



PHYSICS AND ASTRONOMY COLLOQUIUM

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“Kepler: NASA's Exo-earth Census”

Abstract

Twenty years ago, we knew of no planets orbiting other Sun-like stars, yet today, the roll call is nearly 1,000 strong. Statistical studies of exoplanet populations are possible, and words like "habitable zone" are heard around the dinner table. Theorists are scrambling to explain not only the observed physical characteristics but also the orbital and dynamical properties of planetary systems. The taxonomy is diverse but still reflects the observational biases that dominate the detection surveys. We've yet to find another planet that looks anything like home.

The scene changed dramatically with the launch of the Kepler spacecraft in 2009 to determine, via transit photometry, the fraction of stars harboring earth-size planets in or near the Habitable Zone of their parent star. Early catalog releases hint that nature makes small planets efficiently: over half of the sample of 2,700 planet candidates discovered in the first two years is smaller than 2.5 times the Earth's radius. I will describe Kepler's milestone discoveries and progress toward an exo-Earth census. Humankind's speculation about the existence of other worlds like our own has become a veritable quest.

Wednesday, February 27, 2013

3:30 p.m.

Bob Wright Centre

Room A104