

JOINT TUFTS/MIT COSMOLOGY SEMINAR

Quantum effects in the early Universe

Nishant Agarwal

University of Massachusetts Lowell

Primordial perturbations are responsible for CMB anisotropies and structure formation in the Universe. We believe that the perturbations have their origins in quantum theory, though this is hard to test directly. I will discuss how perturbation modes observable today couple to UV and IR modes, and describe two ways in which this coupling can be used to predict truly quantum signatures in late-time observables. I will first present an open quantum system framework that demonstrates a non-Hamiltonian and non-Markovian evolution of observable modes. I will next present preliminary results on perturbative renormalization and late-time resummation techniques, and discuss how these may affect cosmological observables when applied to primordial correlators.

Tuesday, February 25, 2020, 2:30 pm

574 Boston Ave, Room 316

Tufts University

Refreshments at 2:00 outside room 304