Ph.D. position in Experimental Particle Physics/Instrumentation

Project: Prof. Guillaume Giroux and Prof. Levente Balogh at the Arthur B. McDonald Canadian Astroparticle Physics Research Institute (MI), Queen's University are looking for a Ph.D. student to participate in a research project setting up a quasi-monoenergetic neutron beam at the Reactor Material Testing Laboratory's (RMTL) proton accelerator facility to calibrate dark matter detectors. The student's project will focus on developing instrumentation for neutron detection and quenching factor measurements on dark matter detectors. This research is essential in understanding the response of dark matter detectors (gaseous -, semi-conductor -, liquid noble gas - and superheated liquid detectors) to the low energy nuclear recoils that are expected from WIMP (weakly interacting massive particle) interactions. The student will work closely with the NEWS-G collaboration and will have the opportunity to collaborate with other institutions affiliated with the MI and SNOLAB (Sudbury, ON).

With Nobel Prize winner Art McDonald, Queen's University is home to one of the strongest astroparticle physics groups in Canada. Queen's also hosts the Arthur B. McDonald Canadian Astroparticle Physics Research Institute, a partnership between 13 universities and research institutes working to unite researchers, theorists and technical experts across Canada and internationally. Queen's University is located in historic Kingston on the shores of Lake Ontario and it is one of Canada's leading research-intensive universities.

Requirements: The candidates should have experience/interest in experimental particle physics, detector instrumentation and data evaluation. Some working knowledge of GEANT4 would be an asset. Candidates should have the willingness to learn new things and be motivated to solve problems in an interdisciplinary framework. By the start date of the Ph.D. position, the successful candidate should possess a M.Sc. in physics or engineering with specialization in high-energy physics, nuclear physics, astroparticle physics, or equivalent.

The PhD student will be affiliated with the Department of Physics, Engineering Physics and Astronomy (PHYS) and MI, and will work in close collaboration with the Department of Mechanical and Materials Engineering (MME). The student will be jointly supervised by Prof. Levente Balogh (MME) and Prof. Guillaume Giroux (PHYS). The PhD position will be located in Kingston ON and funded for 4 years.

To apply: If interested, please send an email to Prof. Levente Balogh (levente.balogh@queensu.ca) with a CV and contact information for 2 referees.

Queen's University invites applications from all qualified candidates. Queen's is committed to employment equity and diversity in the workplace and welcomes applications from women, visible minorities, Indigenous peoples, persons with disabilities, and persons of any sexual orientation or gender identity. Queen's University recognizes and appreciates the value that diversity adds to its activities and initiatives.

Application deadline: open until filled. *Start date:* September 2019 or ASAP thereafter.

Arthur B. McDonald Institute (MI) https://mcdonaldinstitute.ca, NEWS-G collaboration https://news-g.org, RMTL https://rmtl.engineering.queensu.ca, SNOLAB https://www.snolab.ca, MME https://me.queensu.ca/, PHYS https://www.queensu.ca/physics/home, Graduate Studies at PHYS https://www.queensu.ca/physics/grad-studies/applicants