

**LRT 2004 at SNOLAB and Laurentian University  
Topical Workshop in Low Radioactivity Techniques  
(Sudbury, Canada)  
December 12-14, 2004**

Bulletin 1 - September 2004

***1. Motivation***

Excavation work is now underway for the new international facility for deep underground particle astrophysics (SNOLAB), located in Sudbury, Canada. Funded through the Canada Foundation for Innovation (CFI), the facility, located 2070m below ground in INCO's Creighton Mine, will host multiple large scale and small experiments in neutrino physics, dark matter, and other fundamental research.

Recent experimental proof of neutrino mass and flavour oscillations continues to enrich and expand the field of neutrino astrophysics. The next steps in neutrino research seek to fix the absolute mass scale, measure the mixing parameters and CP-violation, determine if neutrinos are Majorana or Dirac particles, and to measure the flux of lower energy neutrinos from the primary reaction processes in the sun. The field also includes detectors for dark matter searches, and the detection of geo-neutrinos, reactor neutrinos and from possible beamed neutrino sources.

The next generation of proposed experiments will demand ultra-low detector backgrounds to reach the instrument sensitivities required. This will require novel techniques in the development, construction, operation and analysis of these experiments. Such issues include the low background radioactivity assay and purification of detector components and materials, and the development of high purity noble gases.

The goal of this workshop is to bring together experts in this field for presentations and discussion covering broadly the issues of low radioactivity techniques. The intention is to foster the collaboration and resource sharing required for the new generation of detectors to be developed at underground facilities.

***2. General Information***

The workshop will be held at the Laurentian University campus in Sudbury, Canada, from Sunday 12<sup>th</sup> to Tuesday 14<sup>th</sup> December. Participants could arrive on Saturday the 11<sup>th</sup>, with workshop sessions held on the 12<sup>th</sup> and 13<sup>th</sup>; underground tours of SNO can be arranged on the 14<sup>th</sup>. The workshop is funded in part by SNOLAB (through the Canada Foundation for Innovation), and is organised by SNOLAB and Laurentian University.

Due to the short lead time for this workshop, please send a short email to [lrt2004@snolab.ca](mailto:lrt2004@snolab.ca) at your earliest convenience to express your interest in participating.

Up to date conference information and registration will be available soon on the website <http://LRT2004.snolab.ca>.

### ***3. Format and organisation***

The format will be topical sessions with a program of invited and contributed talks. The program will leave time for some questions and discussion after each talk, with extra discussion time at the conclusion of each session. The workshop format is intended to provide for an active discussion in these periods among all participants.

Posters are also invited and will be posted directly in the conference hall for break time and inter-session discussions.

Contacts for the workshop and local organisers are listed at the end of this bulletin. An international advisory committee is being formed to set the workshop program.

### ***4. Workshop topics, invited talks, and proceedings***

This conference is intended to be wide in scope to include all aspects of the development of low background detectors and techniques. Topics include, but are not limited to:

- Survey of existing and planned low background facilities and resources.
- Low background detectors, shielding techniques and radiopurity requirements.
- New scintillators (optical properties, loading, and purification).
- Radon emanation and diffusion studies.
- Radon assay techniques.
- Radon free air, very low background noble gases (free of Rn, Ar and Kr).
- Radium assay techniques.
- Wash-off, leaching, surface contamination, screening and cleanliness studies.
- Water and scintillator purification studies.
- Low-level gamma-ray spectrometry.
- Neutron activation analysis techniques.
- ICPMS, atomic absorption and x-ray fluorescence spectroscopy.
- Studies of cosmogenic activation of materials.
- Software, simulations, electronics, vetoes and in-situ assay techniques.
- Simulation of background radiation and cosmic ray backgrounds and neutron fluxes.
- Adaptation of industrial processes and instrumentation.

An agenda of invited talks will be posted on the conference website when it is available. Participants interested in presenting at the workshop are encouraged to send an abstract to the scientific advisory committee.

Invited talks will be published in the proceedings; a copy is included in the registration fee for all participants. Transparencies, submitted posters and other contributions will be posted on the conference website.

## ***5. Registration and information***

Participants can register for the workshop on the website <http://LRT2004.snolab.ca> which will be available soon. Program times and details, and all other updated information will be available on the website.

Participants should indicate their interest in the underground tour of SNO at registration time. The tour will be arranged on the basis of this information and details announced at the workshop.

## ***6. Workshop location, travel and accommodation***

The workshop will be held on the Laurentian University campus in the Alfonse Raymond Education building. Refreshments and buffet lunches will be available on location; these and a banquet on Sunday evening are included in the registration fee. Other meals can be arranged by participants at hotels and local restaurants. Maps and suggested restaurants will be posted on the website and made available at the workshop.

Travel to Sudbury, Canada, is arranged by the participants. Sudbury has a local airport, where rental cars or taxis are available for transport to hotels. Travelers may also choose to rent a car from Toronto airport and drive approximately 4.5 hours to Sudbury. Maps and detailed travel advice will be available on the website.

Accommodation is available at several nearby hotels; details will be listed on the website with arranged rates and contact information.

A minibus will provide transport from the arranged hotels to the conference according to a schedule to be posted on the website and announced at the workshop.

Parking will be available on the Laurentian campus at the workshop location.

A campus map will be posted on the website and included in the registration materials.

There is no program or registration for accompanying persons.

## ***7. Important dates***

Those planning to attend are requested to immediately indicate their interest in participating in this workshop by emailing [lrt2004@snolab.ca](mailto:lrt2004@snolab.ca). Participants should also register for the conference on the website at their earliest convenience.

Participants interested in presenting a talk should submit an abstract to the advisory committee (by email to [lrt2004@snolab.ca](mailto:lrt2004@snolab.ca) ). Abstracts should be submitted by November 1<sup>st</sup> 2004.

## ***8. Contact information, organising committees and sponsors***

All registration and information matters are directed to the workshop website at <http://LRT2004.snolab.ca>. Email should be sent to [lrt2004@snolab.ca](mailto:lrt2004@snolab.ca).

Conference organising committee:

Mark Chen (co-chair) [mchen@post.queensu.ca](mailto:mchen@post.queensu.ca)

Richard Ford (co-chair) [ford@snolab.ca](mailto:ford@snolab.ca)

Doug Hallman

Arthur McDonald

Tony Noble

David Sinclair

International science advisory committee:

*To be announced*

Local organising committee:

Doug Hallman (chair) [edh@nu.phys.laurentian.ca](mailto:edh@nu.phys.laurentian.ca)

Fraser Duncan

Jacques Farine

Richard Ford

Clarence Virtue

The workshop secretary, Pat Brouse can be contacted at:

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The workshop is sponsored in part by:

SNOLAB (<http://www.snolab.ca>)