



**Postdoctoral Fellowship in Molecular Dynamics Simulations for
Experimental Particle Astrophysics
Department of Physics, Engineering Physics, and Astronomy
Queen's University**

The particle astrophysics group at Queen's University is seeking applicants for a postdoctoral research position developing molecular dynamics simulations in support of the Scintillating Bubble Chamber ("SBC") experiment. SBC will search for particle dark matter using superheated liquid argon bubble chambers. The collaboration is currently operating a 10kg demonstration detector at Fermilab, while preparing to deploy the first physics-capable SBC detector at SNOLAB.

A key novel feature of SBC is the suppression of bubble nucleation by electron recoil events relative to nuclear recoil events as a result of optical scintillation by the argon. The successful candidate will be responsible for improving our understanding of the SBC technology, in particular by developing and using molecular dynamics simulations to help us better understand bubble nucleation in superheated liquid argon. The candidate will also participate in analysis of data from SBC-Fermilab.

This is a cross-disciplinary search. The successful candidate will have a PhD in condensed matter physics and extensive experience in molecular dynamics simulation and methods development. Experience in programming in Python, the HOOMD-Blue MD package, molecular dynamics thermostat development, and the Signac data management framework are all assets. The appointment will be for two years, with the possibility of renewal. Salary will be commensurate with qualifications and experience. The position will be based at Queen's University in Kingston, Ontario and will be co-supervised by Profs. Ken Clark and Alex Wright (particle astrophysics/SBC) and Greg van Anders (condensed matter/MD simulations).

Applicants should submit a cover letter/statement of interest and a detailed CV, and arrange to have at least three letters of reference sent by e-mail to Professor Alex Wright: awright@queensu.ca. Review of applications will begin March 20, 2026 and will continue until the position is filled.

Queen's University is strongly committed to equity, diversity and inclusion in the workplace and encourages applications from all qualified candidates including Black, racialized/visible minority and Indigenous people, women, persons with disabilities, and 2SLGBTQ+ persons.

Queen's University has policies in place to support its employees with disabilities, including an Accommodation in the Workplace Policy and a policy on the provision of job accommodations that take into account an employee's accessibility needs due to disability. The University will provide support in its recruitment processes to applicants with disabilities, including accommodation that takes into account an applicant's accessibility needs. If you require accommodation during the interview process, please contact Prof. Alex Wright at awright@queensu.ca.