



# X-RAY SCIENCE.

## DESY, Hamburg location, is seeking: Postdoc (f/m/diverse) in theoretical physics

### DESY

DESY is one of the world's leading research centres for photon science, particle and astroparticle physics as well as accelerator physics.

We are delighted to offer a postdoctoral positions in the field of the interaction of x-ray radiation with matter, with the goal of developing new strategies for combining coherent x-ray diffraction and x-ray spectroscopy in a unified approach. The offered theoretical, computational project will be at the boundary of physics, chemistry and applied mathematics and will be in close connection to experimental campaigns at storage-ring x-ray radiation sources (PETRA III) and x-ray free-electron laser (XFEL) facilities and in collaboration with other experimental and theory groups.

### The position

- Developing unified representation of elastic x-ray scattering and x-ray emission spectroscopy based on an appropriate electronic orbital representation
- Developing theoretical methods and numerical algorithms to solve for the direct inversion of the x-ray diffraction data under the constraints, given by x-ray emission spectra
- Generating high resolution electron-density maps and x-ray emission spectra by usage of state-of-the-art quantum chemistry codes
- Testing different algorithms on numerically generated diffraction and spectral data
- Proof of concept on experimental data

### Requirements

- University degree in a relevant subject and PhD in physics, physical or theoretical chemistry, or applied mathematics
- Background in theoretical atomic, molecular and optical physics, quantum chemistry, theoretical x-ray crystallography, applied mathematics or related fields
- Experience in one or several of the following areas is highly desirable: numerical physics, development of quantum chemistry codes, theoretical x-ray spectroscopy, electronic structure calculations, theoretical x-ray crystallography, inverse problems, nonlinear optimization
- Strong record and interest in programming and code development in C++, C or Python is expected
- Excellent command of spoken and written English

For further information please contact Prof. Dr. Nina Rohringer, phone: +49 40 8998-6258 or email: [nina.rohringer@desy.de](mailto:nina.rohringer@desy.de).

The position is limited to 2 years.

Salary and benefits are commensurate with those of public service organisations in Germany. Classification is based upon qualifications and assigned duties. Handicapped persons will be given preference to other equally qualified applicants. DESY operates flexible work schemes. DESY is an equal opportunity, affirmative action employer and encourages applications from women. Vacant positions at DESY are in general open to part-time-work. During each application procedure DESY will assess whether the post can be filled with part-time employees.

We are looking forward to your application quoting the reference code preferably via our electronic application System: Online-Application

### Deutsches Elektronen-Synchrotron DESY

Human Resources Department | Code: FSPO017/2018

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**Deadline for applications: 22 October 2018**

[www.desy.de](http://www.desy.de)