

Abstract Submitted  
for the APR17 Meeting of  
The American Physical Society

**Quantum Gravity, very early universe and the cosmic microwave background**<sup>1</sup> BRAJESH GUPT, ABHAY ASHTEKAR, The Pennsylvania State University — The standard model of cosmology in conjunction with inflation is a robust paradigm of the evolution of our Universe from today all the way up to the energy scale  $10^{16}$  GeV. However, the framework fails to provide a faithful understanding of the physics at Planck scale since it excludes quantum gravity correction. Furthermore, recent observations reveal the presence of large scale CMB anomalies which could be signatures of new physics preceding inflation. We present a quantum gravitational extension of the current inflationary paradigm and its possible connection with the CMB anomalies. We highlight the predictions for the future observations and potential avenues where the interplay between the UV physics of very early Universe and the IR behavior of large scale perturbations can have interesting implications for late time Universe.

<sup>1</sup>NSF

Brajesh Gupta  
The Pennsylvania State University

Date submitted: 29 Sep 2016

Electronic form version 1.4