

Postdoctoral Research Associate in Fusion Energy Science

The Physics Department at the University of Virginia seeks applicants for a Postdoctoral Research Associate position to support a new research program at the intersection of Nuclear Physics and Fusion Energy. The program aims to experimentally verify the potential for achieving a predicted enhancement of the power output of a tokamak fusion reactor, by burning spin-polarized nuclear fuel. This *Spin-Polarized Fusion* (SPF) program is a joint venture by the University of Virginia (UVA) with its collaborating partners at Jefferson Lab (JLab), Oak Ridge National Lab (ORNL), the University of California at Irvine (UCI), and the DIII-D National Fusion Facility in San Diego. The initial phase of the program, recently funded by the U.S. Department of Energy–Office of Fusion Energy Science, will focus on the construction of unique equipment needed to prepare and inject polarized fuel into the DIII-D tokamak. Spin lifetime studies would be carried out in a subsequent phase of the program.

The SPF experiments at DIII-D will utilize the $D + {}^3\text{He} \rightarrow \alpha + p$ reaction, with polarized deuterium injected in the form of solid LiD pellets (developed at JLab) and polarized ${}^3\text{He}$ injected as pressurized gas encapsulated in polymer shells (developed at UVA). The successful applicant will be involved with the preparation of both polarized fuel species, though most of their effort will focus on polarized LiD. The successful applicant will be stationed at JLab, as part of its Polarized Fusion Group, and will develop and run an experiment to dope LiD with paramagnetic polarizing centers by electron irradiation. They will work closely with JLab's Target Group on the irradiation experiment, and will support the simulation of the beamline design and the execution of the irradiation experiment. The successful applicant will also work with JLab colleagues to design the Dynamic Nuclear Polarization (DNP) equipment required for subsequent LiD polarization, and with SPF partner labs on the overall scientific and technical efforts needed to mount the SPF experiment at DIII-D.

The initial appointment will be for one year, and the appointment may be renewed for an additional year, contingent upon satisfactory performance. Extensions into subsequent phases of the SPF program may also be possible, contingent upon performance and funding.

QUALIFICATION REQUIREMENTS: The candidate must hold a PhD in Physics or closely related field at the time of appointment, and preferably be within 3 years of having completed their PhD degree. The candidate must have good English-language communication skills (both speaking and writing) and be willing to work within an extended collaboration. The preferred research background is in the field of experimental nuclear and/or particle physics, or in experimental plasma physics. Other preferred qualifications include familiarity with low-temperature experiments, charge-particle transport, and the GEANT simulation package. A strong desire to learn and to lead are key.

APPLICATION PROCEDURE: Apply online at <https://uva.wd1.myworkdayjobs.com/UVAJobs> and attach a cover letter, a CV/resume, contact information for three references (name, email address, telephone number) and a brief description of research interest and philosophy. The CV and/or the research statement should include a description of past accomplishments in data analysis, hardware development, simulation, dissemination of results (publications and talks), and demonstration of creativity and innovation if applicable. Please note that multiple documents can be uploaded in the box.

APPLICATION DEADLINE: Review of applications will begin on January 15, 2024. Applications received by the end of January 2024 will receive full consideration. The position will remain open until filled. The University of Virginia will perform background checks on all new hires prior to employment.

For questions regarding this position, please contact Wilson Miller, Associate Professor of Radiology and Physics, at wilson.miller@virginia.edu.

For questions regarding the application process, contact Rich Haverstrom, Faculty Search Advisor, at rkh6j@virginia.edu.

For more information on the benefits available to postdoctoral associates at UVA, visit postdoc.virginia.edu and hr.virginia.edu/benefits.

The University of Virginia, including the UVA Health System which represents the UVA Medical Center, Schools of Medicine and Nursing, UVA Physician's Group and the Claude Moore Health Sciences Library, are fundamentally committed to the diversity of our faculty and staff. We believe diversity is excellence expressing itself through every person's perspectives and lived experiences. We are equal opportunity and affirmative action employers. All qualified applicants will receive consideration for employment without regard to age, color, disability, gender identity or expression, marital status, national or ethnic origin, political affiliation, race, religion, sex (including pregnancy), sexual orientation, veteran status, and family medical or genetic information.

MINIMUM REQUIREMENTS

Education: Doctoral degree

Experience: None

Licensure: None

PHYSICAL DEMANDS

This is primarily a sedentary job involving extensive use of desktop computers. The job does occasionally require traveling some distance to attend meetings, and programs.

