

PRECISION MEASUREMENT OF NEUTRINO OSCILLATION PARAMETERS IN THE JUNO EXPERIMENT

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/precision-measurement-of-neutrino-oscillation-parameters-in-the-juno-experiment/>

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:

[Maxim Gonchar](#)

PhD

Supervisor's research interests:

Neutrino oscillations, oscillation parameter measurement, reactor electron antineutrino, Daya Bay and JUNO experiments, detector simulation and reconstruction, statistical data analysis, high performance fitting.

Research highlights:

- Cutting edge neutrino science, unique experiment.
- Large international collaboration.
- Data taking starts in 2022.
- Extra financial support from JINR.

Supervisor's specific requirements:

Basic knowledge:

- Physics of Elementary Particles.

- Statistical data analysis.

Advanced programming skills, including knowledge of:

- Linux, shell.
- C++: stdlib, ROOT.
- Python: scipy/numpy, matplotlib, jupyter,...
- Geant4 (desirable).

Main publications:

- “Neutrino Physics with JUNO”, F.P.An et al, arXiv: 1507.05613 [physics.ins-det].
- “Study of the wave packet treatment of neutrino oscillation at Daya Bay”, F.P.An et al., arXiv: 1608.01661 [hep-ex].
- “Measurement of electron antineutrino oscillation based on 1230 days of operation of the Daya Bay experiment”, F.P.An et al., arXiv:1610.04802 [hep-ex]
- “GNA: new framework for statistical data analysis”, A.Fatkina et al., arXiv: 1903.05567 [cs.MS].

Specializations within this programme