

**YORK UNIVERSITY
DEPARTMENT OF EARTH AND SPACE SCIENCE AND
ENGINEERING
and
CENTRE FOR RESEARCH IN EARTH AND SPACE SCIENCE
S E M I N A R**

**Lisa Esteves
University of Toronto**

**Changing Phases of Kepler Exoplanets:
Evidence for Clouds and Winds**

ABSTRACT

The Kepler mission's long-term monitoring of stars through high-precision photometry has not only revealed a plethora of exoplanet transits but also provided valuable data for characterizing a subset of these planets. Using over four years of Kepler observations, we have derived phase curves for over a dozen planets, and use these measurements to constrain their mass, brightness/temperature and energy redistribution between the day and the night sides. In our new study, we also investigate possible offsets of the peak brightness of the phase curve, which could be indicative of inhomogeneous clouds and/or substantial winds in the planet's atmosphere. We find significant offsets for over a half-dozen planets. With this growing sample of measured phase curves, we are able to better examine the trends of hot Jupiter energy budgets and albedos, and for the first time relate these properties to the presence of clouds or winds on a planet.

BIOGRAPHY

Lisa Esteves is a third year PhD student in the Department of Astronomy and Astrophysics at the University of Toronto working with Ray Jayawardhana (current Dean of Science at York University). Esteves completed her undergraduate degree in Physics at the University of Guelph. Most recently she has been using Kepler Space Telescope data to study exoplanet atmospheres and for the rest of her PhD she plans to focus on using ground-based telescopes to study the atmospheres of increasingly smaller worlds.

Refreshments will be served at 3:15 p.m. in Room 422 Petrie Science and Engineering Building.

DATE: Wednesday, October 22th, 2014
TIME: 3:30 p.m.
LOCATION: Room 422, Petrie