



**Western University**  
**Department of Physics and Astronomy**

## **PHYSICS & ASTRONOMY COLLOQUIUM**

**Date:** **Thursday, 14<sup>th</sup> December 2017**  
**Time:** **1:30 p.m.**  
**Location:** **Physics & Astronomy Seminar Room 100**

### **Dr. Renée Hlozek**

Dunlap Institute for Astronomy & Astrophysics  
University of Toronto

### ***“New cosmology with small-scale CMB data: Ultra-light dark matter and cosmic voids”***

#### **ABSTRACT**

Cosmology with the Cosmic Microwave Background (CMB) is currently undergoing a data-rich epoch, with measurements on small angular scales from experiments like the Atacama Cosmology Telescope (ACT) and its polarisation instrument, ACTPol, adding to measurements on larger scales by Planck, WMAP and BICEP. I will contextualise the measurements and present constraints on cosmological models of interest to small-scale experiments; while noting that foregrounds that complicate our measurements of the primordial microwave sky. I'll focus on some novel constraints on the axion, an ultra-light dark matter candidate, and also on tests of the thermal Sunyaev-Zeld'ovich effect from cosmic voids. I will highlight the next generation of the experiments in the Simons Observatory and the Fourth Stage CMB experiment (CMB S4): ensuring CMB cosmology has a rich future to look forward to on the ground.

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