

<b>Job Title</b>	Postdoctoral Fellow
<b>PVN ID</b>	YC-2102-003876
<b>Category</b>	Research
<b>Location</b>	YORK COLLEGE
<b>Department</b>	Earth and Physical Sciences
<b>Status</b>	Full Time
<b>Annual Salary</b>	\$55,000.00 - \$55,000.00
<b>Hour(s) a Week</b>	35
<b>Closing Date</b>	Apr 18, 2021 (Or Until Filled)

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## General Description

The Experimental High Energy Physics research group at York College of the City University of New York is seeking an independent, highly motivated individual to become a Postdoctoral Fellow doing research on novel fusion .

The successful candidate will primarily develop and validate computational models in the Geant4 simulation toolkit to enable high fidelity simulations of processes involving muonic atoms, with an emphasis on the physics of muonic hydrogen isotopes, muonic hydrogen molecules, and muon catalyzed fusion. They will also contribute to the design and simulation of experiments taking data on the DD and DT muon catalyzed fusion processes that will be performed at the Paul Scherrer Institut in Switzerland, and the Fermi National Accelerator Laboratory in the United States. This position is supported by the US Advanced Research Projects Agency - Energy (ARPA-E). They will also be expected to join the Geant4 Collaboration.

Responsibilities will include: identify and fill gaps in the base muonic atoms package within the current Geant4 distribution; implement or enhance basic electromagnetic processes for muonic atoms (ionization, scattering, etc); implement muon transfer and exchange processes; implement muonic molecules and processes, muon stripping, and catalyzed fusion processes; simulate the experimental design and compare results to experiment; validate physics performance of models against current and archival data sets, and create a validation test suite; develop Geant4 Example applications exercising the physics implementation; document the physics underlying the implemented process models and commit to the Geant4 Physics Reference Manual.

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## Other Duties

Mentoring and guidance of graduate and undergraduate students, as well as some travel, may be required.

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## Qualifications

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We are looking for:

- \* A PhD or equivalent (at the time of appointment) in theoretical or experimental particle, nuclear, accelerator, or fusion physics or nuclear engineering, or a related field;
- \* Experience in Monte Carlo simulations, preferably with Geant4; implementation experience within the internals of Geant4 would be highly advantageous;
- \* Experience with experiment design and operation preferred.