Position Title: Dynamics and Control Program – Research Associate for Ultrafast Free Electron Laser (XFEL) based Pair Distribution Function (PDF) science

FLSA Status: Exempt

BNL Overview

Brookhaven National Laboratory is a nonprofit research and development institution whose purpose is to advance ideas and knowledge through a multidisciplinary program of basic and applied research. The Division of Condensed Matter Physics and Materials Science currently has a full-time opportunity for a Research Associate.

Organization Overview (short paragraph about the Division or Department as it pertains to the position):

Brookhaven National Laboratory operates a program entitled Dynamics and Control of Magnetic and Charge Order in Complex Oxides -- one of 10 nationwide programs for advancing x-ray free electron laser studies aiming to advance our understanding of chemical and materials science. The collaboration involves 8 PIs and 6 research associates working together to deliver detailed pictures of ultra-fast spin and charge behavior in complex oxide materials and how this organizes into domains once it couples to the crystal lattice. This multi-degree of freedom, multi-length-scale understanding of canonical strongly correlated oxides is a vital step towards controlling “properties on demand” via strategic ultra-fast excitation of quantum materials.

The successful candidate with work with Simon Billinge, Mark Dean and Ian Robinson in the X-Ray Scattering Group alongside Ivan Bozovic, Jing Tao, Robert Konik, Weiguo Yin and Yimei Zhu who provide expertise in molecular beam epitaxy, complex data analysis, ultra-fast electron diffraction and theory.

Essential Duties and Responsibilities:

The successful candidate will develop ultrafast X-ray total scattering techniques to probe charge and magnetic ordering in quantum materials using the pair-distribution function method. This involves preparing and performing state-of-the-art x-ray scattering experiments, analyzing the data and disseminating the conclusions in scientific publications and talks.

Required Knowledge, Skills and Abilities:

A PhD in experimental condensed matter physics, physical chemistry, materials science or related field within 5 years of the application date

Self-motivated and able to work both independently and as part of a team.

Proven abilities for disseminating research by writing papers and giving academic talks

Preferred Knowledge, Skills, and Abilities:

A good understanding of the science of quantum materials

Prior experience with total scattering and Pair Distribution Function methods

Experience in central facility-based techniques such as x-ray, electron or neutron scattering etc.

Strong data analysis skills. Knowledge of programing languages such as python is and experience with large datasets is preferred.

Other Information (Security Clearance, drivers’ license, use of private car, location, travel requirements)

While principally based at Brookhaven National Laboratory, the candidate should be willing to travel to carry out experiments at various national and international facilities.

Environmental, Health, and Safety Considerations (Review Job Assessment Form (JAF)):

Note: ES&H requirements that need to be considered when evaluating all candidates (i.e. lifting of 30 pounds; the ability to run a ½ mile; successfully pass a stress test, climb a ladder or more, etc. (Only essential functions).

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• Vacation

• Holidays

• Dental Plans

• Life Insurance

• 401(k) Plan

• Retirement Plan

• Swimming Pool, Weight room Tennis Courts, and many other employee perks and benefits

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