



# PHYSICS AND ASTRONOMY SEMINAR

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## **“The Wobbly Galaxy: Kinematics North and South with RAVE”**

### Abstract

The RAVE survey is the largest systematic spectroscopic survey of the Milky Way performed to date. Almost 600,000 spectra for nearly 500,000 stars have been taken. At a resolution of  $R=7500$  in the CA triplet region, RAVE spectra allow us to measure radial velocities, stellar parameters, abundances of several chemical elements, and, combined with photometric information, fairly precise distances. Combined with proper motions, the RAVE survey can be used to study in detail stellar kinematics in the extended solar neighbourhood (solar suburb). We examine the mean velocity components in 3D between an  $R$  of 6 and 10 kpc and a  $z$  of -2 to 2 kpc, concentrating on North-South differences. We confirm the recently discovered gradient in mean Galactocentric radial velocity,  $V_R$ , finding that the gradient is more marked below the plane, with a  $Z$  gradient also present. The vertical velocity,  $V_z$ , also shows clear structure, with indications of a rarefaction-compression pattern, suggestive of wave-like behaviour. The complex three-dimensional structure of velocity space presents challenges for future modelling of the Galactic disk, with the Galactic bar, spiral arms and excitation of wave-like structures all probably playing a role.

Friday, March 21, 2014

10:30 a.m.

Elliott Building

Room 061