

P/SS Department Colloquium

# THE EVOLUTION OF THE GALACTIC NUCLEUS AND THE GROWTH OF THE SUPERMASSIVE BLACK HOLE

Dr. Brian Murphy  
Butler University

Friday, March 28, 2014

OPS 140

4:00pm - 5:00pm

Meet and Greet

OPS 140

3:30pm - 4:00pm



In the last 20 years technological advances in imaging have allowed us to peer into the center of the Galaxy with unprecedented clarity. From these observations we now know that the center of the Galaxy provides the strongest case of the existence of black holes, in this case a supermassive black hole of nearly 4 million solar masses. The dynamical evolution of a galactic nucleus can be affected by several mechanisms. Among these are stellar evolution, high-speed stellar collisions, mass segregation, and tidal disruptions of stars due to a central supermassive black hole. I will address how each of these affects the dynamics of the stellar cluster surrounding a supermassive black hole and the growth of the black hole itself over billions of years using a set of dynamically evolving models. Though particular attention will be paid to our own Milky Way's nucleus I will explore a wide variety of galactic nuclei.