

Western Science

Western University
DEPARTMENT OF PHYSICS AND ASTRONOMY

A Special Departmental Seminar

by 2017 Laird Lecturer

Dr. C. Megan Urry

Israel Munson Professor of Physics and Astronomy
Director – Yale Center for Astronomy and Astrophysics
Yale University

Tuesday, 7th November @ 11:00 a.m.

Physics & Astronomy Seminar room (PAB 100)

Galaxy Evolution:

Do Active Galactic Nuclei Quench Star Formation?

Abstract:

We know galaxy evolution requires some way of shutting down star formation in massive galaxies, and that a supermassive black hole grows by accretion at the center of every massive galaxy. Theorists have suggested that energy released by Active Galactic Nuclei (i.e., rapidly growing black holes) might be able to quench star formation. The current paradigm is that a major merger of two galaxies triggers star formation, then the AGN turns on and the stellar population ages from blue to red. In this talk I describe our search for such signs of feedback in multiwavelength surveys, in particular incorporating morphological information, which encodes the merger history. Using results from the Galaxy Zoo citizen science project, we identify two distinct modes of galaxy evolution in the local universe, with mergers and AGN feedback affecting only a minority. At higher redshift (roughly 7-9 billion years ago), where the universe is smaller and mergers are more common, we find that mergers affect a larger fraction of galaxies. In general, high-luminosity AGN and/or massive galaxies are more likely to be affected by major mergers, while lower mass galaxies evolve through some other (important!) mechanism, perhaps associated with halo mass.