



**Job ID: #JOB 2/2021**

## Job Description

**Job Title:** Post-Doc in condensed matter theory

**Job Summary:** Analytical and numerical study of topological insulators (semiconductors)

**Job Description:** The researcher will join the group under the supervision of dr hab. Wojciech Brzezicki, working on the NCN funded project “Limitations for Protected Transport and Exotic Topological States in Topological Semiconductors”. In this project we will address four critical questions related to topological semiconductors:

(A) Lack of topological protection in HgTe/CdTe-type quantum wells. We will model transport in disordered topological multilayers and our aim is to show that the additional edge modes can be responsible for the lack of topological protection.

(B) Study of symmetry-protected topological invariants and symmetry-broken states for multilayer semiconductors, involving surface atomic steps and nanowires.

(C) Control of topological invariants, design of systems that exhibit QSH effect at a macroscopic scale. We will search for such a design of a quantum well that the additional edge modes are either absent or moved out of the gap.

(D) Non-hermitian topological systems, multilayer semiconductors in microcavities and beyond. Going beyond means implementing non-Hermitian Hamiltonians with non-trivial topology using chains of superconducting or optomechanical circuits.

Collaboration with the experimental groups at MagTop/IFPAN,  
<http://www.magtop.ifpan.edu.pl>

### Requirements:

- Sufficient proficiency in English
- Experience in programming (Mathematica/MatLab/Python or similar) and numerical calculations for condensed matter systems or equivalent (e.g. cold atoms)
- Experience in scientific work within the theory of condensed matter systems and preferably topological states of matter
- Good background in linear algebra
- Experience in writing scientific papers

**Main research field:** Physics

**Sub Research Field:** Condensed Matter – Topological states of matter

**Career Stage:** Early stage researcher (with PhD in physics)

**Research Profile** ([details](#)): Recognised Researcher (R2)

**Type of Contract:** Fixed-term (24 month, extendable to 36 months based on performance)

**Status:** Full-time

**Salary:** 10000 PLN per month (before taxes, including obligatory taxes paid by employer).

## Contact

Wojciech Brzezicki (e-mail: [brzezicki@MagTop.ifpan.edu.pl](mailto:brzezicki@MagTop.ifpan.edu.pl) ).

## Application details

**Application deadline:** 08.02.2021. Later applications will be not considered

### **Required materials:**

- Curriculum Vitae
- List of publications
- Motivation letter
- Copy of PhD diploma
- Contact data (e-mail) to, at least two potential referees.
- Consent to process your personal data (expressed on the form attached to this announcement)

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

## DATA PROCESSING UNDER CONSENT FOR THE PURPOSES OF RECRUITMENT

Under Art. 13 sections 1 and 2 of the Regulation of the European Parliament and of the Council (EU) 2016/679 of 27 April 2016 on the protection of natural persons 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 Resolution), EU OJ L 119 of 04.05.2016, page 1, as amended, hereinafter referred to as "GDPR", we hereby inform as follows:

1. The Data Controller of the provided personal data is the Institute of Physics of the Polish Academy of Sciences, Al. Lotników 32/46, 02-668 Warsaw, phone (22) 116-2111, e-mail [director@ifpan.edu.pl](mailto:director@ifpan.edu.pl).
2. Contact details to the Data Protection Officer are as follows: e-mail [iodo@ifpan.edu.pl](mailto:iodo@ifpan.edu.pl)
3. Your personal data shall be processed for the purpose of carrying out the recruitment process for the position of PostDoc.
4. Processing of your personal data in scope of: full name, date of birth, correspondence address, information about education and course of past employment shall take place under Art. 22<sup>1</sup> § 1 of the Act of 26 June 1974 - Labour Code. In the scope in which you sent to us more personal data than indicated above, we process your data under the consent granted by you.
5. Your personal data shall be stored for 1 month from completion of the recruitment process. If you grant consent for processing of personal data for future recruitments, we shall process your data until withdrawal of the consent by you, however, no longer than for the period of 6 months from the day of submittal of the application by you.
6. Provision of the abovementioned data in the scope indicated above is a statutory requirement resulting from Art. 22<sup>1</sup> § 1 of the Act of 26 June 1974 - Labour Code, in the remaining scope it is voluntary. Failure to provide the data referred to in Art. 22<sup>1</sup> § 1 of the Act of 26 June 1974 - Labour Code precludes consideration of your candidacy for the offered position.
7. You have the right to access your personal data, to rectify them, erase them, restrict their processing.
8. You may submit a complaint to the Inspector General for the Protection of Personal Data.
9. You have the right to withdraw the consent to process your personal data in the scope in which they were provided at any time. Withdrawing the consent does not affect the lawfulness of processing carried out on the basis of consent before its withdrawal.

Consent content:

*I grant my consent to the Institute of Physics of the Polish Academy of Sciences to process my personal data contained in the sent recruitment documents for the purpose of carrying out the recruitment process for the position of PostDoc .*

If you want us to consider your candidacy also in the future recruitment processes, please grant the additional consent:

*I grant my consent to the Institute of Physics of the Polish Academy of Sciences to process my personal data contained in the sent recruitment documents in future recruitment processes taking place during 6 months from the day of appearance of this job advertisement.*