

Prospective laser and plasma systems and radio photonics

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

Degree or qualification is awarded: **Bachelor degree**

Language of study: **Russian**

Mode of study: **full-time, part-time**

Duration: **4 years**

Availability of free education: **yes**

Price: **316 290 rubles per semester**

Programme webpage at the university website:

http://eis.mephi.ru/AccGateway/index.aspx?report_url=/Accreditation/program_annotation&report_param_pid=72

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Field of study: "Nuclear Physics and Technologies".

Duration of training: 4 years, 240 credits.

Course delivery language: russian.

Basic department: Laser Fusion (No. 69).

The program of continuous training: Bachelor's Degree – Master of Science.

Program Manager: S. G. Garanin, Doctor of Science, Professor, corresponding member of the Russian Academy of Sciences, director of the Institute of Laser Physics at the All-Russia Institute of Experimental Physics.

The purpose of the program is the training of specialists in the following fields:

- development and application of high-power lasers emitting in the nano-, pico- and femtosecond ranges;
- interaction of intense laser radiation with matter;
- physics of laser fusion.

The training of students is based on the fundamental physical and mathematical sciences and educational-research practices. The professional activity of graduates is related to computer modeling and experimental work in the promising areas, in which superhigh-power lasers and laser plasma physics are used. Education includes theoretical courses, the use of modern software and gaining of experience to work with the laser technology.

The competitive advantages of the program are as follows:

- work on existing installations of laser fusion;
- combination of experimental, analytical, and computer methods of research;
- broad academic and scientific links with leading organizations engaged in laser fusion research.

The sphere of professional activity of graduates includes research; design; expertise; and industrial-technological, organizational, and managerial activities at enterprises of the State Atomic Energy Corporation "Rosatom", the Russian Academy of Sciences, the Ministry of Education and Science and Ministry of Defense of the Russian Federation.

The curriculum of bachelor's enrolled in the program "Laser Fusion" include special courses: the theory of plasma physics, laser plasma, laser plasma diagnostics, power electronics, power supplies lasers, measurement of laser optics and physical elements of the laser systems, introduction to solid state physics, quantum radio physics, introduction to the theory of oscillations, methods and techniques of laser physics experiments, etc. The students get acquainted with

the latest achievements of science and technology in the field of study of laser fusion.

Special emphasis is placed on methods for mathematical modeling of physical processes. Learning process involves additional language training in the form of seminars in English.

The bases of the industrial and scientific practices are the following organizations: Prokhorov General Physics Institute of the Russian Academy of Sciences, Lebedev Physical Institute of the Russian Academy of Sciences, Russian Federal Nuclear Center – All-Russia Research Institute of Experimental Physics (Sarov).

Specializations within this programme

Nuclear Physics and Technologies

Objects of the professional activity: research, design, development of high-power laser systems and installations, as well as their use in basic research and technological purposes for remote and precision measurements, for the diagnosis of different media. The training program includes the acquisition of the graduates of the wide spectrum of competencies that make it possible to carry out investigations and to solve various questions in the field of laser physics, plasma physics, in the field of condensed matter, nanotechnology, physics division of isotopic and molecular mixtures, physics of fast processes in the field of medical physics biophysics, nuclear physics facilities, nuclear and radiation safety control systems and automated controlling of nuclear physics facilities and others.