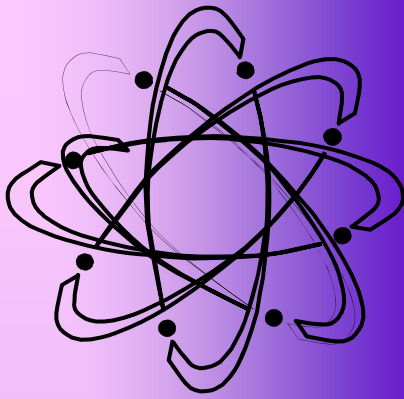


The Department of  
Physics



Carnegie Mellon

# McWilliams Center for Cosmology Colloquium

Adam Bolton  
The University of Utah

## “Measuring Galaxy Masses from Galaxy Mirages”

Thursday, November 4, 2010

4:30pm

Doherty Hall A301D

*Abstract:*

*When two galaxies, billions of light years distant both from one another and from Earth, happen by chance to fall in angular alignment on the sky, the resulting phenomenon is known as “strong gravitational lensing”. Photons on diverging trajectories from the more distant galaxy are deflected by the gravitational field of the nearer galaxy so as to converge again upon the primary mirror of an astronomical telescope. In the telescope’s focal plane, the image of the more distant galaxy appears distorted into an “Einstein ring” encircling the foreground galaxy, whose angular size yields the most precise mass measurement possible of a galaxy at cosmological distance. I will describe the Sloan Lens ACS (SLACS) Survey, in which we have combined spectroscopic data mining of the Sloan Digital Sky Survey database with high-resolution Hubble Space Telescope imaging to discover a homogeneous sample of approximately 100 strong lens systems, which have provided new insights into the regularities and trends in the mass density structure of giant elliptical galaxies. I will also describe ongoing projects to extend our techniques across a wider range of galaxy types, galaxy masses, intra-galactic radii, and cosmic epochs. Pretty pictures and hard results will abound alike.*