# PHYSICS AND ASTRONOMY COLLOQUIUM

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# "Space Astronomy and Exoplanet Astrophysics"

Abstract

There are currently close to 4000 confirmed exoplanets with thousands of additional exoplanet candidates. The population shows great diversity with masses and radii ranging from Mercury-like exoplanets to brown-dwarfs with rich orbital architectures. These observations are increasing our understanding of how exoplanets form and evolve. My research program is focused on the application of Space Astronomy resources in the field of exoplanet astrophysics. I will review theory and observations of solar system giants to seismically sound out interior structure to test planet formation theories. I will demonstrate how combining observations from the NASA Kepler and ESA GAIA missions we can map out the architectures of exosolar systems. Finally, I will discuss the capabilities of planned and proposed missions such as JWST, CASTOR and Canadian micro-satellites to measure atmospheric properties of a large statistical sample of exoplanets with observations covering the mid-IR to the UV. These observations enable comparative exoplanetology with the goal to understand physics underlying differences between potential classes of exoplanets — so called Earth-like, super-Earth, mini-Neptune exoplanets and explore how exoplanetary systems are similar or different compared to our own Solar System.

Wednesday, March 06, 2019
3:30 p.m.
Elliott Building Room 167