

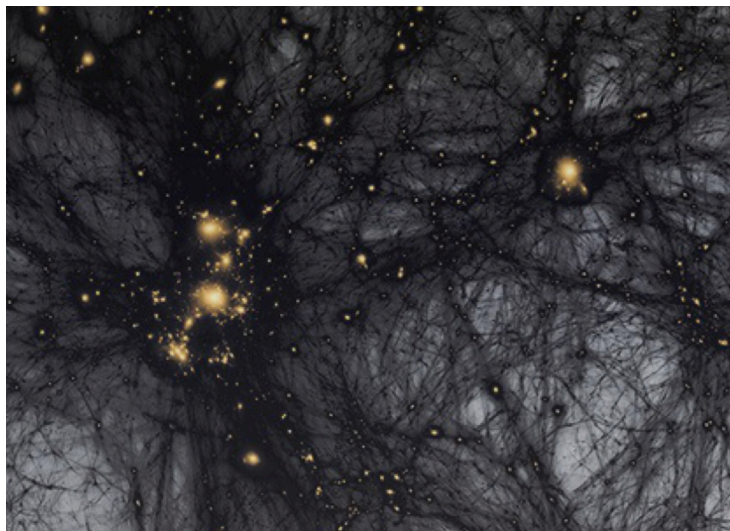


Yale Department of Physics

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Monday, April 8, 2019 at 3:30 p.m. in SPL 57

New Insights into Cosmology and the Galaxy-Halo Connection from Non-Linear Scales



In our LCDM paradigm, galaxies form and reside in dark matter halos. Establishing the (statistical) relation between galaxies and dark matter halos, the 'Galaxy-Halo connection', therefore gives important insight into galaxy formation, and also is a gateway to using the distribution of galaxies to constrain cosmological parameters. After a brief introduction to structure formation in a Universe dominated by dark matter and dark energy, I discuss how clustering and gravitational lensing can be used to constrain the galaxy-halo connection. I then show that several independent analyses all point towards a significant tension in cosmological parameters compared to the recent CMB results from the Planck satellite. I discuss potential explanations of this discrepancy, including assembly bias, baryonic impacts on the matter distribution, and new physics beyond the standard model. I end with a brief discussion of how forthcoming data from new galaxy redshift surveys can break degeneracies and improve our understanding of galaxy formation and our cosmological world-model.

Host: David Moore

Tea will be served after the talk outside the lecture hall

