

## Postdoctoral Fellow at Carleton University

The Astroparticle 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 neutrinoless double beta decay search and direct dark matter searches. Most notably, the group is an essential member of the nEXO and EXO-200 collaborations with emphasis on current and future activities at SNOLab.

New 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 for 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.

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 particle or nuclear physics
- Demonstrate experience and interest in hardware 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

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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