

## Postdoctoral Fellow at Carleton University with the Ba-Tagging Experiment

The Astroparticle and Neutrino Physics Group at Carleton University is looking for a postdoctoral fellow to join the team and contribute to the local research program that focuses on Ba-ion tagging R&D in view of employing it in large scale neutrinoless double beta decay experiments with liquid xenon. The group at Carleton University is conducting world-renowned research in the field of particle physics by contributing to major international efforts for the development of the next-generation high-sensitivity detectors for neutrino physics and direct dark matter searches. Most notably, the group is an essential member of the nEXO collaboration with emphasis on current and future activities at SNOLAB.

Novel detector technologies are required in order to greatly improve the sensitivity of the future nEXO detector that will attempt to observe the neutrinoless double-beta decay of  $^{136}\text{Xe}$  to  $^{136}\text{Ba}$ . One of the most promising technologies is based on the extraction and identification of the  $^{136}\text{Xe}$  decay daughter  $^{136}\text{Ba}$ , where only events with a positive identification of  $^{136}\text{Ba}$  will be considered in the search for new physics. This Ba-ion tagging technique allows discrimination against events induced by residual radioactivity and thus, an almost background-free measurement of double beta decays in xenon.

The successful candidate will have a background in ion-manipulation techniques and the fields of nuclear or particle physics. The candidate will be responsible to lead components of the R&D program which aim at demonstrating ion extraction from liquid Xe and high-pressure Xe gas as well as to optimize ion transport from the extraction facility up to the Ba identification apparatus. The candidate is expected to operate existing scientific equipment, and design and supervise the construction of novel experimental infrastructure, in particular, RF-ion guides and a linear Paul trap for laser spectroscopy applications. Participation in collaboration activities, including travel within Canada and internationally is expected. Additionally, assisting with graduate students supervision as part of the research project is anticipated as well.

The Carleton group is highly recognized in the fields of neutrino physics with crucial participation in award winning projects like SNO (Noble Prize 2015, Breakthrough Prize 2016). Carleton University is also a core member of the Arthur B. McDonald Canadian Astroparticle Physics Research Institute with various prospective openings for new faculty and research scientists.

### Required Qualifications

- Hold a PhD degree, or obtain one soon, in fields related to nuclear or particle physics
- Demonstrate experience and interest in instrumentation development and experimental work
- Demonstrate experience or interest in ion physics, particularly ion manipulation
- Demonstrate management skills and the ability to work in a preemptive environment
- Demonstrate good communication skills and ease of participating in teamwork

Candidates are asked to send an email application with their CV, a statement of research interests and arrange to have three reference letters sent to

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*Carleton University is committed to employment equity, diversity and inclusion in the workplace and strongly encourages applications from all qualified applicants, including women, Indigenous persons, members of visible minorities, persons of any sexual orientation or gender identity, and persons with disabilities. In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents. As a post-doctoral fellow at Carleton University, you would be represented by the Public Service Alliance of Canada and entitled to membership in PSAC Local 77000. We are committed to providing support to applicants with accessibility needs, if you require accommodation at any stage during the recruitment process, please contact us at the above email address.*