



Interdisciplinary Workshop for Undergraduate Students
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Project: *Finding Exoplanets Using Radial Velocity Data* [Exoplanets]

Speaker: David Stenning

Abstract:

The detection and characterization of exoplanets—planets that orbit stars other than the Sun—is one of the most active areas of research in modern astronomy. Many exoplanets are discovered using the radial velocity method, which involves detecting the Doppler shift in a star’s spectral lines resulting from the gravitational effects of an orbiting planet. The goal of this project is to “discover” exoplanets in historical datasets by correctly determining the orbital periods of planets using noisy radial velocity measurements. The radial velocity data is sparse, unevenly sampled, and subject to (known) heteroscedastic measurement errors; determining periodicities is thus statistically challenging.