



Western University
Department of Physics and Astronomy

PHYSICS & ASTRONOMY COLLOQUIUM

Date: Thursday, 20th April 2017
Time: 1:30 p.m.
Location: Physics & Astronomy Seminar Room 100

Dr. Adolf Witt

Department of Physics and Astronomy
University of Toledo

“The Puzzle of the Extended Red Emission in Interstellar Space”

ABSTRACT

Once a mysterious interstellar radiative process, extended red emission (ERE) is now understood as the radiative signal of the electronic relaxation of a family of large, carbonaceous molecules or molecular ions after absorption of far-ultraviolet (FUV) photons under the collision-free conditions of interstellar space. In a process called recurrent fluorescence or Poincarè fluorescence, multiple low-energy optical photons are emitted from the energy provided by a single FUV photon, resulting in highly efficient optical luminescence and rapid cooling of the molecular ion. This process was demonstrated under terrestrial laboratory conditions for the first time in 2014. I will discuss the astronomical evidence derived from observations spanning four decades that has led to the identification of the ERE process. Work by several University of Toledo Physics and Astronomy graduate students provided the key findings that led to crucial evidence for recurrent fluorescence and the elimination of numerous alternative models.

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