

JOINT TUFTS/MIT COSMOLOGY SEMINAR

An extension of the inflationary scenario to the Planck regime

Abhay Ashtekar
Pennsylvania State

Since the standard theory of cosmological perturbations is based on quantum field theory on a classical background space-time, it is not applicable in the quantum gravity era where curvature and matter densities are of Planck scale. Using techniques from loop quantum gravity, the theory is extended to overcome this limitation. The new framework sharpens conceptual issues by distinguishing between the true and apparent trans-Planckian difficulties. The true difficulties can be handled systematically all the way from the quantum bounce of loop quantum cosmology to the onset of slow roll inflation, with interesting lessons both for theory and observations. In particular, in addition to providing a quantum gravity extension of the inflationary scenario, the analysis opens a window for novel and potentially observable effects.

Tuesday, February 5, 2013, 2:30 pm
Robinson Hall, Room 250
Tufts University

Refreshments at 2:00 in Knipp Library, Room 251