

SUPERCONDUCTING PROPERTIES INVESTIGATION OF 2G HTS WIRE IN HIGH MAGNETIC FIELD AND TEMPERATURE FROM 4.2 TO 77K

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 webpage at the university website:

<https://eng.mipt.ru/programs/superconducting-properties-investigation-of-2g-hts-wire-in-high-magnetic-field-and-temperature-from-/>

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:

[Pavel Degtyarenko](#)

PhD

Supervisor's research interests:

Investigation of:

- Critical current of 2G HTS wire in high magnetic field and temperature from 4.2 to 77K.
- Irreversibility field and temperature for 2G HTS wire without/with artificial pinning centers.
- Superconducting properties of irradiated 2G HTS wire.
- Losses in 2G HTS wire without/with artificial pinning centers.

Supervisor's specific requirements:

- Knowledge of quantum physics, field theory, statistical physics and electrodynamic of continua.
- Knowledge of solid-state physics and theory of superconductors, include the physics of phase transition.
- COMSOL.
- Mathcad.
- Origin.
- Python.
- C++.

Main publications:

- Pavel N. Degtyarenko et al / Microstructure and superconducting properties of high-rate PLDderived

GdBa₂Cu₃O_{7-δ} coated conductors with BaSnO₃ and BaZrO₃ pinning centers // Sci. Rep., 9:15235, 2019.

- Pavel N. Degtyarenko, et al / Energy dependent structure of Xe ion tracks in YBCO and the effect on the superconductive properties in magnetic fields // J. Appl. Phys. 126, 145106, 2019.
- Pavel N. Degtyarenko et al / The influence of BaSnO₃ artificial pinning centres on the resistive transition of 2G HTS wire in magnetic field / Supercond. Sci. and Tech, 33(4), 045003, 2020.

Specializations within this programme