

SPINTRONIC HETEROSTRUCTURES FOR THZ SIGNALS DETECTION AND GENERATION

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:

Duration: **4 years**

Availability of free education: **yes**

Price: **375 000 RUB**

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:

[Dmitry Kalyabin](#)

PhD

Supervisor's research interests:

Investigation of physical effects arising during spin waves propagation and spin current flow along 2D and 3D micro- and nanoscale heterostructures formed by ferromagnets, heavy metals, semiconductors and carbon-based materials for fundamental basis development of magnonics spintronics components and its pairing with convenient semiconductor electronics with ultra-large-scale integration.

Research highlights:

- Technological and experimental equipment to create and study nanoscale magnetic samples.
- Additional founding by Russian Foundation for Basic Research and Russian Science Foundation.

Supervisor's specific requirements:

- Basics of solid state physics.
- Advanced knowledge of physics of magnetic phenomena.
- Analytical, numerical or experimental methods of magnetic properties study.
- Basics of analytic geometry, computational mathematics, computer programming.

Main publications:

- Magnonics: a new research area in spintronics and spin wave electronics. Phys. Usp. 58 1002-1028.
- Nonreciprocity of edge modes in 1D magnonic crystal. JMMM Volume 378, 15 March 2015, Pages 313-319.
- Surface spin waves propagation in tapered magnetic stripe. Journal of Applied Physics 126, 173907.

Specializations within this programme