



**Western University**  
**Department of Physics and Astronomy**

## **PHYSICS & ASTRONOMY COLLOQUIUM**

**Date:** **Thursday, 22<sup>nd</sup> March 2018**  
**Time:** **1:30 p.m.**  
**Location:** **Physics & Astronomy Seminar Room 100**

### **Dr. Marco Cortesi**

National Superconducting Cyclotron Laboratory  
University of Michigan

### ***“Developments and applications of Micro-Pattern Gaseous Detectors (MPGD): A concise review”***

#### **ABSTRACT**

A centenary after the discovery of the basic principle of gas amplification, gaseous detectors are still fundamental components at the frontier of present and planned physics experiments. Radiation detection and imaging with gas-avalanche technologies are the first choice whenever the large area coverage with low material budget is required.

Over the past decades, progresses in photo-lithographic technology have enabled the inventions of novel Micro-Pattern Gas Detector (MPGD) concepts: Gaseous Electron Multiplier (GEM), Micromegas and more recently other MPGD schemes, have revolutionized the cell size limits for many gas detector applications. This offers the potential to develop new radiation detectors and imaging devices with unprecedented spatial resolution, high rate capability, large sensitive area, stable high-gain operation and excellent radiation hardness. Originally developed for the HEP, MPGD applications have expanded to nuclear physics, astrophysics, neutrino physics, material science, neutron detection and medical imaging.

This seminar provides an overview of the state-of-the-art of the MPGD technologies: it presents and discusses operation mechanisms, properties and main applications of the most popular MPGD designs, with a particular focus on charge-particle tracking in the fields of nuclear, neutrino, astro- and rare-event physics.

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