PHYSICS AND ASTRONOMY COLLOQUIUM

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"Making cosmological measurements with standard rulers and standard shapes"

Abstract

Analyses of galaxy clustering in redshift surveys such as the Baryon Oscillation Spectroscopic Survey (BOSS), have provided robust cosmological measurements and are now considered as one of the pillars of modern observational cosmology. The key technique uses Baryon Acoustic Oscillations as a standard ruler with which to measure the expansion of the Universe: finding the BAO scale within the galaxy survey fixes the distance-redshift relation. Complementary measurements can be made on smaller scales using voids as standard shapes - on average voids have no preferred orientation with respect to us, and this can be used to make cosmological measurements. I will introduce both BAO and void-based methods, and present recent results using both, confirming and refining the standard LCDM cosmological model. Future surveys including the Dark Energy Spectroscopic Instrument (DESI), the Euclid satellite mission and the MaunaKea Spectroscopic Explorer, will provide an order of magnitu! de more information than BOSS and I will introduce these surveys and discuss predictions for the expected measurements.

Wednesday, March 27, 2019
3:30 p.m.
Elliott Building Room 167