



PHYSICS AND ASTRONOMY SEMINAR

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“How Are Galaxies Affected by Their Environment?”

Abstract

Galaxies grow by gas infall and mergers, but their growth is constrained by mechanisms that limit the supply of gas to the molecular clouds where stars are observed to form. These mechanisms can be internal feedback processes from supernova explosions and outflows from active galactic nuclei around the central supermassive black hole. But the environment of galaxies can also affect the rate of star formation in galaxies, through physical processes such as tidal stripping and ram pressure stripping that starve the galaxy from its gas supply, as well as galaxy encounters. After a brief review of these processes, illustrated by simple toy models, I will show how attempts to quantify the “quenching” of star formation by the galaxy environment is hampered by the inherent difficulty to measure these environments in quality low-redshift spectroscopic galaxy surveys, and how the results depend on the method to quantify these environments. I will also ask whether galaxies are affected by their environment far beyond the equilibrium radii of groups and clusters, whether this is caused by pre-processing in low-mass groups, in filaments, or whether there is a long-range galactic conformity, which may be explained by the initial conditions of the density field of the Universe.

Monday, January 9, 2017

2:30 p.m.

Elliott Building

Room 060