



# PHYSICS AND ASTRONOMY COLLOQUIUM

## Dr. Sarah Ballard

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### “Exoplanets: Under a Microscope, and Through a Wide-field Lens”

#### Abstract

The Solar System furnishes the most familiar planetary architecture: many planets, orbiting nearly coplanar to one another. We can examine the composition and atmospheres of the Solar System planets in detail, even occasionally in situ. Studies of planets orbiting other stars (exoplanets), in contrast, only begin to approach the precision of humanity's knowledge of Earth five hundred years ago. I will describe a two-pronged approach to the study of exoplanets. One approach involves time-intensive investigations of individual planets to eke out bulk density or single molecules in the planetary atmosphere. Another involves studies of the ensemble properties of planetary systems, and addresses the question of a "typical" planetary system in the Milky Way. In an era with thousands of exoplanet discoveries in hand and thousands more to follow in short order, a good research program combines these approaches. I'll showcase some of my own detailed findings of other worlds (placing Earth in context), in addition to wider-field studies of typical planet occurrence and formation.

Monday, February 22

3:40 p.m.

Clearhue Building

Room A203