

Program Theoretical Physics and Mathematical Modeling**Level:** 03.03.01 Bachelor's Degree Subject: APPLIED MATHEMATICS AND PHYSICS**Mode of study:** full-time Duration: 4 years**Graduation department:** the program is implemented at the Department of Theoretical Nuclear Physics (№32) of the Institute for Laser and Plasma Technologies of the MEPhI University.**Program Description**

The program aims at the training of highly qualified theoretical physicists capable of conducting fundamental and applied research including the search for new laws of nature; modeling of complex physical, technical and engineering systems; suggesting and boosting new research directions in applied physics and technologies. The graduates possess skills and research capabilities sufficient for productive and creative work in any area of modern physics. This includes physics of atoms, molecules and nanostructures, physics of classical and quantum fields, of atomic nuclei and elementary particles, astrophysics and cosmology, physics of plasmas and of condensed matter, laser physics, physics of extreme states of matter and high energy density physics. The key element of the program is intense training in fundamental physics and mathematics as well as in numerical simulations and computer sciences in general. The program relies on the cooperation between basic (general) and special courses in theoretical physics and in theoretical methods in physics and mathematical modeling. The program includes several fundamental disciplines; special disciplines; research, tutorial and pre-diploma projects and the preparation of the thesis. The core part of the program includes the theory of elementary particles, methods of modern statistical physics, selected chapters of quantum field theory, general relativity as well as modern methods of mathematical modeling in theoretical physics. The specialized part of the program is built on distinguished courses developed by leading researchers in the respective fields, and includes plasma theory, nuclear physics, astro- and cosmo-physics, physics of condensed matter

Program Supervisor PhD. Sergey V. Popruzhenko, the Head of Department of Theoretical Nuclear Physics**Career opportunities**

Graduates of this program apply their knowledge in physics, condensed matter physics, mathematical modeling and theoretical physics. This knowledge is vital for employment at leading Russian and foreign research centers and companies specializing in scientific software.

- Areas of research and experts training
- Physics of ultrahigh laser fields
- Particle physics
- Astrophysics and cosmology
- Nuclear physics
- Quantum informatics and quantum computers
- Physics of nanosystems