SAPERE AUDE

MOSCOW INSTITUTE OF PHYSICS AND TECHNOLOGY

MIPT

THE BEST TECHNICAL UNIVERSITY IN RUSSIA

Moscow Institute of Physics and Technology (aka MIPT, Phystech) is a top 5 Russian university that is highly regarded by scientists, students and engineers alike.

MIPT scientists perform cutting-edge research in the fields of fundamental science. We push the boundaries of human understanding, create new technologies and help to improve the world.

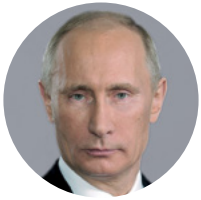
We explore neural and aerospace engineering, biophysics and nuclear science, quantum optics and aeromechanics. We devise mathematical models to account for all the diversity in nature. MIPT research labs feature international teams driven by professors with global credentials and aspirations.

OUR MISSION

The mission of the Moscow Institute of Physics and Technology is to gather talented young people and give them the power of knowledge for making this world a better place with the grandeur of science.

RANKINGS

Expert RA Russian Universities Ranking (2014): 2
Interfax Life Sciences (2014): 5
THE Physical Science (2013): 63
QS BRICS (2014): 52



Vladimir Putin, President of the Russian Federation:

"Among MIPT alumni there have been prominent scientists, politicians, and high ranking officials. The fame of MIPT is based on its strong university traditions, brilliant faculty members and talented, enthusiastic students. A degree received here is indication of a profound knowledge, a most promising starting point for an outstanding career."

Prof. Nikolay Kudryavtsev, MIPT Rector, Corresponding Member of the Russian Academy of Sciences, 1973 MIPT graduate:

"We believe that MIPT students should keep an active life position and never take an indifferent approach to it. We are committed for teaching students how to think – in the long run, that is the key approach."

1946
November, 25

The Faculty of Physics and Technology was founded at Moscow State University in order to train young scientists who would conduct research in nuclear physics, aeromechanics, cryogenics, quantum electronics and other fields related to USSR military projects.

1951
October, 1

The Faculty becomes an autonomous university named “Moscow Institute of Physics and Technology – MIPT.”

1956

MIPT professor Nikolay Semyonov is awarded the Nobel Prize in Chemistry for researches into the mechanism of chemical reactions.

1958

MIPT professor Igor Tamm receives Nobel Prize in Physics for the discovery and interpretation of the Cherenkov-Vavilov effect.

1962 Lev Landau, Professor of the Dept. of Pure Physics becomes a Nobel laureate in Physics for his development of a mathematical theory of superfluidity.

1964 Alexander Prokhorov, Chair of Laser Physics Dept. wins the Nobel Prize for his pioneering work on lasers and masers.

1978 MIPT professor Andrei Sakharov is awarded the Nobel Peace Prize.

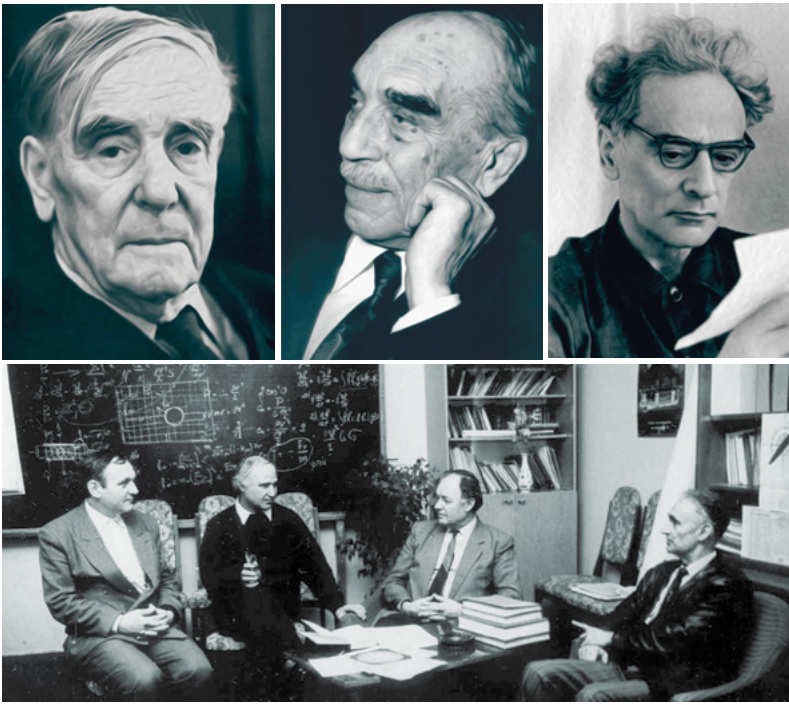
1978 MIPT founder Pyotr Kapitsa wins the Nobel Prize in Physics for his basic inventions and discoveries in the area of low-temperature physics.

2003 MIPT professors Alexei Abrikosov and Vitaly Ginzburg share the Nobel Prize for their pioneering contributions to the theory of superconductors and superfluids.

2009 MIPT receives approval for Russia's government funding program "National Research Universities."

2010 MIPT graduates Prof. Sir Andre Geim and Prof. Sir Konstantin Novoselov are awarded the 2010 Nobel Prize in Physics for groundbreaking experiments regarding the two-dimensional material graphene.

2013 MIPT joins the 5top100 Russia's government funding program.



PHYSTECH SYSTEM

The MIPT industry-academic partnership scheme called the “Phystech System” was introduced by our first professors, the Nobel-prize winners Pyotr Kapitsa, Nikolay Semenov and Lev Landau. It includes four components:

1. Pre-admission selection of talented young people. We cooperate with high schools all over Russia to spot children who show progress in mathematics and physics.
2. During the first two years our students undergo rigorous study in fundamental sciences.
3. From the third year on every student conducts research at one of our industry-academic partnerships.
4. We invite prominent scientists for lecturing and teaching.

DIRECT GOVERNMENT SUPPORT

MIPT is a state university which receives regular funding from the government. Being a top higher education organization, MIPT gets additional support in infrastructural projects and strategic initiatives, such as the 5top100 program. The latter is aimed at improving on a global scale the quality of educational services and increasing research activities delivered by Russian universities.

Dmitry Medvedev, Prime Minister of the Russian Federation:

"MIPT is the one of most important education and research centers in Russia. Its graduates demonstrate their success in various fields of science and industry. Russia's government is set to continue the direct assistance to the Institute, as we expect that MIPT will soon hold the highest positions in world university rankings, proving its academic excellence."

SUPERVISORY BOARD

In order to improve and extend cooperation between MIPT and Russia's most important companies and government organizations, the Supervisory Board was established in 2012.

Chairman of the Board

Vladislav Surkov, Aide to the President of the Russian Federation.

Members of the Board

Alexander Abramov, Chairman of the Board, EVRAZ Grp.

Alexander Andreev, Director, Kapitsa Institute for Physical Problems, RAS, Russia.

Vladimir Fortov, President of the Russian Academy of Sciences.

Sergey Guz, Head of Mathematical Foundations of Management Section, MIPT.

Andrey Ilnitsky, Moscow Region Deputy Head on Public Affairs.

Andrey Ivashchenko, Chairman of the Board, CHEMRAR High-Tech Center.

Alexander Povalko, Deputy Minister of Education and Sciences of Russia.

Ekaterina Tolstikova, Deputy Minister of Education and Sciences of Russia.

Evgeny Velikhov, President, NRC "Kurchatov Institute".

Vadim Yakunin, Advisory Board Member, PROTEK Co.

INTERNATIONAL BOARD

The primary objective of the International Board is the integration of MIPT as a successor of Soviet Science into the world's academic community. We aim to become a university which will be fully involved in international scientific and educational exchange.

Chairman of the Board

Prof. **Leo Rafael Reif,** President, Massachusetts Institute of Technology (MIT), USA.

Members of the Board

Acad. **Alexander Andreev**, Director, Kapitsa Institute for Physical Problems, RAS, Russia.

Mr. **Ashok Belani**, Executive Vice-President Technology, Schlumberger.

Mr. **Dirk Jan van den Berg**, Executive Board President, Delft University of Technology, The Netherlands.

Mr. **Jacques Biot,** President, Ecole Polytechnique Paris, France.

Prof. **Ralph Eichler**, President, Zurich Federal Institute of Technology, Switzerland.

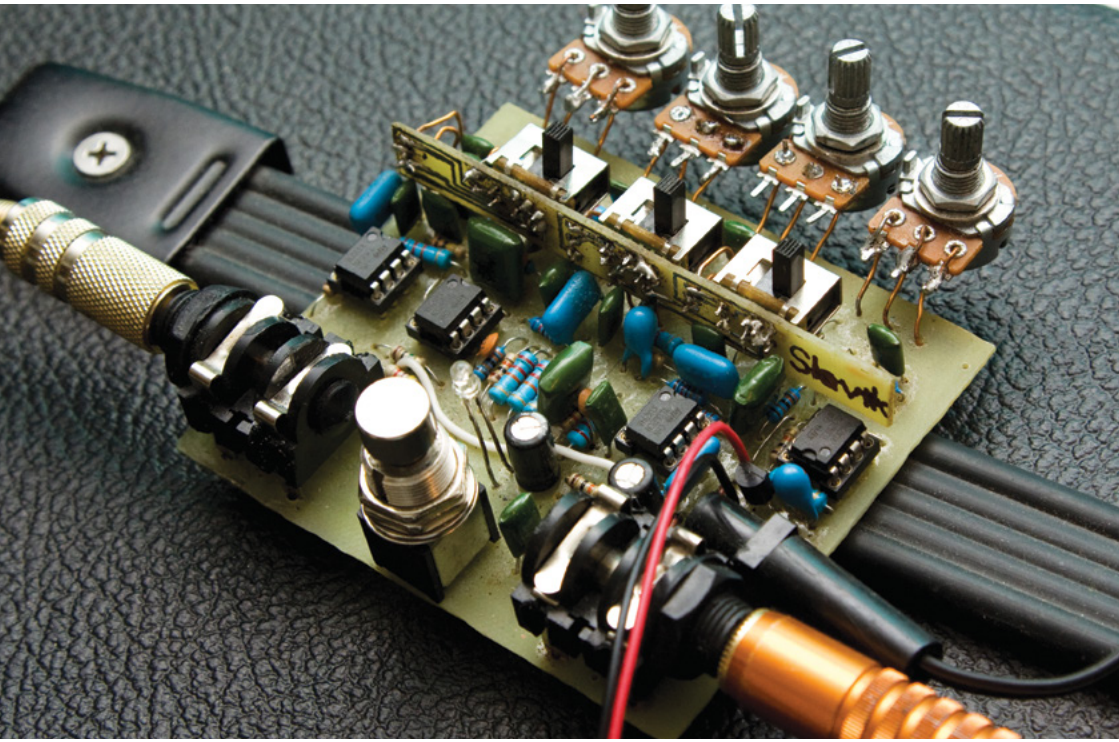
Prof. **Phillippe Gillet**, Vice-President for Academic Affairs, Ecole Polytechnique Lausanne, Switzerland.

Prof. Sir **Malcolm Grant**, Chair, National Health Service, England, UK.

Prof. **Sung-Mo "Steve" Kang**, President, Korea Advanced Institute of Science and Technology, South Korea.

Prof. **Carlo Rubbia**, Nobel Laureate in Physics (1984), Scientific Director, Institute for Advanced Sustainability Studies, Germany.

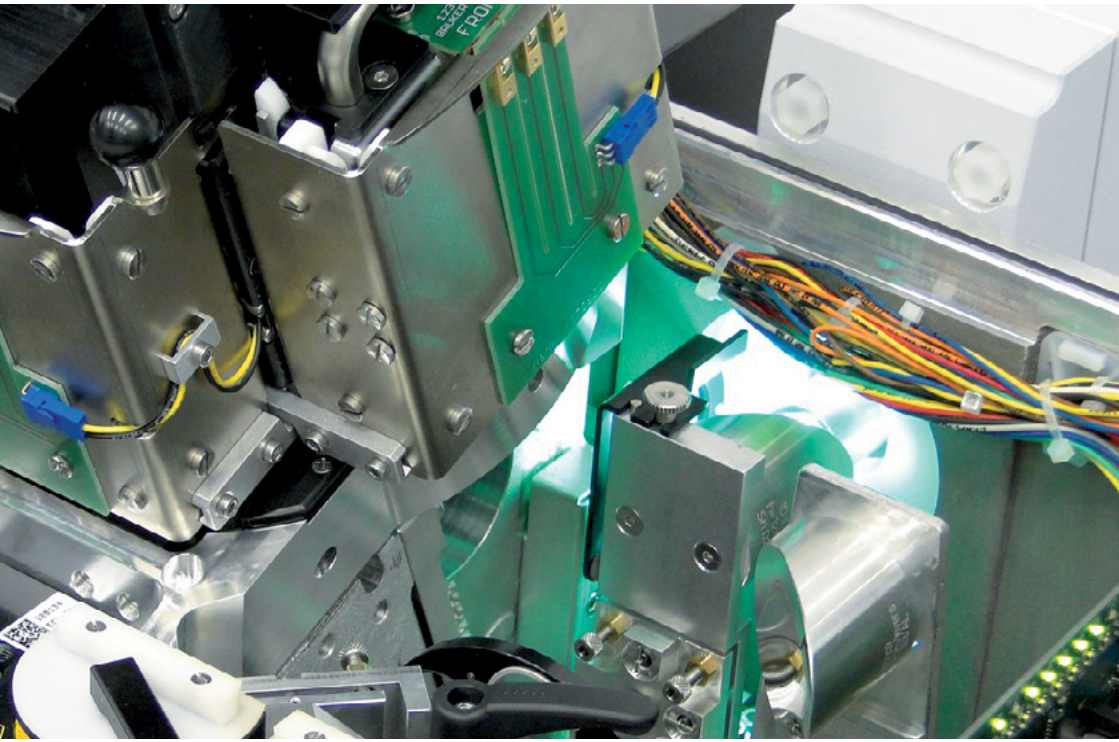
Acad. **Evgeny Velikhov,** President, NRC "Kurchatov Institute", Russia.



DEPARTMENT OF RADIO ENGINEERING AND CYBERNETICS

Since 1952 we have concentrated on studies in electrical engineering and cybertechnology. Our students combine fundamental studies with research activities related to contemporary issues in the fields of wireless systems, solid-state devices, control theory, learning systems, signal processing, parallel and distributed computing, fault-tolerant computing, and computer vision.

Master Course	Partner Research Organization
Artificial Neural Networks	Center for Information Technologies and Systems *www.citis.ru*
Control Systems Engineering	V.A. Trapeznikov Institute of Control Sciences, RAS *www.ipu.ru* Honeywell *www.honeywell.com*
Electronics and Computing Engineering	Intel *www.intel.com*
Mathematical and Information Technology	Joint Supercomputer Center, RAS *www.jscc.ru* Parallels *www.parallels.com* Acronis *www.acronis.com*
Telecommunications	Institute for Information Transmission Problems, RAS *www.iitp.ru* Netcracker *www.netcracker.com*



DEPARTMENT OF GENERAL AND APPLIED PHYSICS

Here is one of the best places to get involved in the most wonderful and most complicated areas of knowledge. We train our students to push the boundaries of human understanding of space and time, of matter and energy from the nuclear to the cosmological. We offer exploration of the nature of the universe to those who dare to know.

Master Course	Partner Research Organization
Biophysics	On-site research facilities
Fundamental and Applied Research in Quantum Physics	Joint Institute for Nuclear Research *www.jinr.ru*
High Energy Physics	Institute for High Energy Physics *www.ihep.su*
Low Temperature Physics and Engineering	P.L. Kapitza Institute for Physical Problems, RAS *kapitza.ras.ru*
Modeling of Nuclear Processes and Technologies	Kurchatov Institute *www.nrcki.ru*
Particle Physics	Alikhanov Institute for Theoretical and Experimental Physics
Problems in Theoretical Physics	Landau Institute for Theoretical Physics, RAS *www.itp.ac.ru*
Quantum Electronics, Nonlinear Optics and Holography	Institute of Physics of NAS of Ukraine *www.iop.kiev.ua*
Problems of Quantum Physics	Institute of Laser Physics *www.laser.nsc.ru*
Quantum Radiophysics	P.N. Lebedev Physical Institute, RAS *www.lebedev.ru*
Research in Physics and Astrophysics	P.N. Lebedev Physical Institute, RAS *www.lebedev.ru*
Physics and Technology of Nanostructures	On-site research facilities
Solid State Physics	Institute of Solid State Physics, RAS *www.issp.ac.ru*
Theoretical Astrophysics and Quantum Field Theory	Alikhanov Institute for Theoretical and Experimental Physics

DEPARTMENT OF AEROPHYSICS AND SPACE RESEARCH

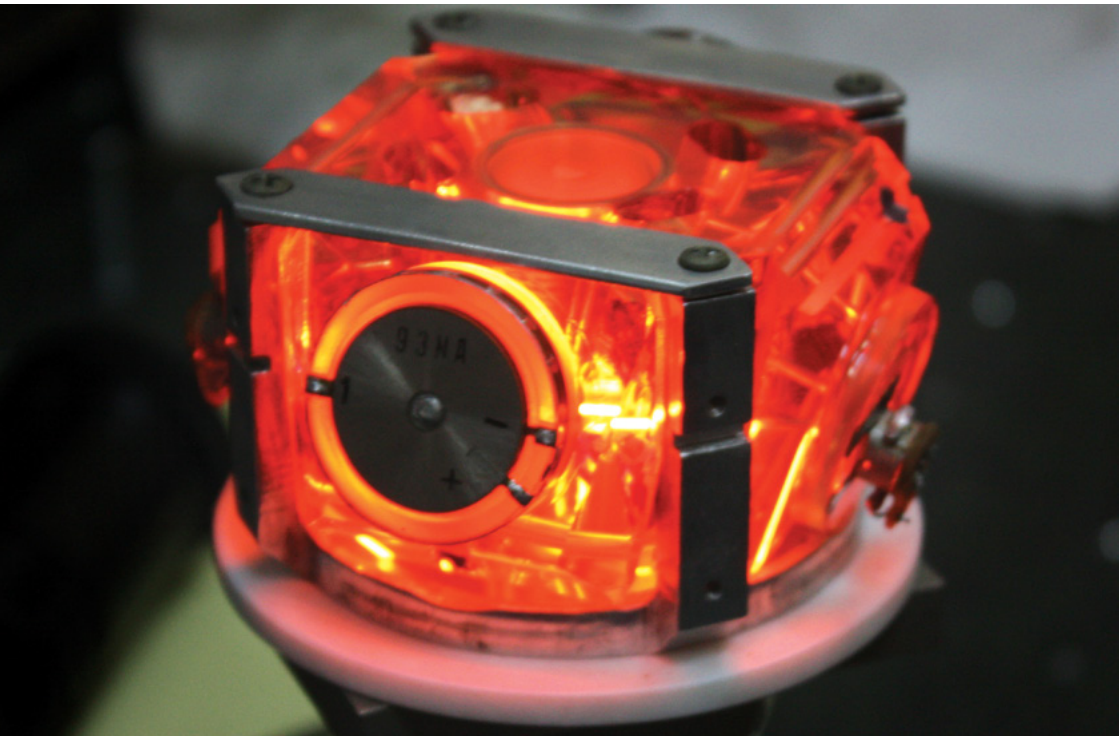
Our training program focuses on a practical approach to opportunities offered by the space industry and includes aerospace engineering, space science and space technology. Our research focuses on biosystems engineering, Earth remote sensing, and natural resource exploration. Alumni include astronauts, policy-makers, high-ranking officer and researchers who work on the cutting edge of earth and space sciences in the most respected research centers and companies both in Russia and abroad.

Master Course	Partner Research Organization
Computational Mechanics	On-site research facilities
Geosphere Interaction Physics and Earth Ecology	On-site research facilities
Information Technology, Computing and Mathematics	A.A. Blagonravov Mechanical Engineering Research Institute, RAS *www.imash.ru*
Operations Research in Control Systems	V.A. Trapeznikov Institute of Control Sciences RAS
Physical Mechanics	On-site research facilities
Physics of Oceans and Atmospheres	P.P. Shirshov Institute of Oceanology, RAS *www.ocean.ru*
Spacecraft Guidance, Navigation and Control Systems	Institute for Problems in Mechanics, RAS *www.ipmnet.ru*
System Analysis and Large-Scale Systems Management	Institute of Systems Analysis, RAS *www.isa.ru* On-site research facilities

DEPARTMENT OF MOLECULAR AND CHEMICAL PHYSICS

Combining MIPT's traditional program in pure physics and mathematics with deep studies in chemistry, we foster unique specialists who conduct research in chemical dynamics and reaction mechanisms, materials and plasma chemistry as well as the physics of living systems. Our community includes scientists that study radiochemistry and conduct experiments using laser technology.

Master Course	Partner Research Organization
Chemical Physics	N.N.Semenov Institute of Chemical Physics, RAS *www.chph.ras.ru* Institute of Problems of Chemical Physics, RAS *www.icp.ac.ru/eng* Technological Institute for Superhard and Novel Carbon Materials
Cheminformatics	On-site research facilities
Continuum Mechanics	Institute for Problems in Mechanics, RAS *www.ipmnet.ru*
Molecular Physics	On-site research facilities
Physics and Chemistry of Plasma	National Research Centre “Kurchatov Institute” *www.nrcki.ru*
Physics of High Temperature Processes	Joint Institute for High Temperatures, RAS *www.jiht.ru*
Supramolecular Systems	Photochemistry Center, RAS *www.photonics.ru*



DEPARTMENT OF PHYSICAL AND QUANTUM ELECTRONICS

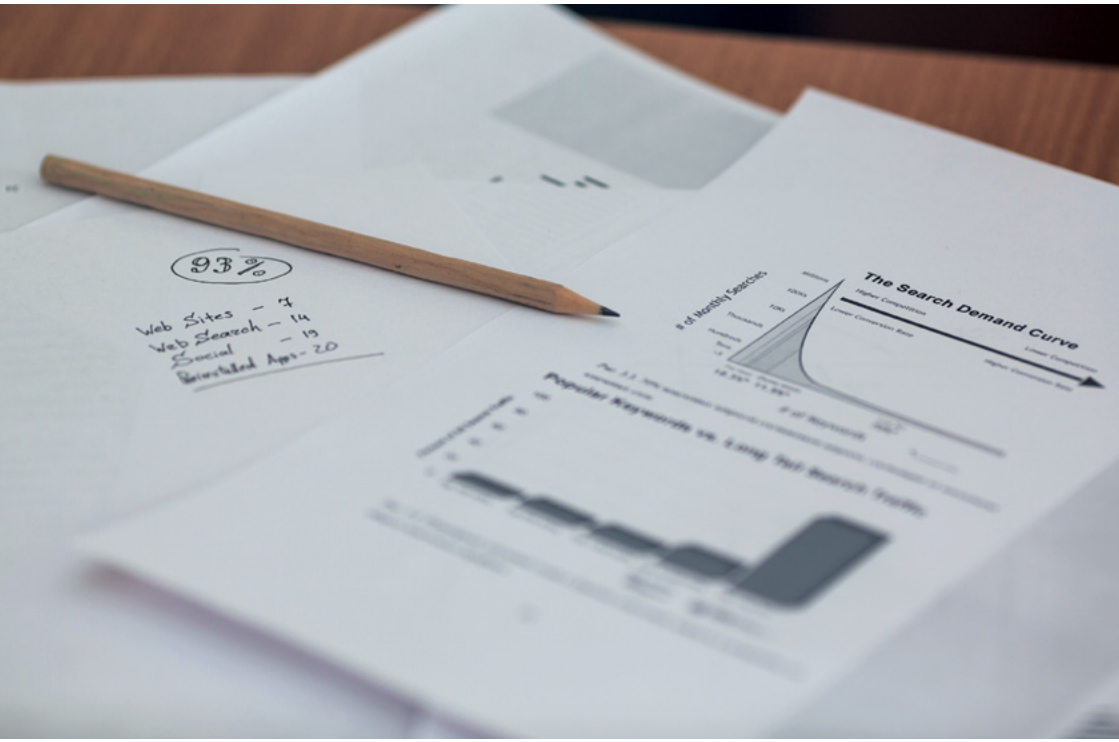
Converging rigorous pure sciences with the power of our industry-academic partnerships, we provide training programs for students who wish to become outstanding researchers in the field of electronics. We explore new materials and create new methods in solid state electronic devices as well as in laser and optics systems providing sharpened efficiency for contemporary solutions in telecommunications, control systems, supercomputers and the aerospace industry.

Master Course	Partner Research Organization
Diagnostics, Metrology and Standardization in Industrial Applications of Nanotechnology	Research Center for Studying Properties of Surfaces and Vacuum *www.nicpv.ru*
High-Performance Computing	Institute of Physics and Technology, RAS *www.ftian.ru*
Open Source Information Technology	Kotel'nikov Institute of Radioengineering and Electronics, RAS *www.cplire.ru*
Solid State Electronics	Kotel'nikov Institute of Radioengineering and Electronics, RAS *www.cplire.ru*

DEPARTMENT OF AEROMECHANICS AND FLIGHT ENGINEERING

The Department prepares students for professional positions in the aerospace industry by offering intensive curriculum merged with cutting-edge research at Russia's renowned Aviation Industry Cluster. Our program focuses on aeromechanics, aircraft control, propulsion and engineering. The department is located off-campus in the city of Zhukovsky, Moscow Region.

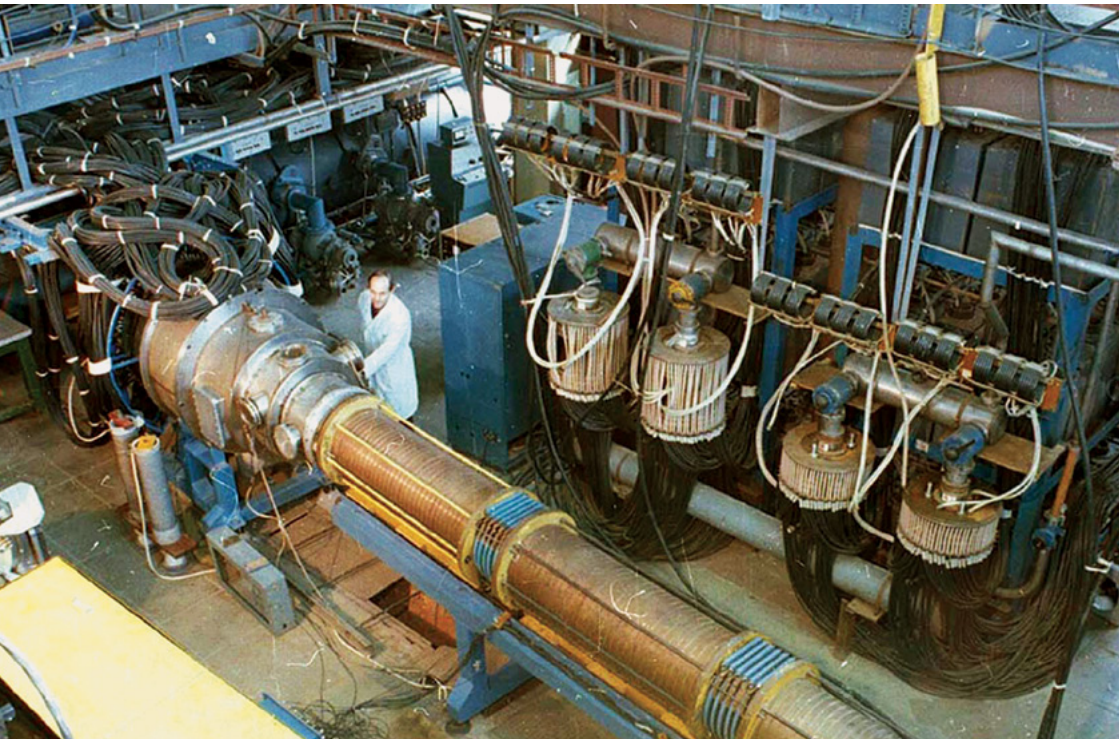
Master Course	Partner Research Organization
Aerodynamics and Heat Transfer in Aircrafts	Central Aerohydrodynamics Institute *www.tsagi.com* Central Institute of Aviation Motors *www.ciam.ru* On-site research facilities
Aircraft Design and Development	Central Aerohydrodynamics Institute *www.tsagi.com*
Aircraft Guidance, Navigation and Control Systems	Central Aerohydrodynamics Institute *www.tsagi.com* Ilyushin Aviation Complex *www.ilyushin.org*
Aircraft Structural Design	Central Aerohydrodynamics Institute *www.tsagi.com*
Mathematical Modeling	Central Aerohydrodynamics Institute *www.tsagi.com* Central Institute of Aviation Motors *www.ciam.ru* On-site research facilities
Mathematics and Information Technology	Central Aerohydrodynamics Institute *www.tsagi.com* Ilyushin Aviation Complex *www.ilyushin.org* On-site research facilities



DEPARTMENT OF CONTROL AND APPLIED MATHEMATICS

The Department provides training at the bachelor's and master's level in applied mathematics. Education programs are focused on mathematical modeling in fundamental and applied physics, mechanics and economics. We offer unique courses in supercomputing, artificial intelligence, system analysis and software engineering.

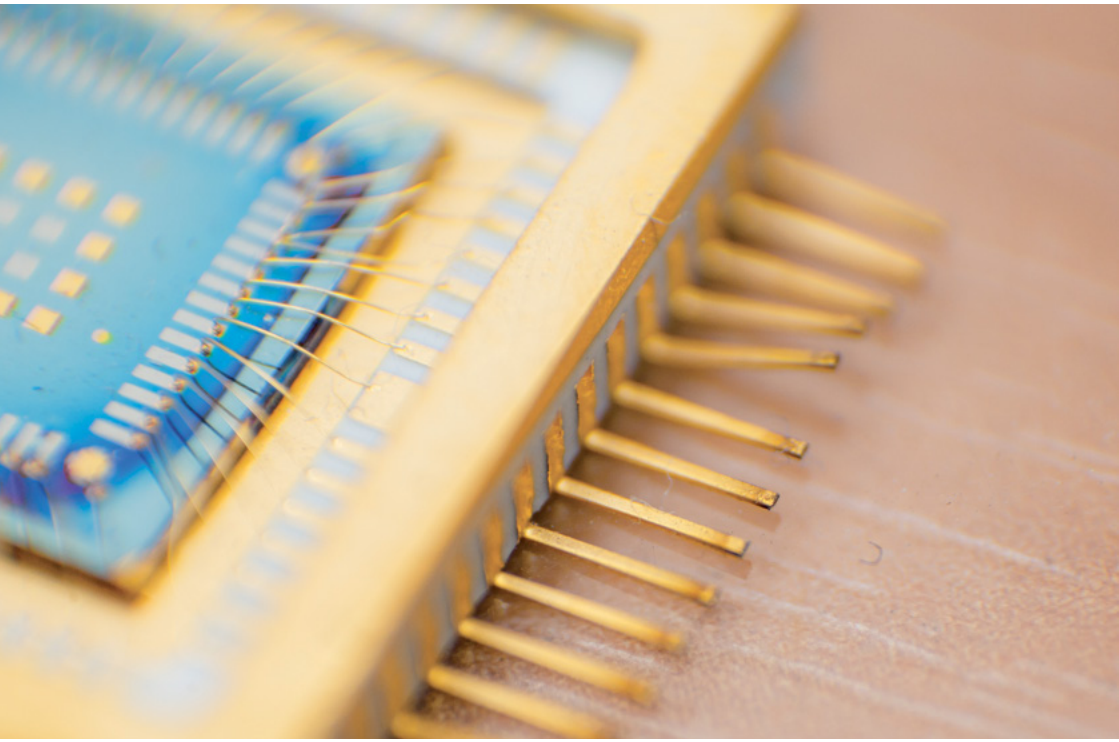
Master Course	Partner Research Organization
Applied Economics	Institute of Economic Forecasting, *RAS* *www.ecfor.ru*
Applied Mathematics	M.V. Keldysh Institute of Applied Mathematics, RAS *www.keldysh.ru*
Data Mining	Dorodnicyn Computing Centre, RAS www.ccas.ru Kharkevich Institute for Information Transmission Problems, RAS *www.iitp.ru*
Dynamic Systems and Control	M.V. Keldysh Institute of Applied Mathematics, RAS *www.keldysh.ru*
Mathematical Information Technology	Institute for Computer Aided Design, RAS Dorodnicyn Computing Centre, RAS *www.ccas.ru* Parallels *www.parallels.com* Acronis *www.acronis.com* Institute of Computer Aided Design of the Russian Academy of Sciences (ICAD RAS) *www.icad.org.ru*
Mathematical Modeling in Physics	Dorodnicyn Computing Centre, RAS www.*ccas.ru*
Operations Research	Dorodnicyn Computing Centre, RAS www.*ccas.ru*
Software Solutions for Computational Modeling	On-site research facilities
Software Systems Developer	Institute for System Programming, *RAS* *www.isp*ras.ru
System Research	Institute for System Analysis, RAS *www.ispras.ru*



DEPARTMENT OF PROBLEMS OF PHYSICS AND ENERGETICS

The Department focuses on training scientists to face a broad range of challenges caused by the rapid growth of human civilization in the 21st century. We offer programs related to quantum optics, extreme states of matter, nuclear physics, astrophysics and cosmology, fundamental interactions and plasma energetics. We endeavor to conduct experiments beyond the limits of present-day science and are proud of our graduates, who are involved in investigating the most spectacular phenomena of the universe.

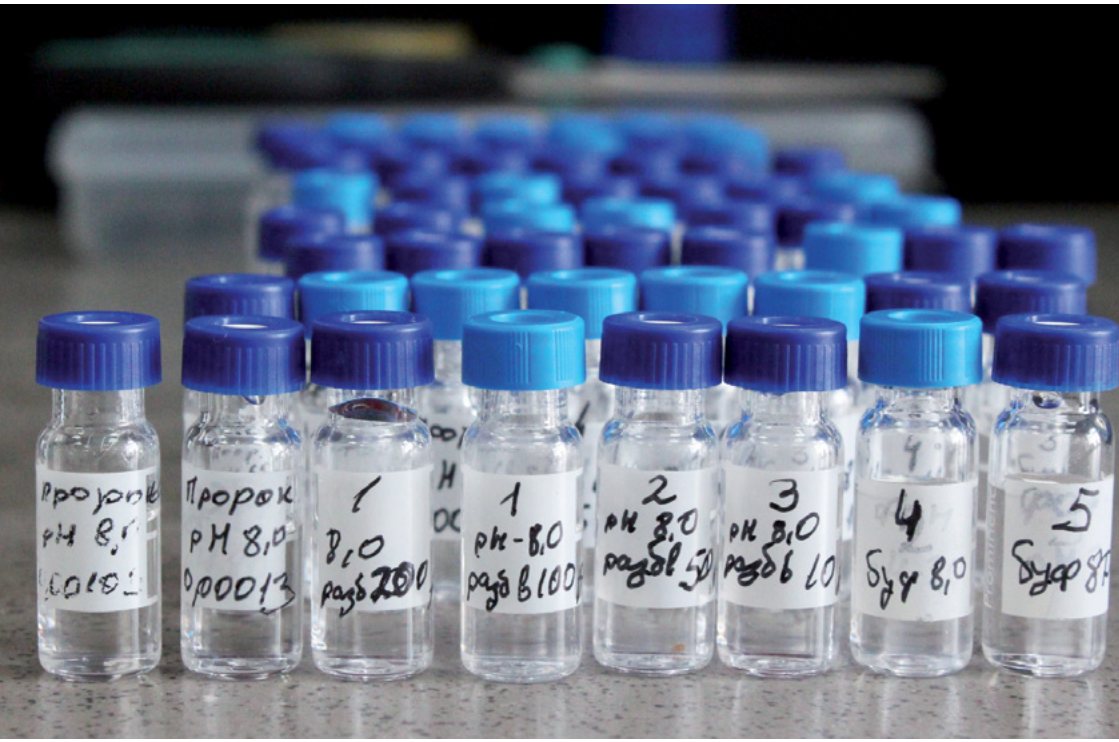
Master Course	Partner Research Organization
Applied Theoretical Physics	Institute for Theoretical and Applied Numerical Electrodynamics, RAS *www.itae.ru*
Electrophysics	Lebedev Physical Institute, RAS *www.lebedev.ru*
Fundamental Interactions	Institute for Nuclear Research, RAS *www.inr.ru*
High Energy Density Physics	Joint Institute for High Temperatures, RAS *www.jiht.ru*
Quantum Optics and Laser Physics	Institute for Spectroscopy, RAS *isan.troitsk.ru*
Space Physics	Space Research Institute, RAS *www.iki.rssi.ru*



DEPARTMENT OF INNOVATION AND HIGH TECHNOLOGY

Computers and information technologies have become indispensable to modern life. We prepare our students to give rise to innovations, to be eager in studying computer science, to explore the cyber-universe and to implement their ideas in the real world with the help of our industry-academic partnerships with the world's largest software companies and hightech corporations.

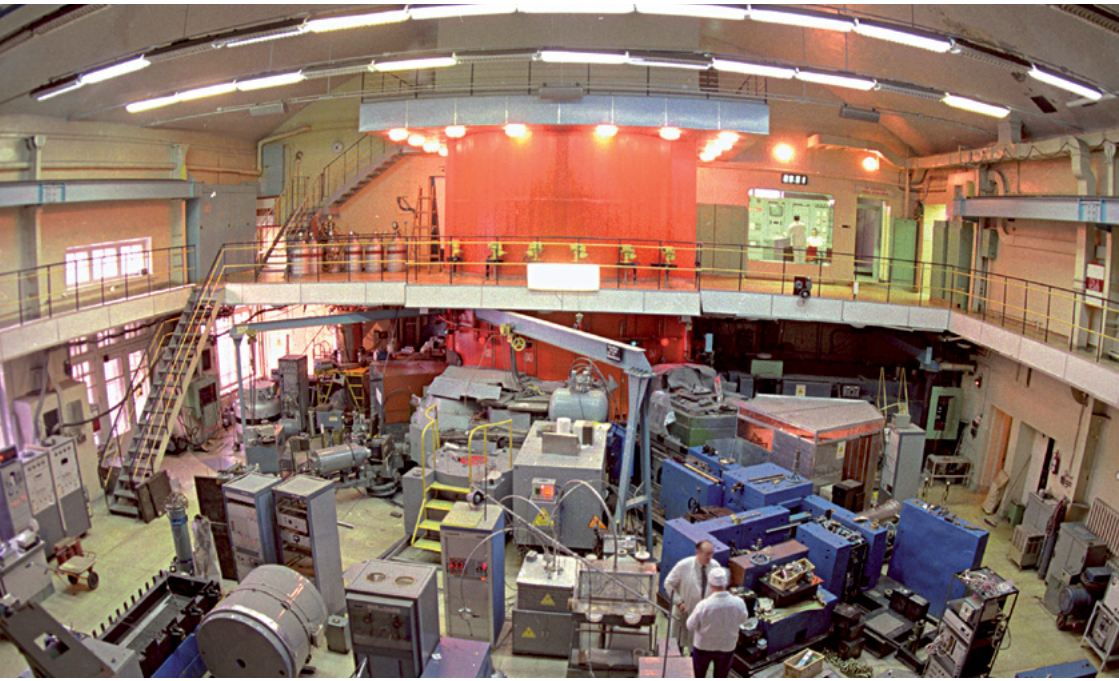
Master Course	Partner Research Organization
Cognitive Technology	Institute for System Analysis, RAS *www.isa.ru*
Conceptual Design and Analysis	CONCEPT Analysis Centre
Data Analysis	Yandex *www.yandex.ru*
Distributed Computing	Institute for System Analysis, RAS *www.isa.ru*
Economics of Innovation	Institute for System Analysis, RAS *www.isa.ru*
Economics of Intellectual Property	Central Economical Mathematical Institute, RAS
Economy of High Technology	Institute for System Analysis, RAS *www.isa.ru*
High Technology Management	Institute for System Analysis, RAS *www.isa.ru*
Image Recognition and Text Processing	ABBYY Software House *iwww.abbyy.com*
Information Technology in Business Administration	1C Software Company *www.1c.ru*
Investment Assessment	Central Economical Mathematical Institute, RAS *www.cemi.rssi.ru*
Knowledge Economy and Digital Economy	Central Economical Mathematical Institute, RAS *www.cemi.rssi.ru*
Mathematics and Information Technology	ABBYY Software House *iwww.abbyy.com* Institute for System Analysis, RAS *www.isa.ru*



DEPARTMENT OF BIOLOGICAL AND MEDICAL PHYSICS

Thanks to MIPT's unique teaching style and structure, we are merging medicine, biology and chemistry with fundamental physics and mathematics in order to create new methods for the medical industry and technologies for pharmaceutical production. Our alumni include entrepreneurs, educators and researchers that are pushing the boundaries of life sciences.

Master Course	Department of MIPT Partner Research Organization
Advanced Bioinformatics	*Bioinformatics* Vavilov Institute of General Genetics, RAS Georgia Institute of Technology (Atlanta)
Innovative Drug Design and Development	*Innovative Pharmaceutics and Biotechnology* Life Science Center MIPT
Fundamentals of Molecular Biology	*Molecular and Cellular Biology* Engelhardt Institute of Molecular Biology, RAS Institute of Molecular Genetics, RAS Institute of Protein Research, RAS
Genome Analysis	*Molecular Medicine* Scientific Research Institute of Physical-Chemical Medicine of Federal Medical-Biological Agency
Fundamentals of Physiology	*Molecular Physiology and Biophysics* Bogomoletz Institute of Physiology Pisarzhevsky Institute of Physical Chemistry (Kiev)
Nuclear Medicine	*Translational and Regenerative Medicine* Rogachev Federal Centre for Pediatric Hematology, Oncology, Immunology of Ministry of Healthcare of Russia
Electrophysiology	*Physics of the Living Systems* Sklifosovsky Institute of Emergency Care Institute of Transplantology and Artificial Organs, Heamatology Center, Myasnikov Cardiocenter
Proteomics	*Physical and Chemical Biology and Biotechnology* M.M. Shemyakin and Yu.A. Ovchinnikov Institute of Bioorganic Chemistry, RAS



DEPARTMENT OF NANO-, BIO-, INFORMATION TECHNOLOGY AND COGNITIVE SCIENCE

Converging nanotechnology, biotechnology, information technology and cognitive science into a holistic art of cognition, we have acquired a new instrument for understanding our world and making it a better place. The NBIC department was established in the close cooperation with the renowned NRC “Kurchatov Institute”, which has been a hub of cutting-edge science since the Soviet era. The department is located in Moscow.

LABORATORY FOR STRUCTURAL BIOLOGY OF GPCRs

Research team led by Vadim Cherezov focuses on investigating 3-D structure of G protein-coupled receptors (GPCRs). Development of better drugs with fewer side effects requires knowledge of these receptors and understanding of the signal and response mechanisms.

Contacts:

mishinalexej@gmail.com

+7-495-408-79-74

Prof. Vadim Cherezov, Head of the Lab, Associate Professor, Department of Integrative Structural and Computational Biology, The Scripps Research Institute:

"Now it is time to start making a serious impact on the field of structural biology of GPCRs and other challenging membrane proteins and complexes."

LABORATORY FOR ADVANCED STUDIES OF MEMBRANE PROTEINS

Joint project of MIPT and Juelich Research Centre. The Laboratory's activity focuses on advances in the study of membrane proteins. These proteins perform a wide range of biological functions including signal transduction and molecular transport.

Contacts:

borshchevskii.vi@mipt.ru

+7-495-576-32-66

Prof. Georg Bueldt, Head of the Lab, Former Director of Institute of Complex Systems Research Centre Juelich:

"Every scientist wishes to know how nature is organized, in order to use this knowledge to create inventions that help the humankind."

LABORATORY OF CHEMICAL SYNTHESIS AND CATALYSIS

The laboratory's research program is centered on development of chemical methods, including new catalytic reactions, for studying biological systems. Current projects are multifaceted and involve a mix of chemical synthesis, molecular modeling, and investigation of biological activity — many in collaboration with colleagues at MIPT and other institutions. Results of this research are expected to be useful in the development of new therapies, among which are drug delivery systems that effectively target specific cell types.

Prof. Valery Fokin, Head of the Lab, Associate Professor, Department of Chemistry, The Scripps Research Institute:

"A truly creative scientific team should not be rigid and hierarchic. The only way to discover something new is to provide complete intellectual freedom to all members of the group, from undergraduate students to senior scientists."

Contacts:
fokin@pharmcluster.ru
+7-495-408-42-00

LABORATORY OF CELLULAR AND MOLECULAR TECHNOLOGIES

Current projects: Development of personalized therapy for functional liver disorders based on transplantation of vascularized organoids. Development of wound dressing using GAL-KO pig skin.

Application: Treatment of chronic hepatic failure; wound treatment.

Details: Project involves the creation of "artificial" liver tissues with the help of tissue nanoengineering methods to develop the technology of patient specific therapy in functional liver failure.

Technological innovations include 3D cell process and device developments for all major tissue types, which follow a bionic concept in tissue engineering. Pharmaceutical innovations include the discovery of a mode of action of therapeutic proteins that leads to tissue regeneration (such as liver and skin).

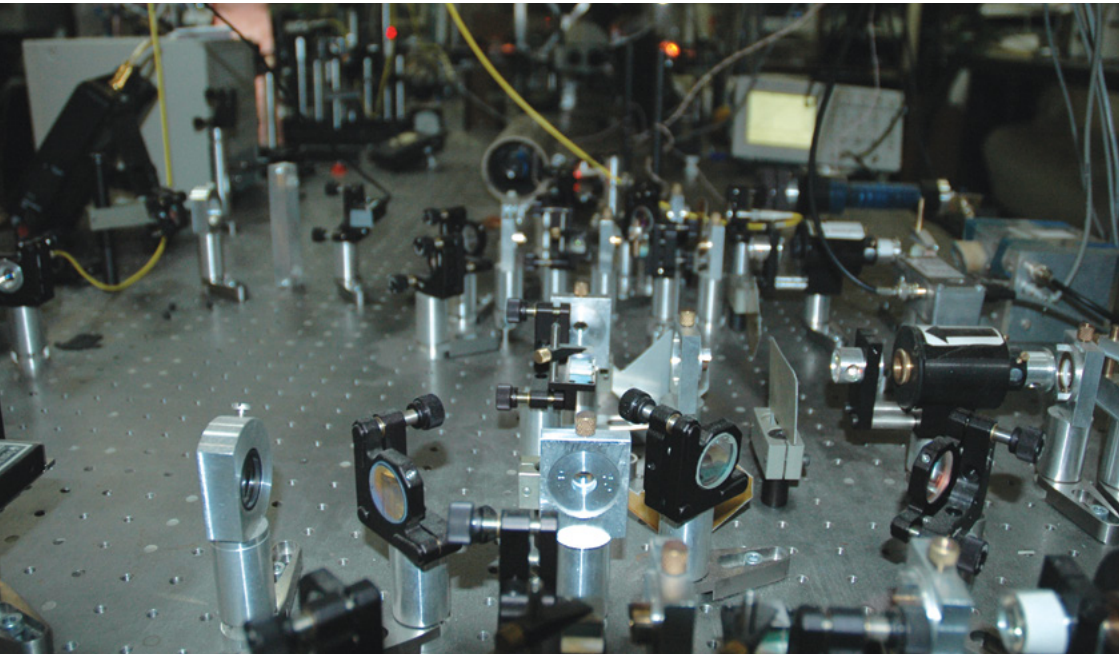
Contacts:

petersen.elena.v@gmail.com

+7-926-716-90-00

Head of the Laboratory: Elena Petersen MD, PhD, Deputy Dean for Research and Innovation, Department of Biological and Medical Physics, Moscow Institute of Physics and Technology

Scientific Supervisor: Prof. Dr. med. habil. Augustinus Bader, director and professor for Applied Stem Cell Biology and Cell Technology at the University of Leipzig



TERAHERTZ SPECTROSCOPY LABORATORY

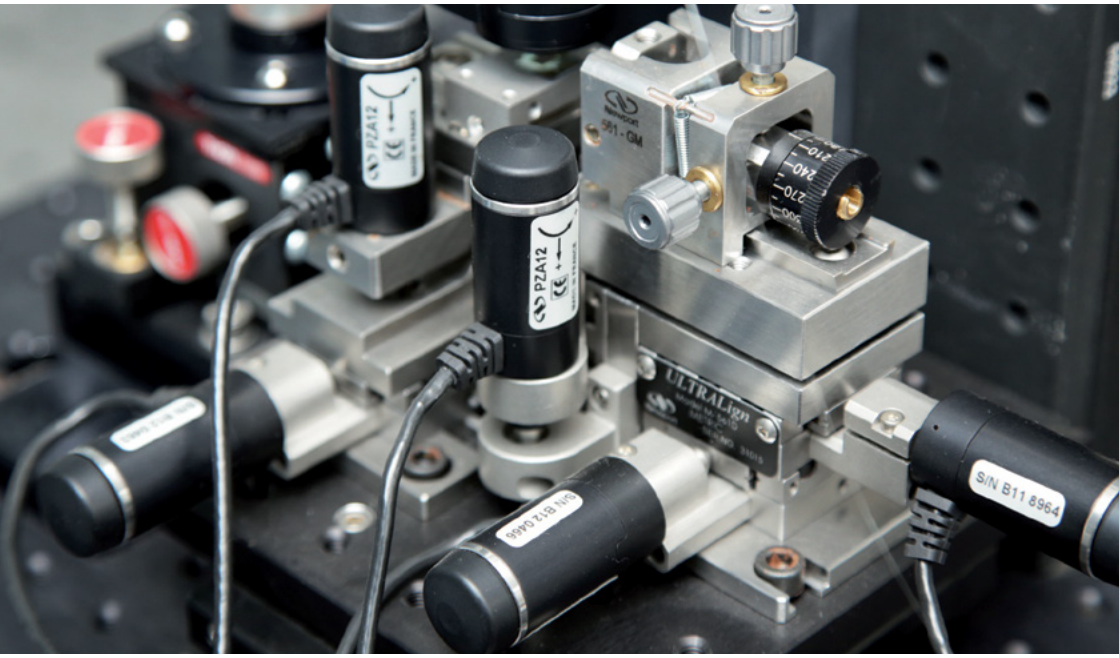
Prof. Boris Gorshunov, Head of the Lab

The lab's staff utilizes three spectrometers to study a variety of objects, ranging from superconducting to biological. As for biological systems, terahertz radiation makes it possible to study the role of water in biological processes, charge transfer in biological structures, and oscillatory processes, which can characterize the state of a biosystem. Having high sensitivity to the phase state of water, the terahertz range allows for determining the degree of the bond between water molecules in biological systems, the level of solvation of ions in a solution and the hydration level of surfaces at the phase boundary. In space research, terahertz radiation makes it possible to perform remote probing of an atmosphere.

Contacts:

bpgorshunov@gmail.com

+7-498-744-65-38



NANO-OPTICS AND PLASMONICS LABORATORY

The laboratory investigates optoelectronic processes at deep subwavelength scale building the bridge between the nanophotonics and microelectronics. Utilizing the enormous speed of light and high confinement in metal-semiconductor structures with efficient electron-photon conversion, we develop ultracompact on-chip optical components for future microprocessors.

Contacts:

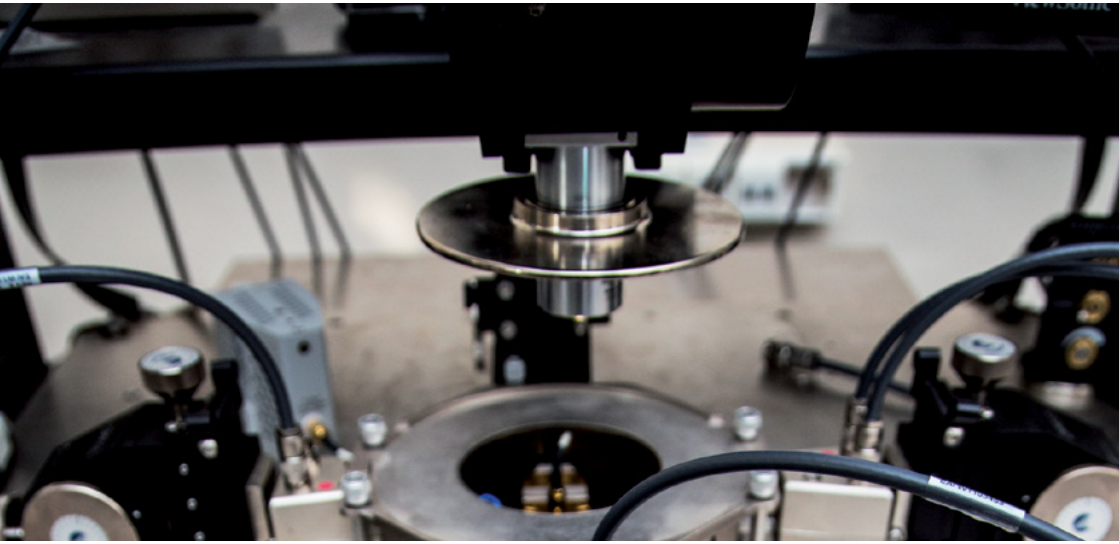
nano.phystech.edu

nano@phystech.edu

+7-905-712-86-98

Prof. Valentyn Volkov, Head of the Lab:

"Nano-optics and plasmonics are at the cutting edge of modern science. Taking the best from the worlds of optics and electronics, they will help to boost microprocessor performance and eventually to build supercomputer on a single chip."



LABORATORY OF FUNCTIONAL MATERIALS AND DEVICES FOR NANOELECTRONICS

Research area: development of the next generation non-volatile memory technologies as well as innovative brain-inspired computing architectures.

Application: stand alone and on-chip non-volatile memory devices in nanoelectronics.

Details: synthesis of novel materials in nanometer thick layers, investigation of their physical properties and eventual functionalization for development of innovative memory devices.

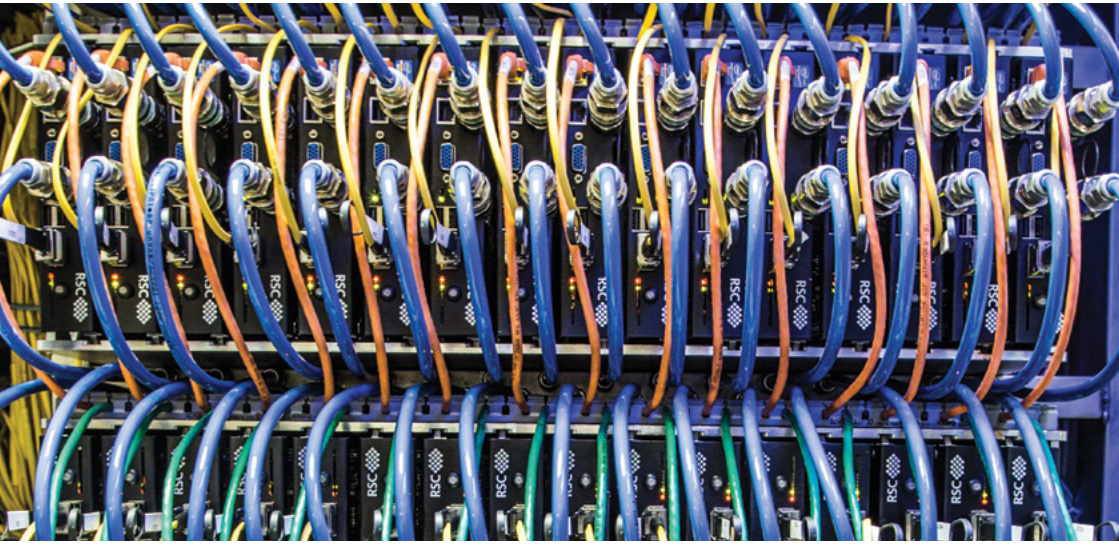
Contacts:

zenkevich.av@mipt.ru

+7-903-687-49-45

Dr. Andrei Zenkevich, Head of the Lab:

"By exploiting alternative physical principles of writing and storing information in nanostructures, we develop novel competitive memory technologies. On top of this basic activity, using emerging nanoelectronic and possibly spintronic, devices, we try to design hybrid 'neuromorphic' circuits and computing systems."



APPLIED COMPUTATIONAL GEOPHYSICS LAB

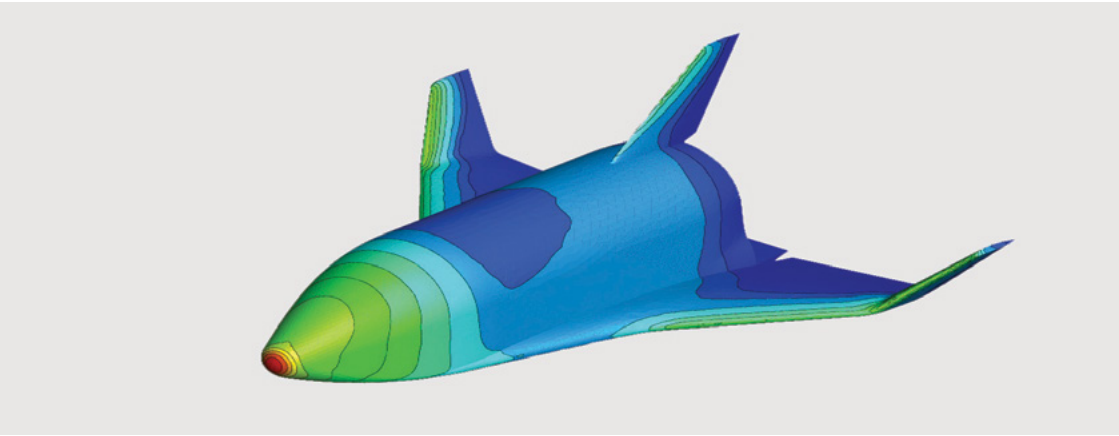
Prof. Mikhail Zhdanov, Head of the Lab

The laboratory develops and promotes new approaches to geophysical data integration for increasing the sensitivity and resolution of geophysical surveys in the oil and gas industry. For efficient interpretation of electromagnetic, seismic and other data, there is a need for development and application of modern approaches to large-scale 3D numerical modeling and inversion in complex heterogeneous geological environments. Consequently, research in the laboratory is concentrated on creating such approaches as well as studying geophysical field propagation in heterogeneous multi-phase media typical for rock and hydrocarbon reservoirs.

Contacts:

michael.s.zhdanov@gmail.com

+7-498-744-65-37



FLOWMODELLIUM LABORATORY

Current project: Development of a software kit for mathematical simulation of high-altitude hypersonic aerodynamics within the full range of Reynolds (Knudsen) numbers.

Application: spacecraft and experimental hypersonic aircraft.

Details: investigation of thermochemically and thermodynamically non-equilibrium hypersonic flows, heat and mass transfer in free-molecular, transitional and continuum regimes of existing space vehicle design.

Prof. Sergey Utyuzhnikov, Head of the Lab:

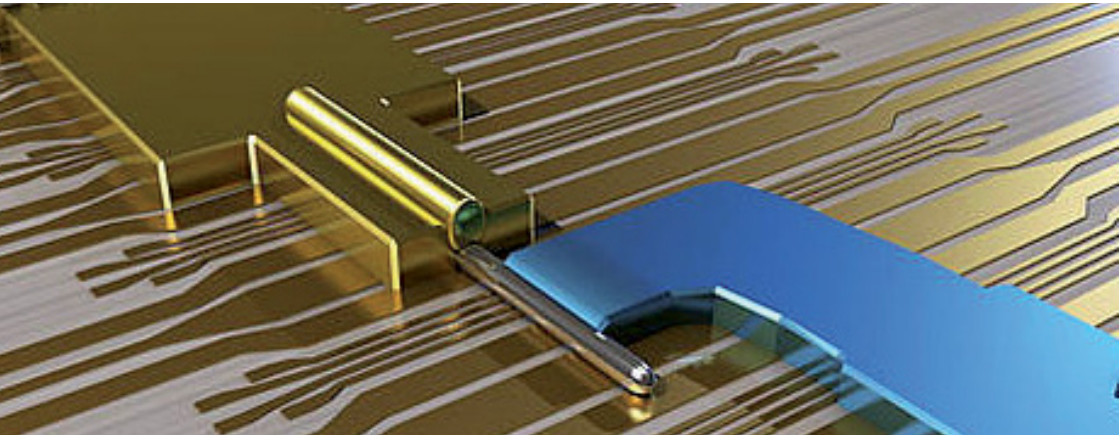
"We have invented a unique method for modeling laminar-turbulent transition for spacecraft. It makes thermo-protection systems of spacecraft much more reliable."

Contacts:

www.flowmodellium.ru/en

titarev.va@mipt.ru

+7-498-744-69-09



LABORATORY OF TOPOLOGICAL QUANTUM PHENOMENA IN SUPERCONDUCTING HYBRID STRUCTURES

Prof. Alexander Golubov, Head of the Lab, Associate professor of University of Twente, Netherlands

The laboratory's main research area is the study of topological quantum materials. Current research projects aim to experimentally and theoretically investigate topological quantum physics with an emphasis on the confluence of internal symmetries of the electronic structure (global phase coherence, spin-orbit interactions, and broken inversion symmetry). The chief task is the study of Majorana states in superconductor – nanowire contacts and in superconductor – surface contacts of 3D topological insulators. We concentrate on the detection and manipulation of these states and study the dynamic effects related to tuning Majorana bound states and the dynamics of transformation of usual Andreev bound states into chiral Majorana edge modes.

Contacts:

a.a.golubov@utwente.nl

ACADEMICS FOR INTERNATIONAL STUDENTS

Bachelor's programs

Undergraduates pass through in-depth study of fundamental sciences combined with intensive participation in research in the third and fourth year at one of MIPT's partnering or affiliate scientific organizations and industrial companies.

Master of Science programs

Two-year MS programs are delivered individually at each department. Students attain MS degrees in specialized fields in cooperation with Russia's renowned research centers.

PhD programs

MIPT is certificated to provide PhD Programs in 42 specialist fields covering physics, mathematics, chemistry, engineering and earth science.

One-year pre-university language program.

During the academic year, freshmen study Russian, taking into account the specifics of their upcoming BS or MS curriculum. We give them an opportunity to learn about Russian culture and society in order to make it easier for them to study in our main educational programs.

HOW TO APPLY?

1. Choose a department (faculty).

2. Send application request by e-mail to intoff@mipt.ru.

3. Once we have replied, send copy of your international passport and copy of educational documents together with their translation into English or Russian to intoff@mipt.ru.

4. You will then receive the University Admission Confirmation Letter and further instructions in 10 working days.

MIPT provides visa support and comprehensive assistance for international students. We also provide housing in our residence complex.

Scholarships

The Ministry of Education and Science of the Russian Federation and the Russian Federal Agency "Rossotrudnichestvo" annually provide 15,000 Quota Scholarship for foreign citizens and compatriots living abroad and seeking admission to Russian universities.

DEPARTMENT OF INTERNATIONAL AFFAIRS

International Students Office

The International Students Office provides comprehensive assistance in the organization of international student training at MIPT. We are also responsible for international student admission and recruitment. You can apply as a freshman, transfer student or graduate student.

nizhnik.ii@mipt.ru
+7-495-408-70-43

International Projects Office

— Administrative assistance for international students, including invitation and visa document support, accommodation, pick up and transfer.

— Organization and support for international seminars and conferences.

— Coordination of bilateral and multilateral projects.

— Recruitment of scientists and researchers for working at MIPT.

Intoff@mipt.ru
+7-495-408-75-63

WE ASPIRE TO BE A UNIVERSITY WITH A FIRST-CLASS REPUTATION, HIGHLY RANKED ACADEMIC PROGRAMS, AND GLOBAL CONNECTIONS.

Communications Office:

press@mipt.ru
+7 (498) 744-65-26

www.mipt.ru/en