



# PHYSICS AND ASTRONOMY COLLOQUIUM

## **Dr. Brendan Bowler**

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### **Imaging Extrasolar Planets**

#### Abstract

Finding and characterizing extrasolar planets has become one of the fastest-paced and most rapidly evolving fields in modern astronomy. Direct imaging spatially resolving exoplanets from their host stars is especially challenging but provides unique insight into the architectures, atmospheres, and formation of giant planets. By exploring planetary systems from the outside-in and directly detecting photons originating in their atmospheres, imaging complements other planet-finding techniques sensitive to smaller orbital separations and enables detailed studies of atmospheric structure and composition. In this talk I will review the field of high-contrast adaptive optics imaging with an emphasis on observational programs I am leading to test theories of planet formation, primarily by means of large surveys, planet population statistics, and near-infrared spectroscopy. I will also outline the long-term future of the field; imaging planets has been a consistent motivating factor for the next generation of telescopes like the James Webb Space Telescope, WFIRST, and the Thirty Meter Telescope. Eventually these facilities will pave the way for the ultimate objective: a dedicated space-based mission to image and characterize Earth analogs.

Thursday, January 26, 2017

3:30 p.m.

Engineering Computer Science

Room 104