

## 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:** A TES detector system for the ALPS II experiment at DESY

**Project leader:** Axel Lindner

**Web-address:** [alps.desy.de](http://alps.desy.de)

### **Description of the project** (max. half page):

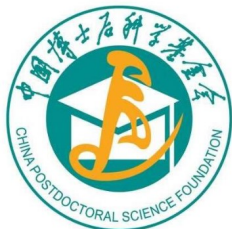
The Any Light Particle Search Collaboration is constructing the ALPS II experiment at DESY which aims at the discovery of hypothetical very weakly interacting ultralight particles, in particular of axion-like particles (ALPs). Their existence is predicted in extensions of the Standard Model based on string theory. Support for their possible existence accumulates from different astrophysical observations. ALPS II aims both for the production and detection of such ALPs in the laboratory. This is done by sending laser photons along a strong magnetic field, allowing for their conversion into ALPs, towards a blocking wall, behind of which the latter may then reconvert, again in a strong magnetic field, into photons giving the impression of light-shining-through-a-wall. However, the photon flux behind the wall is expected to be very low i.e. around  $10^{-5}$  photons/second.

One of the photon detection methods of ALPS II is based on a Transition Edge Sensor (TES) system: a thin Tungsten film is stabilized at the transition between superconductivity and normal conductivity thus becoming very sensitive to any additional energy deposition by single photons for example. The collaboration has demonstrated the principle applicability of this approach and has now to develop a reliable system for ALPS II data taking starting at the end of 2020 and expected to last for about two years.

The applicant is expected to participate in the construction and operation of the TES detector system as well as in the corresponding data analyses.

### **Required qualification of the post-doc:**

- PhD in physics
- Experience with detector development
- Experience in programming
- Additional skills in low noise electronics and cryogenics are welcome

**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