



**ASTROPHYSICS
SEMINAR SERIES**

"The Road to 100 Earths"

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Monday, September 30, 2013
Refreshments at 3:15pm in CAS 500
Talk begins at 3:30pm in CAS 502

Abstract:

The search for planets orbiting nearby stars has been one of the greatest success stories of the past decade, with hundreds of discoveries being made using Doppler, transit, microlensing, and direct imaging techniques. More than 3000 candidates have been detected with NASA's Kepler mission. Exoplanet detections have launched a subfield of astronomy that includes host star characterizations, measurements of planet radii and density, studies of atmospheres, interior structure, formation theory, and orbital evolution.

The search for exoplanets is motivated by the question of whether life exists elsewhere. This drives our interest in the detection of planets that are similar to our own world: rocky planets with the potential for liquid surface water and plate tectonics; worlds that might harbor life that we can recognize. Importantly, we will need to discover not just a few, but hundreds of these worlds to eventually gain a statistical understanding of whether life is rare, common, or ubiquitous and ground-based telescopes offer an ideal platform for carrying out decade-long surveys. It is critical for follow-up studies (imaging, atmospheric studies) that these planets orbit nearby stars. In this talk, I will discuss how we plan to take what we've learned and push on to the next frontier: our plans for a next generation spectrograph, EXPRES, to carry out a search 100 Earths at the DCT.