

Carnegie Mellon University
Department of Physics

McWilliams Center for Cosmology

Colloquium

Romeel Dave`
Steward Observatory
University of Arizona

Thursday, January 20, 2011
2:30 pm
Doherty Hall A301D

“Galaxy Formation in the Cosmic Ecosystem”

Abstract:

The formation and evolution of galaxies is a decades-old problem that continues to evade definitive answers. Thanks to advancing supercomputer simulations, a new paradigm is emerging for how galaxies grow. In it, galaxies live in an equilibrium between smooth and filamentary accretion from the intergalactic medium (IGM), rapid processing of gas into stars, and strong and ubiquitous galactic outflows. This paradigm intimately connects galaxies and their surroundings within a cosmic ecosystem of continual mass and energy exchange that governs how galaxies are born, live, and ultimately die. I will present results from our latest cosmological hydrodynamic simulations that trace this cosmic ecosystem from the reionization epoch until today, and show how advancing multi-wavelength observations of galaxies and intergalactic gas provide constraints on the core physical processes that govern galaxy evolution.