**03.04.01 Applied mathematics and physics**

**Program Summary**

**Program title:** 1. Electrophysics; 2. Physics of fundamental interactions.

3. Quantum optics and laser physics.

**Program goals**: training of graduate students in applied mathematics and physics for scientific and industrial organizations of nuclear and other high-tech industries, forming universal and specialized competencies that contribute to the social mobility and competitiveness of the graduates in the labour market.

**Duration of study**: full-time education-2 years.

**Departments**: Department of experimental physics (Electrophysics), Department of nuclear and radiation physics (Physics of fundamental interactions), Department of quantum electronics (Quantum optics and laser physics) of SPTI NRNU MEPhI.

**Areas of expertise**: research aimed at the development of new theoretical and computational methods and approaches in the field of theoretical and mathematical physics, including condensed matter physics, classical and quantum field theory, classical and quantum mechanics, macroscopic electrodynamics, hydrodynamics and elasticity theory, statistical physics, physical kinetics, as well as methods of mathematical physics and computational methods;

research, analytical, design, development, innovation, production and technological, organizational and administrative activities in various fields of science, technology and national economy, using the approaches, models and methods of mathematics, physics and other natural and socio-economic sciences.

**Objects of professional activity**: models, methods and tools of fundamental and applied research and development in the field of theoretical and mathematical physics, mathematical modeling according to their specialization in science, engineering and technology, as well as in the fields of high-tech industry, management and business; atomic nucleus, classical and quantum fields, elementary particles and plasma, the condensed state of matter, lasers and their applications, mathematical models for theoretical and numerical studies of phenomena and regularities in the abovementioned areas of physics; high power electrophysical and nuclear installations, sources of electrical and optical pulses and fluxes of ionizing radiation, high voltage and high current systems, particle accelerators, diagnostic systems, and auxiliary equipment, etc.

**Curriculum features**: the curriculum complies with NRNU MEPhI higher education standards taking into account the requirements of Rosatom state corporation as the main employer of graduates. The educational trajectory of the graduate student is formed taking into account their choice of disciplines. Core courses focus on the study of special courses determined by the specialization of the graduate student training.

The research work of students is carried out in close connection with the work conducted at the departments and subdivisions of the Russian federal nuclear center – VNIIEF.

Graduates of the department receive training for solving a wide range of tasks in the interests of scientific research and production organizations of the nuclear and other high-tech industries.

**Enterprises for internship and employment of graduates**: Russian Federal Nuclear Center VNIIEF; enterprises of Rosatom state corporation.