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SLAC National Accelerator Laboratory is one of 17 Department of Energy (DOE) National Laboratories, and operated by Stanford University on behalf of the DOE. SLAC develops and operates some of the world's premier science facilities, including the first hard X-ray free-electron laser. Research at SLAC explores the structure and function of matter and the properties of energy, space and time, at the smallest and largest scales, all with the goal of solving problems facing society and advancing human knowledge.

Research Associate - Experimental - XSWAP

Job

Requisition #: 2457

Classification: **Research Associate - Experimental**
Title:

Grade: **NA**

Location: **Menlo Park, CA (HQ)**

of openings: **1**

Description

POSITION OVERVIEW:

Do you enjoy collaborating with a diverse group of people to solve complex challenges? Does contributing to breakthrough discoveries in science and working with unique experimental instrumentation in a world-leading scientific research environment excite you? The Controls and Data Systems Division (CDS) within the Linac Coherent Light Source (LCLS) Directorate at SLAC is seeking two Research Associates to help with developing tools for the complex analysis of large data volumes. LCLS currently saves as much as 1GB/s to disk, and it is anticipated that this data volume will increase by three orders of magnitude with planned upgrades to the accelerator and detectors.

Reporting to the Photon Controls and Data Systems Department Head, the Research Associate will be a member of a multidisciplinary team comprised of physicists, electronic engineers and software developers focused on developing

software and hardware solutions to support scientific instrumentation, laser systems, controls, and data analysis and acquisition systems. LCLS is the world's first hard x-ray free electron laser (FEL) with unprecedented capabilities in photon energy range, peak power, and pulse lengths. There are seven independent instruments currently in operation, which are specifically designed to utilize the exceptional beam characteristics of the LCLS to probe the structure and dynamics of matter at atomic size and timescales. The evolution of science and experimental techniques on these instruments, along with upgrades in the x-ray FEL source and optical lasers (LCLS-II), require regular improvements to the supporting software and hardware platforms.

See https://portal.slac.stanford.edu/sites/lcls_public for more on LCLS and the unique capabilities of our instrument facilities

CORE DUTIES*:

- Participate in the design, development and deployment of hardware and software systems for big-data analytics.
- Development and optimization of data analytics code on exascale supercomputers (50 to 100 times faster than the fastest supercomputers available today).
- Deployment of monitoring tools to control behavior and measure performance of workflows and applications.

Other duties may also include,

- Understand complex scientific ideas enough to provide software solutions.
- Develop software to provide a user-friendly interface to monitor, understand and predict workflows and improve efficiency for users.
- Develop software that provides a simple user-friendly interface to complex systems so that software tools can quickly adapt to rapidly changing experimental configurations.
- Develop real-time and offline data analysis frameworks which run on Graphics Processing Units (GPUs) and many cores architectures (eg Phi).
- Develop Graphical User Interfaces .

Note: The position is initially a 12-month term with the possibility of renewal.

If interested, please apply via the link:

<https://chk.tbe.taleo.net/chk01/ats/careers/requisition.jsp?org=SLAC&cws=1&rid=2457>

MINIMUM REQUIREMENTS:

Education & Experience:

Ph.D. in a scientific or computing field, including significant experience with large software systems.

Knowledge, Skills and Abilities:

- Ability to learn and understand the workings of a broad range of software.
- Demonstrated programming skills with Python, C and/or C++, Linux/Unix.
- Exceptional communication skills and ability to work well in a diverse research and development team.
- Strong conceptual and problem solving skills as well as the ability to identify and recommend solutions.
- Excellent organizational skills and the ability to synthesize complex technical and scientific information.

Experience in one or more of the following strongly preferred.

- Background in x-ray or material science.
- Large-scale software parallelization techniques, such as MPI or Spark.
- Parallel file systems, such as Lustre or GPFS.
- User-friendly GUI development.

- Batch-processing systems such as slurm, LSF, torque/maui.
- Experience with code revision systems, such as svn or git.
- Knowledge of tools used to call C++ from Python, such as boost-python, cython or swig.

SLAC Employee Competencies:

- **Effective Decisions:** Uses job knowledge and solid judgment to make quality decisions in a timely manner.
- **Self-Development:** Pursues a variety of venues and opportunities to continue learning and developing.
- **Dependability:** Can be counted on to deliver results with a sense of personal responsibility for expected outcomes.
- **Initiative:** Pursues work and interactions proactively with optimism, positive energy, and motivation to move things forward.
- **Adaptability:** Flexes as needed when change occurs, maintains an open outlook while adjusting and accommodating changes.
- **Communication:** Ensures effective information flow to various audiences and creates and delivers clear, appropriate written, spoken, presented messages.
- **Relationships:** Builds relationships to foster trust, team collaboration, and a positive climate to achieve common goals.

WORK STANDARDS:

- When conducting university business, must comply with the California Vehicle Code and Stanford University driving requirements.
- Interpersonal Skills: Demonstrates the ability to work well with Stanford colleagues and clients and with external organizations.
- Promote Culture of Safety: Demonstrates commitment to personal responsibility and value for safety; communicates safety concerns; uses and promotes safe behaviors based on training and lessons learned.
- Subject to and expected to comply with all applicable University policies and procedures, including but not limited to the personnel policies and other policies found in the University's Administrative Guide, <http://adminguide.stanford.edu> .

SLAC National Accelerator Laboratory is an Affirmative Action / Equal Opportunity Employer and supports diversity in the workplace. All employment decisions are made without regard to race, color, religion, sex, national origin, age, disability, veteran status, marital or family status, sexual orientation, gender identity, or genetic information. All staff at SLAC National Accelerator Laboratory must be able to demonstrate the legal right to work in the United States. SLAC is an E-Verify employer.

Final candidates are subject to background checks prior to commencement of employment at the SLAC

National Accelerator Laboratory.

Internal candidates, who are selected for hire, may require degree verification and/or credit checks based on requirements of the new position.

For Clery Act Information click here: <http://www.stanford.edu/group/SUDPS/safety-report/security-authorities.shtml>

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