



Job ID: #JOB26/2017

Job Description

Job Title: PhD student in Experimental Low Temperature Nanophysics

Job Summary:

Candidate will develop the fastest in the world all-solid-state thermometer capable of measuring temperature dynamics in nanostructures with unprecedented temporal and spatial resolution. The project will take an extensive use of a superconducting Josephson junction (JJ) as a temperature-sensing element. 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).

Job Description:

Recruited person is expected to go through whole experimental process leading to final results. They will have to acquire technical skills indispensable for becoming a complete experimentalists: design of sample holders, Printed Circuit Boards (PCBs) and samples in CAD programs, basic workshop works e.g. fabrication of home-made parts of the measuring apparatus with milling machine, soldering wires and installing appropriate connectors to cables used in experiments. They will have to make samples to become experts in the e-beam lithography. Members of the First Team will perform electrical measurements at low temperatures with state-of-the-art equipment: recently acquired cryogen-free dilution refrigerator and Helium3 sorption pump fridge (http://www.eagle-regpot.eu/EAGLE-Equipment_Triton400.html). They will gain sound experience in low-noise measurements with application of oscilloscopes, cryogenic amplifiers, LOCK-INs and Vector Network Analyzer. They will get familiarized with software for modeling and simulating electrical circuits (SPICE, SONNET). They will learn to use and write Data Acquisition Programs eg. in LABVIEW. Finally they will have to analyze the data with ORIGIN and MATHEMATICA involving numerical analysis of differential equations of heat transport in nanostructures. Candidate is expected to give input to writing publications.

Requirements:

- strong interest in the proposed research (beyond usual working hours),
- good communication skills, candidate should work in harmony with the rest of researchers,
- flexibility to treat research problems,
- RESPONSIBILITY for the specific tasks in the project,
- A selected person(s) will be examined to verify their general knowledge in physics.

Main research field: Physics

Sub Research Field: Applied physics

Career Stage: Early stage researcher or 0-4 yrs (Post-graduate)

Research Profile ([details](#)): First Stage Researcher (R1)

Type of Contract: Temporary till 30/09/2019.

Status: Full-time

Salary: Depends on qualifications

From to PLN per month (before taxes). Scholarship 4500PLN/month
(approx. 1000EU/month)

Contact

More information can be obtained from Maciej Zgirski (e-mail: jobs@ifpan.edu.pl).

<http://www.fnp.org.pl/en/results-of-the-first-competition-in-the-first-team-programme/>

Application details

Application deadline: November 30, 2017. Later applications may also be considered.

Required materials:

- Curriculum Vitae
- List of publications
- Proof of the recent degree certificate and the transcript of records
- Cover letter explaining the interest and skills of the applicant
- Email addresses (and, if possible, phone numbers) of the two academic/professional referees who may be contacted by the recruiting committee
- Passport-size photo.

All materials should be submitted in electronic form to the address: jobs@ifpan.edu.pl with Job ID in the subject.