



Western University
Department of Physics and Astronomy

PHYSICS & ASTRONOMY COLLOQUIUM

Date: **Thursday, 14 February 2019**
Time: **1:30 p.m.**
Location: **Physics & Astronomy Seminar Room 100**

Dr. Girma T. Bitsuamlak

Department of Civil & Environmental Engineering
Western University

“Climate resilient and sustainable architectural engineering”

ABSTRACT

Sustainable and climate-resilient building design requires realistic modelling of urban microclimate interaction with building at various scales (component → building → neighbourhood → city). This includes both (i) normally recurring microclimate conditions driven by thermal variations and/or normal wind for building thermal and energy performance design, and (ii) extreme climate conditions such as hurricane landfall, tornado touchdown or extreme winter for capacity and safety design. Alan Davenport’s “wind-loading-chain” links the modelling of extreme wind, exposure, aerodynamics, and dynamics to particular design criteria. Its expansion to (i) non-synoptic winds such as tornadoes and downbursts; (ii) micro-climatic loads such as thermal loads, (iii) optimal building aerodynamic solutions; and (iv) community level wind performance assessment will be presented, through representative research projects from each category. The roles of computational fluid dynamics and Artificial Intelligence (enabled by SHARCNet) complimenting the physical experiments (enabled by the Boundary Layer Wind Tunnel Laboratory and WindEEE Dome) in realizing climate-resilient and sustainable architectural engineering will be emphasized.

HOST: P. Barmby

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