



Western

Western University  
Department of Physics and Astronomy

## PHYSICS & ASTRONOMY COLLOQUIUM

**Date:** Thursday, 14 October 2021

**Time:** 1:30 p.m.

**via Zoom:** <https://westernuniversity.zoom.us/j/98429769447?pwd=RUFWNzNSUGVibWlpZGEvM0FDcDJ0QT09>

**Dr. Aaron Sigut**

Department of Physics & Astronomy  
Western University

***“Are the Stars Aligned?”***

### ABSTRACT

Individual stellar inclination angles (the angle between a star's rotation axis and the observer's line of sight) have been traditionally very difficult to measure. In any population of stars, it is usually assumed that the directions of the rotation axes are random and uncorrelated; however, recent observations using asteroseismology have suggested non-random inclination distributions for the stars in at least two Milky Way open clusters. Detecting such correlations can provide new and important constraints on the flow angular momentum during star cluster formation.

In this talk, I will discuss extracting robust estimates of the inclination angles of a common class of stars known as the Be stars by modelling their emission-line spectra. Be stars are massive, main sequence stars that are surrounded by an out-flowing, equatorial, circumstellar disk. I will compare the accuracy of this spectroscopic method to independent methods based on interferometry and on gravitational darkening. Due to the high frequency of Be stars in open clusters, and the ease of their detection, this spectroscopic method for determining Be star inclination angles may allow large, direct searches for rotational axis alignment in open clusters.

**Host:** Prof. G. Fanchini