Punctuated inflation and the low CMB multipoles

Day, Date & Time : Friday, 27 March , 2009 11.30 hrs

Venue : TAP Seminar Room (A269)

Abstract

We investigate inflationary scenarios driven by a class of potentials which are similar in form to those that arise in certain minimal supersymmetric extensions of the standard model. We find that these potentials allow a brief period of departure from inflation sandwiched between two stages of slow roll inflation. We show that such a background behavior leads to a step like feature in the scalar power spectrum. We set the scales such that the drop in the power spectrum occurs at a length scale that corresponds to the Hubble radius today---a feature that seems necessary to explain the lower power observed in the quadrupole moment of the Cosmic Microwave Background (CMB) anisotropies. We perform a Markov Chain Monte Carlo analysis to determine the values of the model parameters that provide the best fit to the recent WMAP 5-year data for the CMB angular power spectrum. We find that an inflationary spectrum with a suppression of power at large scales that we obtain leads to a much better fit (with just one extra parameter, χ_{eff}^2 improves by 6.62) of the observed data when compared to the best fit reference Λ CDM model with a featureless, power law, primordial spectrum.