Aleksei Samoilenko

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Education

Saint Petersburg State University, Mathematics and Mechanics Faculty, Specialist degree (final year)
Advisor - **Alexander Smirnov**

Research Projects

Iwasawa theory for algebraic tori PDF available

Studied an explicit example of a norm-one torus computed the orders of the class groups and the Tate–Shafarevich group. Found explicit representatives in Ш in several cases and described the Galois action.

Gross and Rohrlich points of infinite order on Jacobians of Fermat curves PDF available

Computed endomorphism algebras of Jacobians of Fermat curves, indicating that the corresponding abelian varieties are not modular in the classical sense.

Conferences, Workshops, and Summer Schools

Autumn ALGEULER , 2025 , Euler institute (St. Petersburg)

School and Workshop on Explicit Arithmetic Geometry , 2025 , ICTP (Trieste)

IV Conference of Mathematical Centers of Russia , 2024 , PDMI RAS (St. Petersburg)

Student Mathematical School "Algebra and Number Theory" , 2024 ,
HSE , International Laboratory for Mirror Symmetry and Automorphic Forms (Voronovo)

Summer Mathematics School "Algebra and Geometry" , 2023 ,
HSE , Laboratory of Algebraic Geometry and Its Applications (Suzdal)

Academic Activities

- Active participant in Alexander Smirnov's arithmetic seminar since the beginning of my studies.
- Member of Vasily Golyshev's group since summer 2025; studying kernels of differential equations, with connections to the Langlands program and Kolyvagin systems in special cases of the Bloch–Kato conjecture.
- Co-organizer (with Aleksei Lvov) of a student seminar on abelian varieties at the faculty, focused on studying the proof of Faltings's theorem and building a local arithmetic geometry community.
- Courses passed: "Étale cohomology", "Class field theory", "Modular forms", "Brauer groups, Milnor

groups and Galois cohomology", "Oriented cohomology theories and Riemann-Roch theorem"

Teaching Activities

- Teach practical classes in Algebra and Number Theory for computer science students.
- Taught an online Olympiad math circle for secondary school students.