

## **Ph.D. student (f/m) in the field of condensed matter physics (Experimental)**

Laboratory for the physics of transport phenomena, Institute of Physics, Zagreb in Croatia is looking for a Ph.D. student. The main task would be to work with high-pressure diamond anvil cell and perform transport experiment on a range of strongly correlated materials, such as rare-earth compounds, high-temperature superconductors, and transition metal chalcogenides. The Ph.D. position is partly connected to the HRZZ project\*.

**Keywords:** condensed matter physics, experiment, transport properties, electronic structure, strongly correlated electron systems

### **Task1: High-pressure diamond anvil cell (DAC) for transport measurement**

The DAC offers the opportunity to study the properties of material under high hydrostatic pressure. Application of DAC to the transport measurement will provide an opportunity to explore the novel phenomena under extreme conditions.

### **Task2: Study of transport property under extreme condition**

Using the DAC, the candidate will study the transport properties of materials characterized by strong interactions. The objective of the study is to explore physical properties of the strongly interacting systems under extreme conditions, such as low temperature, high pressure, and high magnetic field. Changing such external environment can cause phase transitions in materials, and at extreme conditions, the strong interactions give rise to exotic phenomena. Understanding the mechanics of the phase transitions is essential to control the properties of materials and also provides useful information to material engineering.

### **Task+: x-ray spectroscopy**

Besides the transport, the candidate will also have an opportunity to learn and participate in the x-ray spectroscopy experiments (e.g. photoelectron and x-ray absorption spectroscopies) to study the electronic structures of strongly interacting systems. Direct observation of the electronic structure and element specific information will help to deepen our understanding of the materials.

### **Offers**

- 4 years contract fully supported by HRZZ project -
- Unique combination of experimental techniques
- Domestic/international research collaborations
- Participation in domestic/international conferences/workshops at least once per year
- Possibility to participate in experiments at large user facilities

### **Qualifications**

Master degree (or equivalent) in physics, or engineering

Good communication skill in English

Commitment to experimental solid state physics

**Application** must include a CV (in English or Croatian) with contact details of two references and motivation letter. Please send the application in pdf format to [natiecaj@ifs.hr](mailto:natiecaj@ifs.hr) by email until 14.03.2019.

**For further information** please contact:  
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Dr. Petar Popčević (ppopcevic@ifs.hr).

Institute website: <http://www.ifs.hr/en/>

EURAXESS website: <https://euraxess.ec.europa.eu/jobs/367323>

## **References**

\*HRZZ IP-2016-06-7258: The physics of many body systems-exploiting the world of complexity  
web site:

<http://www.ifs.hr/en/scientific-projects/2017-the-physics-of-many-body-systems-exploiting-the-world-of-complexity/>