



Western University
Department of Physics and Astronomy

PHYSICS & ASTRONOMY COLLOQUIUM

Date: **Thursday, 26th January 2017**
Time: **1:30 p.m.**
Location: **Physics & Astronomy Seminar Room 100**

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“Exploring ultra-cool atmospheres with linear polarimetric observations”

ABSTRACT

The low temperatures present in the neutral atmospheres of very low mass stars and brown dwarfs (ultra-cool dwarfs, $T_{\text{eff}} < 2700$ K) favour the appearance of condensates: solid and liquid particles that likely draw together to form “dusty clouds.” Most of the observational work to characterize these ultra-cool atmospheres has, so far, been performed mainly on the basis of the intensity of their light. However, the state of polarization of the electromagnetic radiation is an important and frequently overlooked aspect. In particular, linear polarimetry is a powerful technique to probe the presence of photospheric dust grains, and to derive some physical properties such as the grain size and the distribution of the “cloudy” structures.

In this talk, and as part of our goal to provide tools for the characterization of ultra-cool atmospheres, I will present an on-going effort to obtain the linear polarimetry indices at optical and near infrared wavelengths for a sample of field ultra-cool dwarfs at different ages. In addition, I will also present the first results of my postdoctoral stay at Western: a search for H-alpha emission in ultra-cool dwarfs to seek a correlation between magnetic activity and photometric variability.

COFFEE + light snacks will be available in the Atrium, 2nd floor, at 1:15 p.m.