

Postdoctoral Fellow at Carleton University with the Hyper-Kamiokande Experiment

The Astroparticle and Neutrino Physics Group at Carleton University is looking for a postdoctoral fellow to join the team and contribute to the research program that focuses on the development and optimization of the mPMT high granularity photodetector for its application at the future HyperK far detector. 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 dark matter searches. 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.

Novel technologies are required in order to greatly improve the calibration of the largest ever built water Cherenkov neutrino detector which will provide a tremendous increase in data acquisition statistics when combined with the highest intensity neutrino beam ever made. Strict control of systematic errors enables the exploitation of this massive data set for the implementation of the highest sensitivity searches in the neutrino field as well as that of new exotic physics. The high-granularity and low-noise mPMT photosensor and its auxiliary in-situ calibration systems allow the HyperK collaborators to realize the most precise detector calibration possible by eliminating the degeneracy between various sources of systematic errors. In addition, the Canadian collaborators have proposed a near detector which will help further constraint the experiment's systematic errors by characterizing accurately the neutrino beam, as well as a small R&D detector installed at CERN to test the response of mPMTs before their deployment at the HyperK near and far detectors. Together these form a coherent and powerful research program aimed at reducing the systematic errors in the HyperK experimental data and ensuring the success of the experiment.

The successful candidate will have a background particle physics, preferably with previous experience in neutrino physics or low background rare event searches. The candidate will be responsible to lead the mPMT R&D program at Carleton University with the aim of optimizing the manufacturing and testing procedures for the mPMT application at the HyperK far detector, as well as contribute to the Canadian Monte Carlo simulation efforts in preparation of the IWCD near detector and WCTE R&D program at CERN. Participation to 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.

Required Qualifications

- Hold a PhD degree, or obtain one soon, in fields related to particle physics
- Demonstrate experience and interest in instrumentation development and experimental work
- 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

Dr. Razvan Gornea, Associate Professor

Department of Physics
Room 2462 Herzberg Laboratories
Carleton University
1125 Colonel By Drive
Ottawa, Ontario, K1S 5B6, CANADA

Email: razvan.gornea@carleton.ca

Tel: +1-514-802-4163

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.