



 Proudly Presents The  
**Canadian Association of Physicists (CAP)  
Lecture Series**



Speaker:

**DR. PIERRE GOREL**

Research Scientist  
SNOLAB

***“Digging into Mysteries: the Search for  
Dark Matter at SNOLAB”***

Our understanding of the laws of physics has been going by leaps and bounds in the last century. The Standard Model of Particle Physics has been very successful, culminating with the discovery of the previously predicted Higgs boson. And yet... it is enough to look up and survey the sky to discover that this great achievement explains less than 5% of the Universe. Many clues point to the existence of five times more matter with no electromagnetic interaction, making it impossible to observe except for its effect on the gravity field. The most favored candidates for this “dark matter” are the Weakly Interacting Massive Particles (WIMPs). They would scatter off nuclei, producing detectable recoils. Over the last decades, a world-wide effort has taken to look for these particles, which have managed so far to stay elusive. As a result, the detectors have become bigger and bigger, reaching new levels of sensitivity. The corollary is that the “low background” requirement inherent to this kind of detector became more and more stringent, forcing experiment to be built with the thickest overburden possible to be protected against cosmic rays. In this landscape, SNOLAB is one of the best laboratories in the world. With more than 2 km of rock overburden in the heart of the Canadian Shield, the facility has been built on the success of the SNO experiment (Nobel prize co-winner 2015) and is dedicated to low background research. With 6 projects at various stages of readiness and operation, direct dark matter search occupies a place of choice in the physics program of SNOLAB, next to neutrino detection and biology. In this talk, I will discuss the recent results published by three of them.

*Short bio:*

*Dr. Pierre Gorel graduated in 2002 from the Ecole Nationale Supérieure d'Ingenieur de Caen (France) with a specialization in nuclear instrumentation and worked on ECR ion sources at the Grand Accélérateur National d'Ions Lourds (Caen, France). In 2006, he completed a PhD on the Search for T-violation in the decay of the free neutron at the Paul Scherrer Institut (Villigen, Switzerland) and the University of Caen. He then moved to astroparticle physics as a research associate at the University of Alberta. After a short stint on the neutrinoless double beta decay with the SNO+ collaboration, he focused his work on the direct search for dark matter by joining the DEAP project and leading several aspects of the DEAP-3600 detector construction. He is currently a research scientist at SNOLAB (Sudbury, Canada) and involved in the analysis of the DEAP data as well as the construction of the NEWS-G dark matter detector at SNOLAB.*

**DATE:**

**TUESDAY, MARCH 6, 2018**

**TIME:**

**10:00 am**

**Room:**

**RB 2042**