

**TRENT UNIVERSITY  
PHYSICS & CHEMISTRY SEMINAR PROGRAM**

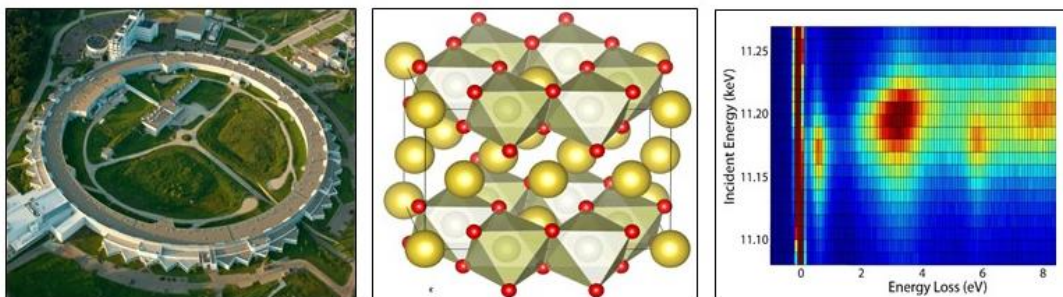
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**WEDNESDAY, SEPTEMBER 21, 2016**

**Dr. Patrick Clancy  
Department of Physics & Astronomy  
Trent University**

**Exploring Iridium-Based Quantum Materials with Synchrotron X-rays**

**ABSTRACT**



Over the past ten years there has been a growing interest in the physics of heavy 5d transition metal oxides, such as the iridium-based iridates. These materials display interesting and unusual physical properties due to a combination of strong relativistic spin-orbit coupling effects and small, inherently quantum mechanical,  $J_{\text{eff}} = 1/2$  magnetic moments. These “spin-orbit-driven” quantum materials are believed to harbour a variety of exotic ground states, including spin-orbital Mott insulators, quantum spin liquids, topological insulators and semimetals, and even unconventional superconductors.

In this talk, I will discuss what we can learn about these materials using modern synchrotron x-ray techniques. In particular, I will present recent experimental data on the honeycomb lattice iridates  $\text{Na}_2\text{IrO}_3$  and  $\text{Li}_2\text{IrO}_3$ , two compounds which have been proposed as potential realizations of the Kitaev quantum spin model.

**SCIENCE COMPLEX ROOM 115**

**11:00 AM**

**All Welcome!**