



Western University
DEPARTMENT OF PHYSICS AND ASTRONOMY

PHYSICS & ASTRONOMY COLLOQUIUM

Date: **Thursday, 1st December 2016**
Time: **1:30 p.m.**
Location: **Physics & Astronomy Seminar Room 100**

Dr. Richard Hill

Visiting Scientist at Perimeter Institute and
University of Chicago, Fermilab

"The Proton and the Future of Particle Physics"

ABSTRACT

The venerable proton continues to play a central role in fundamental particle physics. Neutrinos scatter from protons in neutrino oscillation experiments, Weakly Interacting Massive Particles (WIMPs) are expected to scatter from protons in dark matter searches, and electrons or muons are bound by protons in precision atomic spectroscopy. Our understanding of the proton is an obstacle to the success of next generation experiments hoping to discover CP violation in the lepton sector and determine the neutrino mass hierarchy, discover the particle nature of dark matter, or reveal new interactions such as those that violate lepton universality. In this talk I describe new theoretical methods being developed to address these problems, and discuss the implications for fundamental particle physics.

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