



University
of Regina



Faculty of
Science

Graduate Student Position in Particle Physics

The Department of Physics at the University of Regina invites applications for students interested in pursuing a M.Sc. position in experimental particle physics. The position is specifically for work on Super-Kamiokande and/or Hyper-Kamiokande related experiments in neutrino physics.

The Super-Kamiokande experiment in Japan is a world-leading neutrino experiment and its successor, Hyper-Kamiokande, will be one of the most important science experiments in recent history. Their physics program includes measurement of the neutrino oscillation parameters with unprecedented accuracy, search for CP violation in the neutrino sector to solve the mystery of the asymmetry between matter and antimatter in the Universe, as well as searches for the mysterious dark matter, for signs of Grand Unification Theories through proton decay. As well, astroparticle physics and the observation of neutrinos produced in supernova explosions are important goals.

University of Regina scientists lead several efforts supporting this research which includes the design, testing and construction of the Intermediate Water Cherenkov Detector (IWCD), and systems to support the future operation and calibration of the main Hyper-Kamiokande detector, which are crucial for the achievement of the scientific goals. As well, new methods are being developed to study supernova neutrinos as part of the global effort to prepare for the next galactic supernova. This work is done in close collaboration with TRIUMF and other Canadian institutions, including the British Columbia Institute of Technology (BCIT).

The successful candidate will have the opportunity to learn a variety of hardware and software skills in particle physics that could include detector and hardware systems design, validation and production, computer simulations, and advanced computing techniques such as machine learning (ML) and high performance computing (HPC). The student be a part of a large scale international project team; to meet diverse cultures through travel and teamwork. The work may require periodic relocation for work at TRIUMF or BCIT in Vancouver.

Candidates with interest in particle physics, and specifically in neutrino and astroparticle physics, are invited to apply. The successful candidates will be required to work on both hardware and software tasks for Hyper-Kamiokande. Experience with Python, C++, Geant 4 or ROOT will be considered an asset, as would some knowledge of machine learning and HPC.

For the University of Regina graduate studies application procedure please visit:

<https://www.uregina.ca/science/physics/grad-students/index.html>

<https://www.uregina.ca/gradstudies/future-students/index.html>

Please direct all questions regarding this position to:

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