

Condensed matter physics

National Research Nuclear University MEPhI (Moscow Engineering Physics Institute)

Degree or qualification is awarded: **Researcher. Lecturer-researcher**

Language of study: **Russian, English**

Mode of study: **full-time**

Duration: **4 years**

Availability of free education: **yes**

Price: **155 000 rubles per semester**

Programme curator: **Vladimir R. Nikitenko**

Tel.: **(484)3920531**

E-mail: VAStepanov1@mephi.ru

Place of education:

- **Obninsk Institute for Nuclear Power Engineering**

1 Studgorodok, Obninsk, 249040, Kaluga Region

+7 (495) 788-56-99 (add. 1101)

iate@mephi.ru

<http://www.iate.obninsk.ru>

Basic department: Physics of the solid state and nanosystems (№ 70)

Goals of the Program: The program aim is to obtain the highest education allows graduates to work successfully in the field of activities related to the physics of condensed matter (including solid-state physics, physics of superconductivity, physics of nanostructures, laser physics, laser technology, spintronics, physics of interaction of concentrated fluxes of laser radiation with matter etc.), as well as research and development of devices and installations of condensed matter physics, and their application for research and technological purposes. PostGraduates will have universal competences, contributes to their social mobility and demand in the labor market.

Characteristics of the scope and objects of professional activity of future graduates: research aimed at the development of the theory of condensed matter physics phenomena, designing of devices and installations based on these phenomena, their application for development and use of novel solid-state technology, including nanotechnology, and research methods.

Objects of the professional activity include, among others, superconductors, magnetically ordered materials, shape memory materials, nanomaterials, thin films, gas sensors, photonic crystals and metamaterials, nonlinear optics, strongly correlated electron systems, and other actual problems of condensed matter physics.

Brief description of the curriculum

The program stimulates PhD students for independent scientific research work at high professional level with self-appraisal of results. Main accent in the curriculum is aimed to profound study of phenomena being researched. Special attention is given to research work. This allows students to practice in compiling the literature overview in the research field, modeling of physical phenomena with standard and unique software suits, experimental work, analysis of obtained results, preparing scientific publications, developing models of processes under study.

High qualification of the graduates is provided by top level researches, carried out by the department staff with mandatory participation of students, as well as involvement of scientists and staff of the enterprises of the State Atomic Energy Corporation "Rosatom", National Research Centre "Kurchatov Institute", Institutes of Russian Academy of Sciences. The department collaborates with international synchrotron center DESY (Hamburg, Germany), BESSY (Berlin, Germany), MAX-lab (Lund, Sweden), ALBA-CELLS (Barcelona, Spain), the Saclay Neutron Research Centre (France), the International Magnetic Laboratory (Wroclaw, Poland), the University of Arizona (United States), University of Jena (Germany), University of Oslo (Norway), University of Mainz (Germany).

The curriculum includes:

- specialized programs for PhD students, individual studying plans, academical mobility.
- participation in research and teaching together with leading specialists in the field, practical work of PhD students in scientific groups of various organizations;
- competitive selection of PhD students and help in their employment in Russian scientific centers, State Atomic Energy Corporation "Rosatom", and others.

The base of industrial and/or scientific practice and employment:

- Enterprises of the State Atomic Energy Corporation "Rosatom";
- Institutes of Russian Academy of Sciences: P.N.Lebedev Physical Institute of RAS, Shubnikov Institute of Crystallography of RAS, Joint Institute for High Temperatures of RAS, Institute of Solid State Physics of RAS, Kotel'nikov Institute of Radio Engineering and Electronics of RAS, and others;
- National Research Centre "Kurchatov Institute", Russian state scientific center "TRINITY", and innovative high-tech business enterprises.

Specializations within this programme