

Postdoctoral Fellow in Experimental Particle Physics

Hyper-Kamiokande Detector Construction, Commissioning, Calibration and Physics

Appointment	Full-time, two-year term; renewable up to three years total, subject to mutual agreement and continued funding
Start date	As soon as possible
Application deadline	October 28, 2026; applications received by this date will receive full consideration
Location	Department of Physics, University of Regina, Regina, Saskatchewan, with substantial periods of work in Japan
Initial salary	\$65,000-\$72,000 CAD per year, commensurate with qualifications and experience, plus benefits under the CUPE Local 5791 Collective Agreement for Research Employees

Position overview

The Hyper-Kamiokande group in the Department of Physics at the University of Regina invites applications for a Postdoctoral Fellow in experimental particle physics. The position is intended for a broadly skilled experimentalist who can contribute across detector construction, commissioning, calibration, scientific software development, and, as the experiment enters operation, physics data analysis. The successful candidate will join the international Hyper-Kamiokande (Hyper-K) collaboration at a particularly active stage in the construction of the experiment.

The immediate program includes completion of the University of Regina responsibilities for the Hyper-K multi-PMT (mPMT) LED light-injection system, including component production, quality control, integration, documentation, and coordination with collaborating institutions. The postdoctoral fellow will also participate directly in Hyper-K far-detector construction in Japan during the current high-intensity construction phase and, as commissioning begins, will take an active role in commissioning and calibration activities. Extended and repeated stays in Japan are a central requirement of the position and may range from several weeks to several months at a time.

In parallel with these hands-on activities, the successful candidate will contribute to the development of the Hyper-K far-detector calibration framework, including software, analysis tools, procedures, validation methods, monitoring, and documentation. The postdoctoral fellow will work closely with the Hyper-K Canada calibration effort and will also contribute to the active Intermediate Water Cherenkov Detector (IWCD) program. The balance of effort between the far detector and IWCD will evolve with project priorities so that the successful candidate can take on responsibilities in a focused and effective way. As Hyper-K begins producing physics-quality data, the role will expand naturally to include detector-performance studies and physics data analysis.

Primary responsibilities

- Play a leading hands-on role in production, testing, quality control, integration, software support, and documentation for the Hyper-K mPMT LED light-injection system at the University of Regina and within the broader Canadian production effort.
- Participate directly in Hyper-K far-detector construction and installation in Japan, including extended construction periods and collaboration shifts as required.
- Take an active role in far-detector commissioning, including detector checkout, calibration-system operation, data-quality validation, troubleshooting, and development of commissioning procedures.
- Contribute substantially to the Hyper-K far-detector calibration program and Hyper-K Canada calibration effort, including calibration frameworks, software, procedures, validation strategies, databases, monitoring tools, and evaluation of calibration-related systematic uncertainties.
- Develop and use simulation, reconstruction, detector-performance, and analysis tools relevant to construction, commissioning, calibration, and eventual neutrino-physics measurements.
- Contribute to the active IWCD construction, calibration, commissioning, software, and detector-performance program as the balance of responsibilities permits.
- Participate in physics data analysis as Hyper-K enters operation and suitable data become available, contributing to collaboration analyses, publications, presentations, documentation, and mentoring or technical coordination where appropriate.

Required qualifications and abilities

- A PhD in experimental particle physics, nuclear physics, astroparticle physics, or a closely related field, completed or expected before the start of the appointment.
- A strong background in experimental particle physics and substantial knowledge of neutrino physics and modern neutrino experiments.
- Excellent scientific programming and software-development skills. Strong experience with Python and/or C++ is required; experience with ROOT, Linux/Unix, version control, and collaborative scientific-software development is expected.

- Demonstrated ability in quantitative data analysis, detector-performance studies, statistical interpretation, and the development or validation of analysis procedures.
- Hands-on experience with particle-detector instrumentation, construction, commissioning, calibration, data acquisition, electronics, optics, photodetectors, or closely related experimental systems.
- Ability to work independently, solve technical problems, document work clearly, communicate excellently in oral and written form, and contribute effectively within a large international collaboration.
- A strong commitment to Hyper-K construction and commissioning and the ability and willingness to spend repeated extended periods in Japan, ranging from several weeks to several months at a time.

The following would be considered assets

- Direct experience with Hyper-Kamiokande, T2K, Super-Kamiokande, IWCD, or another large neutrino or water-Cherenkov experiment.
- Experience with photomultiplier tubes, LED or laser light-injection systems, optical calibration, detector timing/gain calibration, or measurements of optical properties in large detectors.
- Experience designing or maintaining calibration frameworks, monitoring software, production databases, automated quality-control systems, or reproducible analysis pipelines.
- Experience with detector simulation and reconstruction frameworks, including Geant4-based applications, water-Cherenkov simulation, event reconstruction, or detector-response modelling.
- Experience with electronics, data-acquisition or slow-control systems, laboratory instrumentation, detector production/installation coordination, or supervision and mentoring of students.

Appointment, salary, and benefits

The initial appointment will be for two years, with the possibility of renewal for up to three years total, subject to mutual agreement and continued funding. The position is full-time and is expected to begin as soon as possible. The initial salary will be \$65,000-\$72,000 CAD per year, commensurate with qualifications and experience, plus benefits under the CUPE Local 5791 Collective Agreement for Research Employees. Current collective-agreement and postdoctoral-benefits information is available on the [University of Regina Postdoctoral Resources page](#).

Application procedure

Applicants should submit a cover letter, a curriculum vitae including a publication list, a brief statement of research and technical experience, and the names and contact information of at least three references. Applications received by October 28, 2026 will receive full consideration; the position may remain open until filled.

Application contact: Dr. Nikolay Kolev, Department of Physics, University of Regina - Nikolay.Kolev@uregina.ca

Equity, diversity, inclusion, and immigration

The University of Regina is committed to an inclusive workplace that reflects the richness of the community that we serve. The University welcomes applications from all qualified individuals, including individuals within the University's employment equity categories of women, persons with disabilities, members of visible minorities, Indigenous persons, individuals of diverse gender and sexual orientation and all groups protected by the Human Rights Code.

All qualified candidates are encouraged to apply; however, Canadian citizens and permanent residents will be given priority. International candidates are welcome, subject to obtaining appropriate authorization to work in Canada.