

National contact point “AERONAUTICS”

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*Factsheet*¹

Opportunities for the Development of EU-Russia Science and Technology Cooperation in Aeronautics

Moscow Institute of Physics and Technology (State University) – MIPT

In order to maintain and develop the scientific and technological EU-Russia cooperation in the field of aeronautics, **Russian National Contact Point for aeronautical research – NCP “Aeronautics”** informs you about Russian organizations performing their activities in the field of aeronautics and being potential partners for international cooperative activities in this field.

At the present time in Russia, one of the leading universities in the field of aeronautics is **Moscow Institute of Physics and Technology (State University) – MIPT**.

About the University

Moscow Institute of Physics and Technology (MIPT) — is one of the leading technical universities of Russia, which is confirmed not only by the achievements of its scientists and alumni, but also by high positions in international and national ratings. In recent years 64 new laboratories have been opened in MIPT, where world-class academics work.

Research in MIPT covers a wide range of fields of theoretical and experimental physics, aviation and space, energy and biomedicine, chemistry and applied mathematics, computer science, and other natural and fundamental sciences. Especially, MIPT fosters academic excellence in aerospace research.

MIPT is the “alma mater” for highly qualified specialists, engineers and scientists for such leading national aviation enterprises as TsAGI (Central Aerohydrodynamic Institute named after Prof. N.E. Zhukovsky), CIAM (Central Institute of Aviation Motors named after P.I. Baranov), Gromov Flight Research Institute, Sukhoi Company, Aviation Complex named after. S.V. Ilyushin, Irkut Corporation, etc., with which the University also closely cooperates in the scientific and educational spheres.

The strategic development of MIPT is based on strengthening its competitive advantages, including outstanding professors (more than 80 academicians and corresponding members of the RAS) and researchers, a unique system for selecting candidates, student involvement in scientific research and a high concentration of qualified personnel in one cluster.

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MIPT is **one of the top 100 world universities** according to THE World University Rankings of the British rating agency. At the same time, according to the QS University Rankings by subject - “Mechanical, Aeronautical & Manufacturing”, MIPT entered the top 250 world best universities list. Also, in 2017, Times Higher Education (THE) for the first time presented The Golden Age ranking of the universities, established from 1945 to 1966, in which MIPT took 46th place.

In 2013, MIPT became one of the participants of “The Project for Enhancing Competitiveness of the Universities of the Russian Federation (**Project 5-100**)” among the world's leading research and educational centers and presented the “Program for Enhancing International Competitiveness” and the “roadmap” for implementing the long-term development of the educational process, its own research base and infrastructure.

Priority areas of MIPT Project 5-100:

- expansion of international presence and strengthening of MIPT reputation in the world through integration into the international community, development of academic mobility and control of the university's reputation abroad;
- increasing relevance of MIPT's educational programs at the international level through the development of two-diploma education, joint educational programs and open online courses;
- R&D quality and volume growth.

To assist in the implementation of the program to improve competitiveness, the International Board, chaired by the president of the Massachusetts Institute of Technology, Leo Rafael Rife, was established at MIPT. The International Board facilitates the integration of MIPT in international research and educational programs and the University promotion in the international community.

MIPT’s School of Aerospace Technologies (SAT)

MIPT includes 9 phystech schools and scientific centers, on the basis of which various laboratories have been set up. The **School of Aerospace Technologies (SAT)** includes the **Department of Aerophysics and Space Research (DASR)** and the **Department of Aeromechanics and Flight Engineering (DAFE)**, both schools provide scientific training of specialists in different fields of aeronautics, starting from classical to the most promising ones.

Laboratories on the basis of SAT:

- Laboratory of information technologies and applied mathematics,
- Laboratory of hypersonic and plasma technologies,
- Laboratory of impulse plasma systems,
- Laboratory of advanced control systems,
- Laboratory of chemical physics and alternative fuels,
- Laboratory of infrared spectroscopy,
- Laboratory of precision orientation systems,
- Laboratory of modeling of mechanical systems and processes,
- Laboratory of plasma engines,
- Laboratory of autonomous systems,
- Laboratory of space optical and electronic equipment “ELFOKS”,
- Laboratory of applied nanotechnologies.

Specialized chairs of DAFE:

- Chair of Theoretical and Applied Aerohydrodynamics,
- Chair of Gas Dynamics, Combustion and Heat Transfer,
- Chair of Computer Modeling,
- Chair of Special Aircraft and Aviation Information and Measuring Systems,
- Chair of Aircraft Strength,
- Chair of Aerophysical and Flight Experiments,
- Chair of Applied Mechanics and Informatics,
- Chair of Flight Physics.

Specialized chairs of **DASR**:

- Chair of Thermal Processes,
- Chair of Mechanics and Control Processes,
- Chair of Space Physics,
- Chair of Physical Mechanics,
- Chair of Space Information Systems,
- Chair of Spacecraft,
- Chair of Space Instrument Engineering,
- Chair of Systems, Devices and Methods of Geocosmic Physics,
- Chair of Aerophysical Mechanics,
- Chair of Physical and Chemical Problems of Hydrodynamics,
- Chair of Computational Mathematics,
- Chair of Applied Mechanics,
- Chair of Logistic Systems and Technologies,
- Chair of Motion Control,
- Chair of Automated Biotechnical Systems,
- Chair of Thermohydraulics of the Ocean,
- Chair of Theoretical Cybernetics,
- Chair of High Technologies in Life Safety Assurance,
- Chair of Physical Metallurgy and Materials Science,
- Chair of Theoretical and Experimental Physics of Geosystems.

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International Collaboration

MIPT is a partner to many prestigious scientific institutions including both international and national research centers and corporations. Some of them establish the partnership sections on the basis of the University, where MIPT students can study and work (e.g., Intel).

The main areas of MIPT's international activities are:

- development of international relations of MIPT in the field of education, academic exchange;
- participation in providing and supporting joint projects of research programs;
- organization and holding of international seminars, symposia and conferences;
- involving scientists and researchers from other countries in joint activities;
- active cooperation with various international organizations;
- interaction with international partners in the framework of funds, programs;
- development and support of various innovative projects and programs of regional and local significance.

MIPT cooperates with many international scientific and educational institutions, such as École Polytechnique (France), Grenoble Institute of Technology (France), ISAE-Supaero (France), Polytechnic Institute of Advanced Science, IPSA (France), Beihang University, BUAA (China), Embry-Riddle Aeronautical University (USA), McGill University (Canada), University Centre in Svalbard (Norway), TU Delft etc., and with some of them it has joint training and exchange programs.

MIPT's partners are the Research Center of Jülich (Germany), IPSA (France), University of Edinburgh (UK), University of Science and Technology (Norway), University of Southern Denmark (Denmark), The University of California, Berkeley (USA), the Massachusetts Institute of Technology (USA), University of Zaragoza (Spain), Princeton University (USA), Tsinghua University (China), Numeca International (Belgium).

MIPT interacts with such world leading scientific centers as: CERN, DESY, KEK, FAIR, FNAL, ESA, EASN.

MIPT's participation in international scientific cooperation – EU Framework Programmes

The University, namely DAFE MIPT, has participated and continues to participate in significant projects of the European framework programs in the field of aeronautics, such as: HEXAFLY-INT, POLARBEAR, BUTERFLI, ALASCA, COBRA, etc.

Also, DAFE MIPT participates in other international projects, such as the High Speed Aviation Student Initiative (creating an international platform for uniting students and brainstorming ideas to develop a supersonic passenger aircraft), the FSAMP (the project of EU Erasmus + programme on the development of an International Master Programme in the field of Flight safety and airworthiness) (as an expert), etc.

Conferences, seminars, exhibitions

The University regularly participates, as well as organizes Russian and international events, conferences, scientific seminars, workshops, exhibitions, which include:

- European Conference for Aeronautics and Space Sciences EUCASS (EU);
- ICAS congresses;
- AIAA Conferences (USA);
- International Aviation and Space Salon [MAKS](#) (Russia);
- International Exhibition and Scientific Conference on Hydroaviation [GIDROAVIASALON](#) (Russia);
- EASN International Workshops (EU);
- International Aerospace, Scientific and Humanitarian Seminar named after S.M. Belotserkovsky (Russia);
- International Micro Air Vehicles Conferences and Competitions [IMAV](#);
- International Workshop "Extreme and record flights of UAVs and aircraft with electric motors" [ERBA](#) (Russia, MIPT);
- International Conference "Engineering and Telecommunications - [En&T](#)" (Russia, MIPT);
- [MIPT Scientific Conferences](#) with international participation;
- International Conference on Innovations in Mass Spectrometry: Instrumentation and Methods – [INNMS](#) (Russia, MIPT, SkolTech, MEPhI);
- and others.

At IMAV-2017 (Toulouse, France), the drone of MIPTeam from DAFE MIPT won the "Best MAV design" nomination and was awarded the second place in the "Record breaking session" nomination.

MIPT is always open for international cooperation, which is vitally important today to realize the scientific potential of Russia on the world stage.²

More information you can find here:

- ✓ MIPT official website: <https://mipt.ru/english/about/>;
- ✓ MIPT Schools and departments: <https://mipt.ru/english/edu/departments/>;
- ✓ MIPT laboratories and research centers: <https://mipt.ru/english/research/labs/>;
- ✓ MIPT International Board: https://mipt.ru/english/persons/international_board/;
- ✓ Department of Aeromechanics and Flight Engineering of MIPT (rus): <http://falt.ru/>;
- ✓ Department of Aerophysics and Space Research of MIPT (rus): <https://mipt.ru/dasr/about/>;
- ✓ Russian NCP "Aeronautics" support: +7 495 556 31 62, +7 498 483 29 09, <http://ncp.tsagi.ru/en/>.

² Prepared using the materials of the official websites of MIPT: <https://mipt.ru/>, DAFE MIPT: <http://falt.ru/>.