PROGRAMME provides students with knowledge of edge fundamental and applied results in condensed matter nanophysics and light-matter interactions at nanoscale. A set of programme disciplines includes both fundamental and applied nanophysics oriented courses revealing basic physical principles underlying nanoscale phenomena, as well as describing particular applications of these principles in nanoelectronic and nanooptic devices.

KEY ADVANTAGES:
- First year lecture courses provide general student training in theoretical and experimental physics, and advanced mathematics. The world-wide recognized MIPT basic physics teaching experience is used at this stage;
- Second year lecture courses focus on optics and solid state physics of nanostructures including modern advances in related topics, and provide students with knowledge that can be further applied in both fundamental and applied science;
- Lectures on physics of nanostructures are given by top-level researchers intensively working in related fields and having broad teaching experience;
- Students will have the possibility to work on their research projects in leading MIPT labs including the Laboratory of Topological Quantum Phenomena in Superconducting Structures, the Laboratory of Artificial Quantum Systems, the Laboratory of Nanooptics and Plasmonics, the Laboratory of Quantum Nanostructures, and the Laboratory of Terahertz Spectroscopy;
- Students will work on their research projects under supervision of top-level researchers.

TEACHING METHODS:
- The programme includes lectures, tutorials, and laboratories. During preparation of research projects students will obtain solid knowledge and skills within a chosen research topic.

STUDIED COURSES:

General courses:
- Quantum mechanics
- Introduction to Solid State Physics
- Mathematical Physics
- Electrodynamics of solids
- Introduction to Statistical Physics
- Physics Labs on Electromagnetic Phenomena and Optics
- Physics of Lasers
- Light-Matter Interactions
- High-Frequency Electrodynamics of Solids

Courses on Physics of Nanostructures:
- Integrated Nanophotonics
- Metamaterials and Plasmonics
- Experimental Physics of Microwaves and Nanomaterials
- Computational Nanophysics
- Transport in Mesoscopic Systems
- Quantum Phenomena in Nanosystems
- Physics of Semiconductor Nanodevices
- Physics of Noise and Correlations

PROGRAMME PARTNERS:
- University of Twente (Netherlands);

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