



National Research Nuclear University MEPhI
(Moscow Engineering Physics Institute)

Institute of Nuclear Physics and Engineering

Nuclear Physics and Cosmic Physics

Direction: **14.03.02 Nuclear Physics and Technologies**

Certificate, degree or qualification: **Bachelor degree**

Language of instruction: **English**

Duration and mode of study: **4 years, full-time**

Program curator: **Viktor M. Grachev**

Graduation department: Department of Experimental Nuclear Physics and Cosmophysics (# 7)

Aim of the program: Bachelor knowing experimental nuclear physics and cosmic physics, the foundations of nuclear physics and particle physics, capable of using the knowledge gained in the research work for improving experimental techniques in nuclear physics and cosmic physics, preparing and conducting an experiment in these areas, analyzing and interpreting its results, as well as for solving fundamental problems of nuclear and particle physics.

Characteristics of the scope and objects of professional activity of future graduates: Bachelors focus on their research work in the field of experimental nuclear physics and cosmic physics. Graduates may participate in preparation and conduction of various experiments in nuclear physics and space physics (including the design and construction of detectors of elementary particles and radiation), as well as in processing and analysis of experimental data. Knowledge gained allows them to participate in theoretical predictions and interpretation of nuclear physics and space experiments (using accelerators in space physics). Graduates can work at MEPhI, enterprises of the nuclear industry, Dukhov All-Russia Research Institute of Automatics, Research and Production Corporation "Space Monitoring Systems, Information & Control and Electromechanical Complexes" named after A.G. Iosifian, enterprises of the Russian Federal Space Agency, National Research Centre "Kurchatov Institute," Space Research Institute, Joint Institute for Nuclear Research (Dubna), Institute for High Energy Physics (Protvino), Alikhanov Institute for Theoretical and Experimental Physics, Lebedev Physical Institute, at international research centers Saclay (France), DESY (Germany), etc. In addition, graduates can continue their education to obtain a master's degree at the Graduate Department.

Feature of the curriculum, especially the educational process on the program, the main basic and specialized disciplines. The attractive part of the program. The curriculum includes more than 60 courses, including the choice. The courses provide the basic physical and mathematical training, both theoretical and practical training in experimental nuclear physics and space physics. Students have the opportunity to choose the direction of training within the SEC "Micro- and Space Physics" named after V.G. Kirillov-Ugryumov, focused on experiments in cosmic physics, space physics, and neutrino physics in space and on ground-based installations, as well as on the fundamental interactions at particle accelerators. Within these areas, in-depth study of the experimental techniques, methods for radiation detection, detectors for particle physics, nuclear electronics, measurement techniques, as well as computer processing and analysis of experimental data are realized.

The base of industrial and/or scientific practice and employment: graduates can work at MEPhI, Russian and international research centers, such as National Research Centre "Kurchatov institute," Joint Institute for Nuclear Research (Dubna, Moscow region), Institute for Nuclear Research of the Russian Academy of Sciences, Institute for Theoretical and Experimental Physics, Institute for High Energy Physics (Protvino, Moscow region), Lebedev Physical Institute, and Space Research Institute of the Russian Academy of Sciences, Institute of Medical and Biological Problems of Russian Academy of Medical Sciences, MEPhI, at leading institutes of the Rosatom State Corporation (Sarov, Moscow, Snezhinsk), and at enterprises of the Russian Federal Space Agency (Moscow; Korolev, Moscow region).

Specializations within this program: Objects of the professional activity: elementary particle accelerators, nuclear-physics assemblies, control systems for nuclear-physics assemblies, ionization radiation affection on the environment, radiation technologies in medicine, mathematical models for theoretical and experimental studies in the field of elementary particle physics, radiation propagation and interaction with matter, ecological monitoring of the environment, safety of nuclear materials and objects of atomic industry.