INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE
2A&B, Raja S.C. Mullick Road, Jadavpur, Kolkata-700032, India

Seminar Notice

Org. by

Theoretical Physics Department

Title:	**Decoding cosmic fingerprints: constraining the generation and evolution of primordial fluctuations**
Speaker:	**Dhiraj Kumar Hazra,INFN, Bologna, Italy**
Date:	**July 17, 2018 (Tuesday)**
Time:	**3:00 p.m.**
Venue:	**Theoretical Physics Seminar Room (C406),3rd Floor, Centenary Building, IACS**
Abstract:	It is the origin and evolution of quantum fluctuations that eventually lead to the formation of the Large Scale Structure (LSS) in the Universe. The primordial perturbations emerge through the radiation and thereafter the matter dominated epochs and finally to today's dark energy dominated epoch, leaving their distinct fingerprints in the photons that we observe. Photons from the Cosmic Microwave Background (CMB), quasars, galaxies and clusters, supernovae, stars etc. can be analyzed to trace these fingerprints. In this talk, I will mainly discuss decoding three different fingerprints originating from three different epochs in the timeline of the Universe, namely, CMB from the last scattering surface, Lyman-alpha observations from reionization and post-reionization eras and the galaxies observed in the LSS. Since signals from different cosmological processes are convolved in our observations, effective joint analyses are required to converge towards the most probable model of the Universe. I will outline the standard model and few extensions beyond that agree remarkably with the present data. I will also discuss model independent reconstruction methods that can lead to possible scenarios of the Universe directly from the data. I will conclude with forecasts from the upcoming and proposed cosmological missions.

All are cordially invited to attend the seminar