Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

1919 2019
100 JAHRE WISSENSWERFT
Universität Hamburg

As a University of Excellence, Universität Hamburg is one of the strongest research universities in Germany. As a flagship university in the greater Hamburg region, it nurtures innovative, cooperative contacts to partners within and outside academia. It also provides and promotes sustainable education, knowledge, and knowledge exchange locally, nationally, and internationally.

Faculty of Mathematics, Informatics and Natural Sciences / Department of Mathematics Research Area Optimization and Approximation invites applications for a

RESEARCH ASSOCIATE FOR THE PROJECT "METHOD AND SOFTWARE DEVELOPMENT FOR SOLVING THE JOINT PROBLEM OF X-RAY DIFFRACTION AND X-RAY SPECTROSCOPY"

- SALARY LEVEL 13 TV-L -

The position in accordance with Section 28 subsection 3 of the Hamburg higher education act (Hamburgisches Hochschulgesetz, HmbHG) commences on 01.09.2019 or later.

This is a fixed-term contract in accordance with Section 2 of the academic fixed-term labor contract act (Wissenschaftszeitvertragsgesetz, WissZeitVG). The term is fixed for a period of 2 years. The position calls for 39 hours per week.

RESPONSIBILITIES:

Duties include academic services in the project named above. Research associates may also pursue independent research and further academic qualifications.

SPECIFIC DUTIES:

The goal of the project "Method and software development for solving the joint problem of x-ray diffraction and x-ray spectroscopies" is to develop a novel reconstruction method that combines coherent x-ray diffraction and x-ray spectroscopy and generates a refined electron-density map of the underlying species, capable of reconstructing valence-electron density responsible for bonding. Therefore, the following duties occur:
- Developing a unified representation of elastic x-ray scattering and x-ray emission spectroscopy based on an appropriate electronic orbital representation in order to couple the 2 reconstruction problems,

- Extension of the field of quantum crystallography to additionally incorporate x-ray emission spectroscopy,
- Testing different regularization methods and minimization algorithms on numerically generated diffraction and spectral data,
- Proof of concept on experimental data,
- Publication and dissemination of results.

REQUIREMENTS:

A university degree in a relevant subject plus doctorate. The candidate should have a PhD in applied mathematics or theoretical physics. A research background in theoretical AMO physics, theoretical x-ray crystallography or applied mathematics with a focus on inverse problems and optimization is beneficial. Moreover, experience in one or several of the following areas is highly desirable: regularization theory, nonlinear optimization, numerical physics, theoretical x-ray spectroscopy, electronic structure calculations, theoretical x-ray crystallography. A strong record and interest in programming and code development and excellent command of spoken and written English is exptexted.

The University aims to increase the number of women in research and teaching and explicitly encourages women to apply. Equally qualified female applicants will receive preference in accordance with the Hamburg act on gender equality (Hamburgisches Gleichstellungsgesetz, HmbGleiG).

Qualified disabled candidates or applicants with equivalent status receive preference in the application process.

For further information, please contact Jun.-Prof. Dr. Christina Brandt by phone +49 40 42838-4076 or via email christina.brandt@uni-hamburg.de or consult our website at.

Applications should include a cover letter, a tabular curriculum vitae, and copies of degree certificate(s). Please send applications by 25.08.2019 to: christina.brandt@math.uni-hamburg.de.

Please do not submit original documents as we are **not** able to return them. Any documents submitted will be destroyed after the application process has concluded.