

## NOTICE OF VACANCY

### **X-Ray Beamline Scientist for the Dynamic Compression Sector at the Advanced Photon Source, Lemont, Illinois**

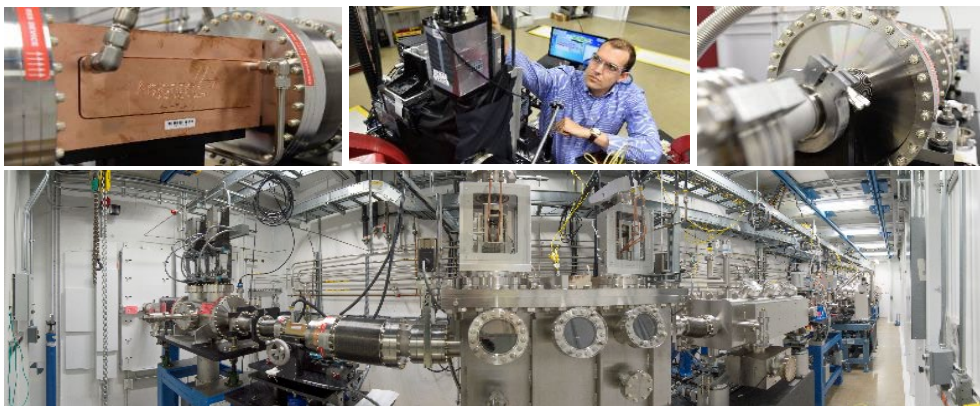


WASHINGTON STATE UNIVERSITY  
Institute for Shock Physics

Washington State University (WSU) is seeking a strongly self-motivated, talented experimentalist to support research activities, working with scientists and engineers at a first-of-a-kind experimental user facility: The Dynamic Compression Sector (DCS) at the Advanced Photon Source (APS), Argonne National Laboratory (ANL). The DCS constitutes a new paradigm for understanding the dynamic compression and deformation response of materials subjected to extreme conditions on short time-scales. Real-time, atomistic-scale investigations of condensed matter phenomena are undertaken in single event experiments through time-resolved, in-situ measurements utilizing the tunable, high energy x-ray capabilities at the APS.



The ideal candidate should have a strong background in Condensed Matter Physics and enjoy hands-on work and problem solving in a fast-paced, research environment. The location for this WSU position is at Argonne National Laboratory (ANL) in Lemont, IL. As such, DCS staff are considered “resident users” and must adhere to ANL policies and procedures, including the completion of required training courses.



Experiments at the DCS utilize both x-ray and optical diagnostics to understand the shock compressed state of materials. X-ray diagnostics include state-of-the-art x-ray optics, high-speed choppers/shutters, and both commercially available and custom x-ray detector systems. Optical diagnostics employ a wide range of free-space and fiber-optics-based lasers, fast photodetectors, image intensifiers, ICCD's, streak cameras, and other state-of-the-art electro-optic instrumentation.

The successful candidate will be expected to operate and maintain these systems for a broad range of user experiments as well as design new systems and components specific to software/hardware controls (EPICS) to advance the capabilities of the DCS. An important aspect of this position is code development for remotely controlling x-ray beamline instrumentation and automated data acquisition and analysis.

**Responsibilities for this position include, but are not limited to:**

- Support and maintain the DCS x-ray beamline components including vacuum systems, large Kirkpatrick-Baez (KB) focusing mirror systems, and x-ray beam choppers and shutters.
- Design and implement experimental components and custom control systems used on the x-ray beamline and in the experimental end stations with a focus on developing efficient automation and data acquisition/analysis software.
- Initiate and participate in research activities including new types of x-ray measurements and analyses to advance the DCS scientific objectives.
- Interacting with users to conduct time-resolved dynamic compression experiments using x-ray techniques, such as x-ray diffraction (XRD), phase-contrast Imaging (PCI), and small angle x-ray scattering (SAXS/WAX). This includes setting up and characterizing the x-ray beam for users.
- Contribute effectively to all aspects of the research projects including assistance to DCS users; maintenance of the experimental facilities; ordering experimental components, equipment, and supplies; and working effectively in a team setting.
- Independently define and complete experimental projects and tasks.

**Required Qualifications**

Strong hands-on experimental background and skills relevant to the position responsibilities are essential. The required professional qualifications and personal attributes are:

- A Ph.D. degree in Physics or a related field with a strong experimental background in condensed matter physics.
- Strong hands-on ability with design and fabrication of instruments and experimental components.
- Considerable skill and knowledge of hardware and software required for photonics-based (x-ray and optical) experiments.
- Experience with one or more x-ray measurement techniques such as diffraction, spectroscopy, or imaging.
- Advanced computational skills, including computer programming for instrument control and analysis, such as LabView, EPICS, Python, and/or MATLAB.
- Excellent communication skills, both verbal and written, necessary to interact with team members and users to effectively present research objectives and documentation.
- Personal attributes should include critical thinking, good judgment, attention to detail, ability to work effectively in a team, positive attitude, and accountability.
- Must be able to obtain a badge at U.S. Department of Energy National Laboratories to gain access to restricted areas.

**Preferred Qualifications**

- Work experience at a synchrotron.
- Experience working with ultra-high vacuum systems and optical components.
- Experience in working with custom control systems including FPGAs.

The annual salary range is \$85,000 - \$100,000, commensurate with the candidate's experience and qualifications. Other benefits include health/dental insurance, vacation/sick leave, and retirement plans.

## Applications

Applicants should submit the following information to Dr. Paulo Rigg at [dcs.admin@wsu.edu](mailto:dcs.admin@wsu.edu). The application package should include:

- Cover letter to the attention of Dr. Paulo Rigg explicitly addressing the required qualifications for this position and date of availability.
- Detailed curriculum vitae
- Contact information for three professional references (name, email, and phone number)

**Due to the large volume of applications, we will contact only those selected for next steps.**

## Additional information about the Institute for Shock Physics and Washington State University follows:

The Institute has ongoing research activities at the following three locations:

- *Institute for Shock Physics - Pullman, WA*: Combining research innovations and rigorous education ([shock.wsu.edu](http://shock.wsu.edu))
- *Dynamic Compression Sector - Lemont, IL*: Frontier of dynamic compression science (first-of-a-kind worldwide user facility) located at the Advanced Photon Source, Argonne National Laboratory ([dcs-aps.wsu.edu](http://dcs-aps.wsu.edu))
- *Applied Sciences Laboratory - Spokane, WA*: Transforming science into practical solutions ([asl.wsu.edu](http://asl.wsu.edu))

## Washington State University

Washington State University, one of the two research universities in the state, was founded in 1890 as the state's land-grant institution and is located in Pullman with regional campuses in Spokane, Vancouver, the Tri-Cities, and Everett. Due to its strong emphasis on excellence in research and education, the Carnegie Classification™ has designated WSU as R1/Tier 1: Doctoral University – Highest Research Activity. Current enrollment is approximately 31,600 undergraduate, graduate, and professional students. The University offers 98 majors, 86 minors, and 100+ in-major specializations for undergraduates, 78 master's degree programs, 65 doctoral degree programs, and 3 professional degree programs. Academically, the University is organized into 11 colleges (Agriculture, Human, and Natural Resource Sciences; Arts and Sciences; Business; Communication; Education; Engineering and Architecture; Honors; Medicine; Nursing; Pharmacy and Pharmaceutical Sciences; and Veterinary Medicine) and a Graduate School. For more information, please visit [wsu.edu](http://wsu.edu).



*WASHINGTON STATE UNIVERSITY IS AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EDUCATOR AND EMPLOYER. Members of ethnic minorities, women, special disabled veterans, veterans of the Vietnam-era, recently separated veterans, and other protected veteran, persons of disability and/or persons age 40 and over are encouraged to apply.*

*WSU employs only U.S. citizens and lawfully authorized non-U.S. citizens. All new employees must show employment eligibility verification as required by the U.S. Citizenship and Immigration Services. WSU is committed to providing access and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities.*

*To request disability accommodation in the application process, contact Human Resource Services: 509-335-4521 (v), Washington State TDD Relay Service: Voice Callers: 1-800-833-6384; TDD Callers: 1-800-833-6388, 509-335-1259(f), or [hrs@wsu.edu](mailto:hrs@wsu.edu).*