



CO-OP Undergraduate STUDENT – Radiopurity.org

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

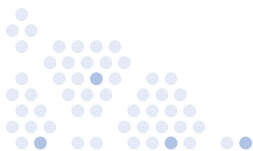
Searches for rare nuclear processes, such as neutrinoless double beta-decay and the interactions of WIMP dark matter, are motivating experiments with ever-decreasing levels of radioactive backgrounds. These background reductions are achieved using various techniques, but amongst the most important is minimizing radioactive contamination in the materials from which the experiment is constructed. To this end there have been decades of advances in material sourcing, manufacture and certification, during which researchers have accumulated many thousands of measurements of material radiopurity.

Some of these assays are described in publications, others are in databases, but many are still communicated informally. Until this work, there has been no standard format for encoding assay results and no effective, central location for storing them. The aim of this work is to address these long-standing problems by creating a concise and flexible material assay data format and powerful software application to manipulate it. A public installation of this software, available at <http://www.radiopurity.org>, is the largest database of assay results ever compiled and is intended as a long-term repository for the community's data.

The database above mentioned is currently hosted at SNOLAB and has not been updated since 2017. The project has the goal deliver an improved and updated database of material and assay screening measurements the physics community.

The student will take a leading role in updating a new radiopurity database currently under development using MongoDB along with its web interface via python script. In addition, the student will update the database uploading new available measurements from astroparticle physics experiments.

Ref. J.C.Loach, J.Cooley, G.A.Cox, Z.Li, K.D.Nguyen, A.W.P.Poon "A database for storing the results of material radiopurity measurements" <https://www.sciencedirect.com>



📍 Creighton Mine #9, 1039 Regional Road 24, Lively, ON P3Y1N2
☎ 705.692.7000 🖱 www.snolab.ca

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:

A student with strong computer science and database system skills (SQL and MongoDB) would be a good fit for this project but not necessary. Python and C++ skills are a good asset, as python scripts are used to interface the database.

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 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. Silvia Scorza via email silvia.scorza@snolab.ca

Closing Date

Deadline to Apply: January 15 to February 1

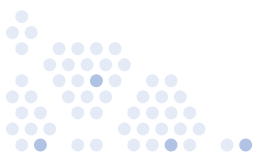
The posting will remain open until the position is filled, but review of applications will commence on January 15th, 2022. SNOLAB thanks all applicants for their interest, however, only those students considered for an interview will be contacted.

SNOLAB is committed to equity in employment and encourage 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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