

INVESTIGATION OF LOW-DIMENSIONAL HETEROSTRUCTURES WITH POLARIZED NEUTRON REFLECTOMETRY

Moscow Institute of Physics and Technology (National Research University)

Degree or qualification is awarded: **PhD (Candidate of Science)**

Language of study: **English**

Mode of study: **full-time**

Duration: **4 years**

Availability of free education: **yes**

Price: **375 000 RUB**

Programme webpage at the university website:

<https://eng.mipt.ru/programs/investigation-of-low-dimensional-heterostructures-with-polarized-neutron-reflectometry/>

Programme curator: **Denis Ustyuzhaninov**

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Entry requirements:

- Master's degree / equivalent in a related field
- B2 level of English
- Good track record of publications related to the topic of the intended research
- Strong research proposal 1,500 - 3,500 words

Research supervisor:

[Vladimir Zhaketov](#)

PhD

Supervisor's research interests:

Polarized neutron reflectometry (PNR) is powerful method for investigation of different low-dimensional heterostructures. Our investigations mostly dedicated to superconducting-ferromagnetic heterostructures. Such systems are very perspective for such areas of technology and applied physics as quantum computing, spintronics and neuromorphic computing. Simultaneously we develop PNR method for possibility of registration secondary radiation (γ -quanta, charged particles). This additional mode greatly expands possibility of classical PNR.

Research highlights:

During this program you have possibility to work at unique equipment as spectrometer REMUR (reactor IBR-2). Including such difficult technics as lowtemperature cryostat and other. Our scientific group collaborate with many Russian and foreign scientific centers, such as PNPI and Max Planck Institute. There are possible different finance programs for PHDstudents, such as JINR scholarships and grants of Russian foundation for basic research.

Supervisor's specific requirements:

- A lot of enthusiasm.
- Experimental skills.
- Programming (mostly, Matlab).
- General education in physics.

Main publications:

- V.D. Zhaketov et al. // arXiv preprint arXiv:1911.03669.
- V.D. Zhaketov et al. // JETP, vol. 129, No. 2, pp. 258-276.
- V.D. Zhaketov et al. // JETP, vol. 125, No. 3, pp. 480-494.

Specializations within this programme