LOW BACKGROUND EXPERIMENTS ON BASIC NUCLEAR AND PARTICLE PHYSICS

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/low-background-experiments-on-basic-nuclear-and-particle-physics/

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:
Lev Inzhechik
PhD, Head of Laboratory of Nuclear Experiments Methods

Supervisor's research interests:
Neutrino physics, double beta-decay, cosmic muons of high energy. Underground low background experiments – collaboration with underground labs: LNGS (Italy), LSC (Spain), Callio Lab (Finland), BNO (Russia). Methods of low background measurements and engineering of unique equipment.

Research highlights:
Participation in international collaborations and projects: GERDA, LEGEND, EMMA Mu-monitor. Cooperation with underground labs: LNGS (Italy), LSC (Spain), Callio Lab (Finland), BNO (Russia). Active interaction with leading German, Swiss, Italian, Spanish, Finnish, Russian and Polish universities and research institutes that take part in the collaborations. Participation in teaching of students and involving them into research (desirable).

Supervisor's specific requirements:

- General physics, mathematics, nuclear physics and computing in the frame of standard programs of a classic university.
- Theoretical physics – to be acquainted with main topics and recent models of basic interactions and particles.

- Engineering for nuclear experiments: electronics, detectors, cryogenics, vacuum, etc. – desirable.

Main publications:

- Cosmic-ray muon flux at Canfranc Underground Laboratory. Eur.Phys.J. C79 (2019) no.8, 721.
- Improved Limit on Neutrinoless Double-ββ Decay of 76Ge from GERDA Phase II. Phys.Rev.Lett. 120 (2018) no.13, 132503.
- Background free search for neutrinoless double beta decay with GERDA Phase II. Nature 544 (2017) 47.

Specializations within this programme