

Geometry and Physics

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Research Unit of HSE University
**International Laboratory for Mirror
Symmetry and Automorphic Forms
(ILMS)**

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project leader

Valery Gritsenko,
Head of Laboratory

Research Unit of Partner
**Laboratory of Mathematical Physics
and General Relativity,
Laboratory of Algebraic Geometry
Beijing Institute of Mathematical
Sciences and Applications (BIMSA)**

www.bimsa.cn

project leader

Nikolai Reshetikhin,
Professor

Artan Sheshmani,
Professor

China and Russia
make science together

Valery Gritsenko:

What is the peculiarity of research in the field of mirror symmetry?

The methodology itself implies that new ideas arisen in theoretical physics find their development in mathematics, and new mathematical results receive interpretations in theoretical physics.

What is the major project task?

We construct and study new algebraic, birational, and categorical invariants of manifolds based on mirror symmetry ideas.

What institutions do you collaborate with?

The geography is quite wide. Recently, China has become our important research partner because the world's mathematical research has been rapidly advancing there. In particular, we cooperate with the Beijing Institute of Mathematical Sciences and Applications (BIMSA) of Tsinghua University, the world-famous mathematical center. The project provides a unique opportunity for early-career Russian mathematicians, including graduate and undergraduate students, to get involved in the global science together with the field top leaders.

Is this project carried out by your laboratory?

Yes, this new research project is a natural extension of our laboratory's studies. We have been exploring many areas of mathematics together with scientists from many countries. The project "Geometry and Physics" is carried out in collaboration with two BIMSA labs: the Laboratory of Algebraic Geometry and the Mathematical Physics Laboratory. Both laboratories can boast renowned scientists. The Laboratory of Algebraic Geometry is led by Professor Kaushar Birkar, 2018 Fields Prize winner, and Professor Artan Sheshmani, an associate member of the International Mirror Symmetry Laboratory (ILSL) since 2017. The Mathematical Physics Laboratory is headed by an American-Russian mathematician Nikolai Reshetikhin, 2022 winner of the Weyl-Wigner Prize for outstanding contributions to fundamental physics using group theory.



International Academic Cooperation, HSE University

Joint Basic Research Projects



SINCE 2023, A COMPETITION FOR JOINT FUNDAMENTAL RESEARCH PROJECTS HAS BEEN INITIATED.

The Competition shall be held among academic (research) structural subdivisions of HSE University planning to implement joint basic research projects with academic units of international universities and research centres engaged in research topics similar to the academic (research) subdivisions of HSE University.

Our goal:

- development of international scientific collaborations
- expansion of the research agenda and multidisciplinary
- involvement of students in joint basic research projects to improve their culture of academic research

