

2021—2022 ASTROPHYSICS SEMINAR SERIES**Towards a complete understanding of supermassive black holes'
impact on galaxy evolution**

I will describe a multi-wavelength analysis of active galactic nuclei (AGN) incorporating X-ray, optical, infrared, and radio data to estimate AGN host galaxies' physical properties. This multi-wavelength approach allows us to address some of the long-standing questions of AGN science, from the selection biases in AGN surveys to the relationship between the growth of the supermassive black holes and their host galaxies.

The radiation from structures surrounding the supermassive black hole can be used to identify AGN at different wavelengths. I investigate the selection biases from different identification techniques in the sample of the $z \sim 2$ AGN in the MOSDEF survey. Once AGN have been identified we have to separate the contributions from the AGN and the host galaxy in order to constrain the physical properties of each. My newly developed, state-of-the-art AGN spectral energy distribution fitting code (ARXSED) models the emission from both the AGN and their host galaxies from X-ray to radio wavelengths, including nuclear accretion disk and torus, star-formation, and the extended radio lobes. I will present the results of fitting this model to a sample of radio-loud quasars from the 3CR sample at $1 < z < 2$.

The connection, if any, between host-galaxy star formation and AGN activity is a major open question, and is explored, using AGN from the PRIMUS, MOSDEF, and the 3CR samples. No statistically significant correlation is to be found in any of these samples. Nonetheless, it is possible to estimate the AGN prevalence in PRIMUS, as I will show. Although AGN are more often found in star-forming galaxies, they also can live in quiescent galaxies.

**Monday, November 29th**

3:30 - 4:30 p.m.

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