Institute of Physics of the Polish Academy of Sciences
Scholarship for a PhD Student

Job ID: #JOB23/2021

Job Description

Job Title: PhD student

Job Summary:

Key responsibilities include:

1. Fabrication of samples with e-beam lithography
2. Electrical measurements in dilution refrigerator (~10mK) and He3 sorption fridge (~250mK)
3. Design and installation of sample holders, CAD programs, filters
4. Data acquisition and analysis (LabView, Origin, Mathematica)
5. Simulation of heat flow in nanostructures (Matlab)

Profile of candidates:

Mandatory:

1. RESPONSIBILITY for the specific tasks in the project
2. Strong interest in the proposed research
3. Good soft skills: candidate should work in harmony with the rest of researchers
4. Successful candidates have to undertake studies in the Warsaw PhD School in Natural and BioMedical Sciences “Warsaw-4-PhD”, http://warsaw4phd.eu/.

Optional:

5. Background in Experimental Solid State Physics, Nanoscience, Nanotechnology or Electronics,
6. Good technical skills,
7. Low-noise transport measurements experience will be of an advantage,
8. Capable of using programming languages i.e. LabView, Mathematica, Matlab

Job Description:

The project will take an extensive use of a superconducting Josephson junction (JJ) as a temperature-sensing element delivering nanosecond resolution. Successful implementation of a JJ-based thermometer should lead to establishing a new approach to calorimetry and bolometry at the nanoscale. It will make it possible to dynamically test thermodynamical properties of nanostructures, involving measurements of heat capacity and thermal conductivity as well as mechanisms of heat exchange at low temperatures (hot electron diffusion, electron-phonon coupling, photon radiation). Fast thermometry will provide direct access to the temporal evolution of effective temperatures under nonequilibrium conditions and the energy relaxation rates, thus contributing to a complete understanding of the thermodynamics of mesoscopic systems.

Main research field: Physics

Sub Research Field: Solid State Physics

Career Stage: finished master studies

Research Profile (details)**:** First Stage Researcher (**R1)**

Type of Contract: stipend

Status: Full-time

Salary: 5000 **PLN per month (**grant funding, before obligatory employer and employee social security contributions**).**

Application details

Application deadline: 06/06/2021 Later applications will be not considered.

Required materials:

1. Cover letter explaining the interest and skills of the applicant
2. Proof of the recent degree certificate and the transcript of records
3. CV + List of publications
4. References and email addresses (and, if possible, phone numbers) of the two academic/professional referees who may be contacted by the recruiting committee

All materials should be submitted in electronic form to the PhD school http://warsaw4phd.eu/, choosing the project "Thermodynamics of nanostructures at low temperatures"