



# PHYSICS AND ASTRONOMY SEMINAR

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## **“Observing How Galactic Environment Impacts AGN Evolution”**

### Abstract

An Active Galactic Nucleus (AGN), the process of the central supermassive black hole accreting matter, is a key phase in galaxy evolution. We know that as the black hole grows so does its host galaxy, and that AGN can both bring about and impede star formation. But what mechanisms result in a nucleus becoming active? In this talk we will focus on the external drivers of AGN evolution - that is, how the host galaxy's environment can act to initiate an AGN.

We demonstrate how location of a galaxy within large scale structure can impact its ability to host an AGN. Whilst mechanisms such as ram pressure stripping in the outskirts of massive clusters are conducive to AGN triggering, the dearth of cold gas in cluster and group cores can limit the accretion rate of the nuclear black hole. At smaller scales we show that galaxy mergers can play an important role in AGN evolution. Mergers between similar mass galaxies have frequently been associated with rapidly accreting AGN. We show that for the least massive weakly accreting AGN such major mergers can also be a trigger. Additionally we show that minor mergers, the collision between galaxies of vastly differing mass and an oft hypothesised trigger of weakly accreting AGN, do not trigger these phenomena, and furthermore may act to prevent their evolution.

Wednesday, October 16, 2019  
11:00 a.m.  
Cornett Building  
Room A128