

ASTROPARTICLE 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/astroparticle-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:

[Prof. Sergey Troitsky](#)

PhD, DSc, Corr. member of RAS

Supervisor's research interests:

- Origin of high-energy radiation in the Universe (cosmic rays, gamma rays and neutrinos).
- The Universe as a laboratory of particle theory (axions, axion-like particles, neutrinos, dark matter etc.).
- Particle theory beyond the Standard Model.

Research highlights:

- Research at the intersection of particle physics and astrophysics.
- Work with real observational and experimental data. but in connection with particle-theory problems.

Supervisor's specific requirements:

- Particle physics (at the Master level).
- Astrophysics (at the beginner's level).
- Statistics (to work with data).
- CORSIKA; GEANT welcome.

Recent publications:

- Observational evidence for the origin of highenergy neutrinos in parsec-scale nuclei of radiobright active galaxies, *Astrophys. J.* 894 (2020) 101.
- On the impact of magnetic-field models in galaxy clusters on constraints on axion-like particles from the lack of irregularities in high-energy spectra of astrophysical sources, *Phys.Lett.B* 802 (2020) 135252.
- Carpet-2 search for PeV gamma rays associated with IceCube high-energy neutrino events, *JETP Lett.* 109 (2019) 226.
- Constraining the photon coupling of ultra-light dark-matter axion-like particles by polarization variations of parsec-scale jets in active galaxies, *JCAP* 02 (2019) 059.
- Search for anomalous features in gamma-ray blazar spectra corrected for the absorption on the extragalactic background light, *JCAP* 12 (2019) 002.

Specializations within this programme