

## NOTICE OF VACANCY

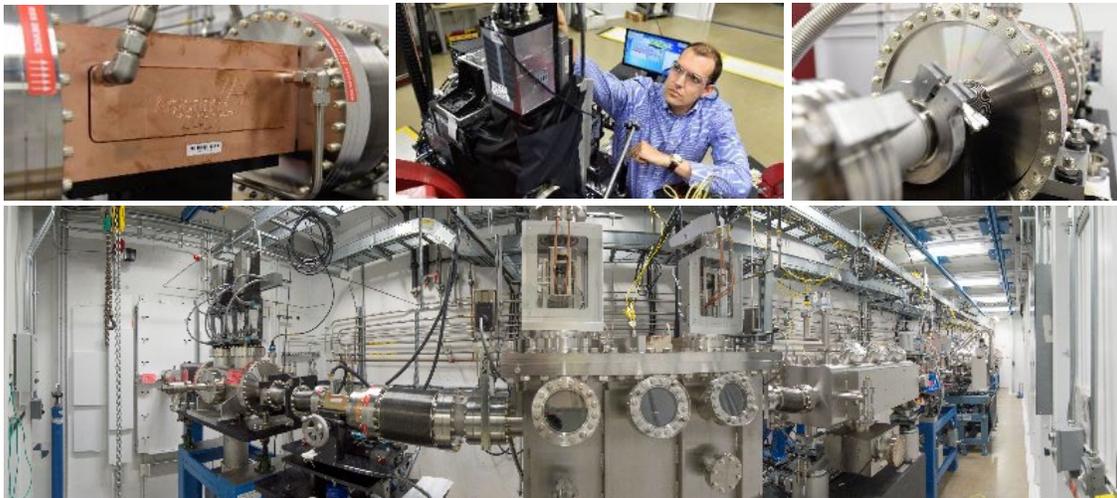
### **X-Ray/Solid State Physicist for the Dynamic Compression Sector at the Advanced Photon Source, Lemont, Illinois**



Washington State University (WSU) is seeking a strongly self-motivated, talented experimentalist to work with scientists and engineers at a first-of-a-kind experimental user facility: The Dynamic Compression Sector (DCS) at the Advanced Photon Source (APS). 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 X-Ray/Solid-State Physicist 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 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, as needed, for a broad range of user experiments as well as design new systems and select appropriate components to advance the capabilities of the DCS.

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

1. Interacting with users to conduct time-resolved dynamic compression experiments using x-ray techniques, such as x-ray diffraction, phase-contrast Imaging (PCI), and small angle x-ray scattering (SAXS). This includes setting up and characterizing the x-ray beam for users.
2. Support and maintain the DCS x-ray beamline components including vacuum systems, several large Kirkpatrick-Baez (KB) focusing mirror systems, and x-ray beam choppers and shutters.
3. Design and implement experimental components used on the x-ray beamline and in the experimental end stations.
4. Work with the DCS users to prepare for experiments in advance. This includes providing guidelines for experimental design, as well as personnel safety and equipment operating procedures.
5. Contribute effectively to all aspects of the various research projects including assistance to DCS users; optimal and safe operations of the experimental facilities; ensure availability of experimental components, equipment and supplies; enhancement of experimental capabilities; and working effectively in a team setting to advance the DCS research mission.
6. Independently define and complete experimental projects and tasks; conduct and analyze research experiments and prepare reports and publications as appropriate.

**Qualifications**

A background in dynamic compression research is not required for this position. However, 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.
- Demonstrated strong hands-on ability with the design and fabrication of instruments and experimental components.
- Good familiarity with 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.
- Strong interest in being involved in all aspects of DCS user experiments.
- Good computer skills, including experience with programs for instrument control and analysis, such as LabView and Matlab. Experience with optical design and/or x-ray simulation and ray tracing software is useful but not required (e.g. Zemax and/or OASYS).
- Excellent communication skills, both oral and written.
- Ability to effectively work independently and in a team environment, as needed.
- Personal attributes should include critical thinking, good judgment, clear sense of purpose, attention to detail, and accountability.
- Must be able to obtain a badge at U.S. Department of Energy National Laboratories to gain access to restricted areas.

## **Desired Qualifications**

- Work experience at a synchrotron
- Experience in conducting and analyzing dynamic compression experiments

The salary structure is both attractive and nationally competitive. Other benefits include health/dental insurance, vacation/sick leave, and retirement plans.

## **Applications**

Applicants should apply online at [WSU Jobs, Job # R-6113](#) by submitting a letter of application explicitly addressing the required qualifications for this position and date of availability; detailed curriculum vitae; and the contact information for three professional references to the attention of Dr. Paulo Rigg.

To ensure consideration, please specify the position (DCS Laser/Optical Physicist) for which you are applying. We will begin reviewing applications immediately and will continue to do so until the position is filled. For more information, please visit <https://dcs-aps.wsu.edu/>.

**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 and the Tri-Cities. Due to its strong emphasis on excellence in research and education, the Carnegie Classification™ has designated WSU as R1: Doctoral University – Highest Research Activity. Current enrollment is approximately 31,478 undergraduate, graduate, and professional students. The University offers more than 200 fields of study, with 95 majors for undergraduates, 79 master's degree programs, 63 doctoral degree programs, and 4 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 Veterinary Medicine) and a Graduate School. For more information, please visit [www.wsu.edu](http://www.wsu.edu).



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