



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



Job ID: #JOB 51/2022

Job Description

Job Title: Master Degree student/PhDstudent in theoretical physics

Job Summary:

Ultra-cold atomic gases in optical lattices (theoretical)

Job Description:

The physics of ultra-cold atomic gases is a rapidly developing field mainly because of extraordinary control over the system parameters that are achieved experimentally. It is also a reason why this many-body quantum system is thought and applied as a very sensitive sensor in quantum metrology or quantum simulators. In particular, ultra-cold atoms loaded into a periodic optical lattice potential are very promising in practical applications. A great example are optical clocks that are now operating with extreme precision. It is now commonly understood that squeezed and some entangled states can enhance precision. Additionally, they are also useful for testing the basics of quantum mechanics, e.g. in quantum information. The motivation for the research proposed is the recent discovery of squeezed and entangled states in the system and weakness of the present-day description.

The project aims at performing a comprehensive theoretical study of the generation of squeezed and entangled states with fermions loaded into an optical lattice potential taking into account the spin-orbit coupling, the role of reduced spatial dimensions and decoherence. The project will be performed in close collaboration with the group of prof. G. Juzeliūnas from Vilnius University and other theoretical groups from IP PAS, Warsaw.

Requirements:

- Good knowledge of quantum physics, previous experience with ultra-cold gases or quantum optics will be an advantage
- Good numerical skills and willingness to learn new computational techniques
- Good spoken and written English

Main research field: Physics

Sub Research Field: Theory of quantum gases, Bose-Einstein condensation, Quantum Mechanics

Career Stage: Master of Sciences in physics or a student of Master Degree Study

Research Profile ([details](#)): First stage researcher (R1)

Type of Contract: Fixed term (12 months)

Status: part-time

Salary: grant funding of **1500** PLN per month (untaxed scholarship).

Contact

More information can be obtained from

Emilia Witkowska (e-mail: ewitk@ifpan.edu.pl)

<https://sites.google.com/site/ewiitk/>

Please make contact.

Application details

Application deadline: 02.12.2022 Later applications will not be considered.

Required materials:

- Scientific CV
- Cover letter
- Certificate that at the moment of application a candidate is a Master Degree student or a participant of a PhD study or a PhD student at Doctoral School in Poland.
- Written permission of the candidate's scientific supervisor together with his/her recommendation
- Consent to process your personal data

All materials should be submitted in electronic form to the address:

rekrutacja@ifpan.edu.pl with Job ID #JOB 51/2022 in the subject.

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