



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



Job ID: #JOB 10/2023

Job Description

Job Title: MSc student

Job Summary: Theoretical research on topological invariants in strongly correlated fermion systems in team ON-6.1/MagTop.

Job Description:

The scholarship holder will participate in the research, which aim is to propose a multi-orbital model that takes into account many-body interactions and realizes Mott topological insulator state. In a typical approach, a topological Mott insulator is considered to be a system in which the opening of the spectral gap and the emergence of topological properties is due to the appearance of spontaneous symmetry breaking due to the presence of many-body interactions. However, recent scientific work has shown that topological states can be expected to exist also in systems without spontaneously broken symmetry, where the chemical potential lies in the Mott-Hubbard spectral gap. Specifically, in this project, the stipend holder will numerically determine topological invariants (such as the Chern number) in selected many-body models of correlated electrons with a potentially topologically non-trivial Mott-Hubbard gap.

The [International Centre for Interfacing Magnetism and Superconductivity with Topological Matter – MagTop](#) is the Division (ON-6) of the [Institute of Physics, Polish Academy of Sciences](#) and is funded by a grant awarded to Professors [Tomasz Dietl](#) and [Tomasz Wojtowicz](#) within the International Research Agendas programme of the Foundation for Polish Science, carried out from the funds of the European Regional Development Fund under the Smart Growth Operational Programme (SG OP), Priority Axis 4: Increasing the research potential, [Measure 4.3: International Research Agendas](#). MagTop activities involve strong local and international collaborations, the strategic partner unit being Julius-Maximilians-Universität Würzburg, Germany, particularly the Institute EP3 headed by Professor Laurens W. Molenkamp.

Candidate profile:

1. Is a second-cycle student in the field of physics (preferred specialty: theoretical physics)

Requirements:

1. Bachelor's degree in physics
2. Proficiency in applying Green function methods to lattice electron systems
3. Knowledge of Mathematica, Matlab or Python software
4. Ability to work in a team as well as independently
5. Fluency in spoken and written English.

Main research field: Physics

Sub Research Field: Condensed Matter Physics

Career Stage: Early stage researcher;

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

Type of Contract: Temporary for 6 months with possibility of further extension.

Status: full time;

Salary: 2500 PLN gross per month (untaxed scholarship).

Contact

All queries should be submitted to: dr hab. Marcin Wysokiński: wysokinski@magtop.ifpan.edu.pl. Please, mention the Job ID in the subject.

Application details

Application deadline: 20 March, 2023, later applications will be not considered

Required materials:

- Curriculum Vitae (up to 3 pages)
- Cover letter (max. 1 page)
- At least one reference contact. Please provide e-mail addresses for contact persons.
- List of grades from the course of studies.
- Document confirming obtaining Bachelor's degree
- A statement by the candidate of consent to the processing of personal data for the purposes of recruitment

All materials should be submitted in electronic form to **two addresses**: rekrutacja@ifpan.edu.pl with the Job ID in the subject and open_positions@MagTop.ifpan.edu.pl

Information clause – scholarship competition

Pursuant to Article 13 paragraphs 1 and 2 of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation) Official Journal of the European Union, L 119, 4 May 2016, page 1, as amended, hereinafter referred to as “GDPR”, we hereby inform as follows:

1. The Institute of Physics of the Polish Academy of Sciences with its registered office in Warsaw, Al. Lotników 32/46, represented by its Director, is the Controller, i.e. an entity deciding about how your personal data will be used. You may contact the Controller using one of the contact forms available on the website: tel. (22) 116-2111, e-mail: director@ifpan.edu.pl
2. The Director of the Institute of Physics of the Polish Academy of Sciences has appointed the Data Protection Officer (DPO), whom you may contact in matters relating to your personal data, by sending an email to the following address: iodo@ifpan.edu.pl
3. Your personal data will be processed in connection with your participation in the scholarship competition and if you win the competition, in connection with receiving the scholarship – on the basis of your consent – Article 6 paragraph 1 item a GDPR.
4. Your personal data will be processed for a period of 6 months after the end of the scholarship competition and in the case of receiving the scholarship – for a period resulting from legal and tax regulations;
5. Your personal data will be made available to other entities that can finance and settle the scholarship granted and entities authorized under provisions of law. Your data will only be accessed by people authorized by the Controller;
6. Provision of your personal data is mandatory; in the event of failure to do so, you will not be able to participate in the scholarship competition;
7. You have the right to access your data, the right to rectify it and limit processing thereof;
8. You have the right to lodge a complaint to the President of the Office for Personal Data Protection, if you consider that the processing of your personal data violates provisions of the General Data Protection Regulation.

Consent to processing:

I hereby consent to the processing of my personal data contained in the application/request form by the Institute of Physics of the Polish Academy of Sciences to conduct the scholarship competition and in the case of being granted the scholarship, to pay and settle it. I provide my personal data voluntarily and I declare that it is accurate. I have read the content of the information clause.

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Date and signature