PHYSICS AND ASTRONOMY
SEMINAR

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"The Illustris Project: Populating the Hubble Sequence in Cosmological Simulations"

Abstract

Cosmological simulations are among the most powerful tools available to probe the non-linear regime of cosmic structure formation. They also provide one of the most powerful testbeds for understanding the impact that feedback processes have on the evolution of galaxies. In my talk, I will present new galaxy formation simulations that couple a powerful computational approach with explicit baryon feedback prescriptions. This results in galaxy formation models that reproduce a wide range of observational constraints including the galaxy stellar mass function, cosmic star formation rate density, and galaxy morphological diversity. I will discuss a few of the most central implications our results have on the currently accepted model for galaxy formation. Finally, I will discuss work-in-progress to increase the usability of our models by observers by coupling our simulations with stellar population synthesis models. This allows us to produce simulated galaxy catalogs which can be used to select galaxy populations with observational techniques and identify the past formation history or subsequent evolution of these galaxy populations

Wednesday, April 10, 2013
2:30 p.m.
Elliott Building
Room 160