University of Victoria

PHYSICS AND ASTRONOMY COLLOQUIUM (In Person & Online)

Dr. Martin Bureau

University of Oxford

"Weighing the Invisible or Probing the Invisible: Weighing Supermassive Black Holes with ALMA"

Abstract

Supermassive black holes are now known to lurk at the centres of most galaxies. They are also believed to play a key role in the evolution of galaxies, by regulating the supply of the gas necessary to form stars. Here, I will present key results from the mm Wave Interferometric Survey of Dark Object Masses (WISDOM), a high resolution survey of molecular gas in galaxy nuclei. I will first explain how dynamical black hole mass measurements are made, what the challenges are, and how these are solved using state-of-the-art technologies, all the while drawing on basic physics. Second, I will discuss substantial ongoing efforts to rapidly but accurately measure the masses of supermassive black holes, and present many new spectacular measurements from the Atacama Large Millimeter/sub-millimeter Array (ALMA), the largest ground-based telescope project. These efforts open the way to literally hundreds of measurements across galaxies of all morphological types, both active and non-active, with a unique method. They thus promise to revolutionise our understanding of the co-evolution of galaxies and black holes.

Wednesday, January 11, 2023

3:30 p.m. PST

ECS 116

Zoom link will be announced on Uvic's Event Calendar