

Position Profile for Chinese Applicants running for 2019 Helmholtz – OCPC – Program

PART A (Info about the Position)

Helmholtz Centre and institute: DESY

Title of the project: Charge dynamics in quasi-one-dimensional materials

Project leader: Moritz Hoesch

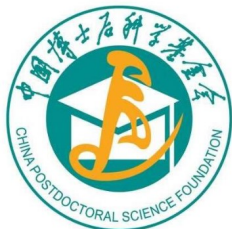
Web-address: www.desy.de

Description of the project:

The research conducted in this project will clarify the existence of collective excitations of electrons in one dimension as predicted by the theory of the Tomonaga-Luttinger-Liquid (TLL). The materials under investigations include Cuprate superconductors, where Charge Density Wave (CDW) ground states have been found to compete with superconductivity. Primarily inorganic materials with chain structures, such as $\text{In}_2\text{Mo}_6\text{Se}_6$, will be investigated. The characteristic excitation spectrum will be explored by high-resolution angle-resolved photoemission spectroscopy (ARPES) making use of beamtime at synchrotron radiation facilities as well as laser-based ARPES systems. The additional use of inelastic x-ray scattering as a direct probe of the excitations will be explored. This research will clarify the competition or cooperation between TLL and CDW and hence make a significant contribution to our understanding of the superconducting state in quasi-one-dimensional materials.

Required qualification of the post-doc:

- PhD in ... Physics
- Experience with ... Quantum Materials Physics, Synchrotron Radiation
- Additional skills in ... Photoemission Spectroscopy, X-Ray Scattering

**PART B (Materials and Procedures)**

The applicants shall submit the following documents to a Chinese postdoc station affiliated to a research institution or a university, after passing through the internal selection, the qualified application shall be forwarded to OCPC, and then to Helmholtz for evaluation:

- Detailed description of the interest in joining the project (motivation letter)
- Curriculum vitae, copies of degrees
- List of publications
- 2 letters of recommendation
- Proof of command of English language

PART C (General Conditions)**Additional requirements on the postdoctoral fellows:**

- Chinese citizenship from Mainland China (allows application while staying abroad)
- Max. age of 35 years, PhD degree not more than 5 years by submission of application
- Very good command of English language
- Strong ability to work independently and in a team