**Graduation department:** Scientific and educational center NEVOD (607)

**Goals of the Program (brief description of the Program):** Training of graduates capable of working in the field of research connected with solar-terrestrial physics, dinamical heliosphere processes studies in near-earth space with the help of cosmic rays.

**Characteristics of the scope and objects of professional activity of future graduates:** Monitoring and forecasting of condition of heliosphere, magnetosphere and atmosphere of the Earth, developing of nuclear-physics equipment for solar-terrestrial physics studies, experimental data processing and analysis.

**Objects of the professional activity:** Detectors and assemblies for cosmic ray variations studies, sattelite and groundbased observations databases, experimental facilities and automized systems for experimental data collection and processing, Earth's geliosphere, magnetosphere and atmosphere theoretical models, modern methods for multidimensional data processing, mathematical methods for images and hidden regularities recognition.

**Brief description of the curriculum:** Master program combines academic studies and scientific work in real conditions of modern physics experiment. Master students take part in current research, in experimental data processing and analysis, in physics data collection. Master program enables graduates to carry out research in different fields of solarterrestrial physics, and also in adjacent areas such as Solar physics, astro- and cosmophysics.

**General scientific module.** The module «General scientific module» has the following objectives: to provide humanitarian, mathematical and natural sciences at a deeper level compared to a bachelor one; create social and personal qualities of graduates: initiative, dedication, discipline, hard work, communication skills, ability to work in teams, establish new professional relationships with Russian and foreign colleagues, responsibility for the final result of the professional activities, civicism, tolerance.

**Professional module.** In the frame of the Professional module the following tasks are solved for the preparation of masters, allowing them to work successfully and be creatively implemented in the activities associated with the theoretical and experimental methods for study of phenomena in solar-terrestrial physics, astrophysics and space physics, have a universal and problem-specialized competences, promote social mobility and stability in the labor market. As a result of the development of module disciplines of the master of physics must be able to actively use the knowledge gained from learning in the master courses, as well as published data. He/she must possess basic skills of research in his/her field of specialization, as well as the necessary set of specific professional knowledge and skills.

In frame of the Professional module also the next following tasks for the preparation of masters are solved: the skills of research of posed problems and the ability to formulate new problems arising during the current research, and to ensure the choice of technical facilities and preparation of equipment. During the course of practice and research, the ability to select the necessary research methods and skills in experimental physics facilities and analysis of physical data obtained with the use of modern computer technology are formed. The most important result is the ability to apply research results in the innovation and development of new methods of engineering and technology activities. After completion of the training cycle master should participate in formulation of new problems and the development of new methodological approaches in science and innovative research.

**The base of industrial and/or scientific practice and employment:** Master students have scientific practice mainly in NEVOD scientific facility. Graduates usually employed by Russian academic centres, RAS institutions and by other organisations.

**The program page on the MEPhI website:**

<http://eis.mephi.ru/AccGateway/index.aspx?report_url=/Accreditation/program_annotation_eng&report_param_pid=108&report_param_year=2016>