

SEMINAR NOTICE

*Department of Physics and Engineering Physics
University of Saskatchewan*

SPEAKER: Dr. Marie-Cécile Piro
University of Alberta

TOPIC: *Towards the Ultimate Challenges for Dark Matter
Detection*

DATE: Tuesday January 31st, 2023

TIME: 3:30-4:30 p.m.

PLACE: *Physics 103*

Abstract:

My research is in particle physics and focuses on addressing the common detection challenges for searches of dark matter (DM) – a crucial element missing in our understanding of the Universe – and provides a unique chance to discover physics beyond the standard model. Experiments aimed at detecting DM interactions utilize detectors with several tons of active mass targets that require an exceptional high-purity environment and a detailed understanding of background signals at extremely low energies. In addition, the coherent scattering of solar neutrinos (CEvNS) will pose an irreducible background creating a solar neutrino floor for all DM experiments. Strategies to ascertain the directionality of detected events will be necessary to discriminate between the neutrino background and potential DM candidates. After giving an overview of the current challenges of direct DM detection, I will present the capability to add the directionality channel in the NEWS-G experiment and superheated liquids detectors to go beyond the neutrino floor.