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TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS Astrophysics and Relativity Seminar (HYBRID)

Title : Cosmology with Cross-Correlations: CMB & Large-Scale Structure

Speaker : Neha Anil Kumar (Johns Hopkins University)

Date : Wednesday, 20th December 2023

Time : 02:00 PM (IST)

Abstract : In this talk, I will discuss how to construct innovative statistics that leverage the strengths of two independent observables, eliminate model degeneracies, and show that these cross-correlations can beat the unavoidable statistical variance intrinsic to each data set, allowing for tighter constraints on parameters beyond the standard model of cosmology. The first data-set I use in my analysis comes from galaxy surveys such as LSST and DESI. These track structure formation by measuring the redshift and sky-locations of galaxies. I leverage the statistical power of this data-set by combining it with 'secondary effects' in the CMB. These effects muddle the primary signal of the primordial Universe, arising from gravitational and electromagnetic interactions of CMB photons with intervening large-scale structure during later times.

I will begin my talk with an illustrative example, drawn from my previous work, that displays the power of CMB-galaxy cross-correlations in probing characteristics of the early Universe.

Venue : **Offline:** Feynman Lecture Hall (ICTS)

Online: Please click on the below link to join the seminar

https://icts-res-in.zoom.us/j/96723897464?pwd=T01NVzlHMTAzK1BHZjRTSWpmbVRvdz09

Meeting ID: 967 2389 7464

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