



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 3848 Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

WITHDRAWN (G*) NEWS-G Data Analysis at SNOLAB for Dark Matter Searches

Wednesday 21 June 2023 11:45 (15 minutes)

The NEWS-G experiment at SNOLAB uses spherical proportional counters, or SPCs, to detect weakly interacting massive particles (WIMPs), which are a prime candidate for dark matter. Interactions within the gas-filled sphere create a primary ionization. Then, a radial electric field acting throughout the detector volume collects the electrons towards an anode sensor located at the sphere's center. This signal is amplified through a Townsend avalanche caused by the electric field. Signals are then processed using a double deconvolution procedure, which enables single electron counting.

The preliminary data analysis from the SNOLAB detector, which began taking data in Fall 2022 with a neon mixture, will be discussed. This will include results of the Argon-37 energy calibration, electron drift time measurements, selection cuts to remove identifiable background sources and measurements of surface and volume background rates. This preliminary analysis provides an important basis for future analysis work by reducing background sources within the data and allowing for a more detailed understanding of the physics processes in the detector.

Keyword-1

Dark Matter

Keyword-2

Particle Physics

Keyword-3

Data Analysis

Primary author: MAKOWSKI, Annabelle (Queen's University)

Presenter: MAKOWSKI, Annabelle (Queen's University)

Session Classification: (PPD) W1-9 DM / Neutrino 2 | DM / Neutrino 2 (PPD)

Track Classification: Technical Sessions / Sessions techniques: Particle Physics / Physique des particules (PPD)