



CO-OP Undergraduate STUDENT – Low Background Screening Activities (High Purity Germanium Detectors)

SNOLAB Research Division

Summer Term May-August 2022

About Us

SNOLAB is an international facility for world-class underground physics research and has an expanding programme in astroparticle physics and underground science. Located in an air-conditioned clean room 2 km underground in the Vale Creighton Mine near Sudbury Ontario, with a suite of surface facilities and laboratories, SNOLAB is currently preparing for the next generation of experiments focusing on neutrino studies and the search for galactic dark matter.

The Position

Astroparticle physics experiments searching for rare events, such as neutrinoless double beta decay and dark matter particle interactions, have to be built from extremely clean materials and shielded from background radiation in order to minimize radioactive backgrounds as low as reasonably achievable. The material selection for the next generation of low-background experiments is crucial to inform the final design of these experiments and to determine the shielding scheme required to minimize radioactive backgrounds, in addition, these methods are used to estimate the ultimate background rate in the energy region of interest of the experiments.

The SNOLAB material screening and assay program allows for the direct measurement of the experimental background sources. The student will be engaged with the analysis of calibration data from the high purity germanium (HPGe) detectors used within the SNOLAB material assay and screening program. In addition, characterization of the response of the HPGe detector via Monte Carlo simulation will be performed. Comparison studies of data and simulations will enable us to better understand the detectors. Samples of materials already in use, or which will be used, in the construction of the next generation of rare search experiments will be screened for their gamma contamination underground at SNOLAB with the HPGe detectors. The student will be based at SNOLAB, spending a fraction of their time underground.



📍 Creighton Mine #9, 1039 Regional Road 24, Lively, ON P3Y1N2

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Criteria

Education:

Applications from any undergraduate levels are accepted.

Must be 18 years or older, registered in post-secondary studies at an accredited institution or apprenticeship program, recent graduate (having graduated in the last 3-6 months) or individual returning to full-time or part-time studies in the next academic term.

Experience:

Expertise in data analysis, statistics and modern programming languages is required, knowledge of C++, Python, ROOT and Monte Carlo simulations are an asset. Comfortable working in a team environment where frequent and open communication are part of the culture. Experience working in a cleanroom laboratory is also an advantage.

Salary Range:

Salary will be determined by education and qualifications. These positions are subject to availability of funding. To meet operational needs, shift work may be required.

To Apply:

Applications must be submitted to ian.lawson@snolab.ca and silvia.scorza@snolab.ca.

Please do not fax or mail your applications. By applying to the e-mail address, your application becomes available to Research Scientists/Managers immediately. Interested students should include a cover letter and resume in a unique pdf file, named as "StudentName_Project_AcademicYear_HomeInstitution".

For more details on this specific project, please contact Dr. Ian Lawson and Dr. Silvia Scorza via email at ian.lawson@snolab.ca and silvia.scorza@snolab.ca

Closing Date

Deadline to Apply: January 15 to February 1

The posting will remain open until the position is filled, but review of applications will commence on January 15th, 2022. SNOLAB thanks all applicants for their interest, however, only those students considered for an interview will be contacted.

SNOLAB is committed to equity in employment and encourages applications from all qualified applicants, including women, Indigenous persons, members of visible minorities and persons with disabilities. In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents.

SNOLAB will provide support in its recruitment processes to applicants with disabilities, including accommodation that takes into account an applicant's accessibility needs.

Further information about SNOLAB may be found at www.snolab.ca

Posting Date: January 11, 2022



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