JOINT TUFTS/MIT COSMOLOGY SEMINAR

Precision pursuits in physical cosmology with galaxy surveys

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Large-scale structure measurements of cosmological parameters are now competitive with the Cosmic Microwave Background, largely through measurements of Baryon Acoustic Oscillations to probe the expansion history as well as measurements of structure formation from the galaxy power spectrum. This tremendous achievement has been possible through the twin developments of drastic improvements in survey data quality and quantity as well as the application of robust perturbation theory-based methods to galaxy clustering. I will discuss several aspects of my recent and current work leveraging and extending this box of robust tools in order to answer key physical questions about the universe at large. In particular: What is the relationship between galaxy clustering and non-gaussianity imprinted in the early universe? How can we employ spatial statistics beyond the power spectrum? And, finally, what trustworthy information can non-galactic tracers of the cosmic web give us? In closing, I will also discuss how to prepare our galaxy clustering models for the high-redshift future, so that we might continue to ask and answer precise questions about the universe.

Tuesday, November 25, 2025, 2:30 pm

Cosman Seminar Room

Center for Theoretical Physics

Building 6C, Room 6C-442

Massachusetts Institute of Technology