

Alexander Perepechko

Curriculum Vitae

+79164420870

a@perep.ru

0000-0002-1584-6127

aperep

Born on 7th October 1988
in Novosibirsk, Russia.



Research Career

- 2019–present **HSE University**, *Senior Researcher*, Laboratory on Algebraic Transformation Groups
- 2017–present **Moscow Institute of Physics and Technology**, *Associate professor*, Chair of Discrete Mathematics
- 2016–present **Institute for Information Transmission Problems**, *Senior researcher*, Laboratory 13, Algebra and Number Theory
- 2014–2015 **Saint-Petersburg State University**, *Postdoctoral position*, Chair of Higher Algebra and Number Theory, Faculty of Mathematics and Mechanics, Scientific Supervisor N.A. Vavilov

Education

- 2010–2013 **Moscow State University & University of Grenoble**, *PhD in Co-Tutorship*, Chair of Higher Algebra, Faculty of Mechanics and Mathematics, Scientific Supervisor I.V. Arzhantsev & Institut Fourier, Scientific Supervisor M.G. Zaidenberg
- 2005–2010 **Moscow State University**, *Department of Higher Algebra*, Faculty of Mechanics and Mathematics, Scientific Supervisor I.V. Arzhantsev
- 1995–2005 **Lyceum-school 130**, Novosibirsk, Russia

Mathematical interests

Automorphism groups of affine varieties
Actions of ind-groups
Flexibility of affine varieties
T-varieties
Locally nilpotent derivations
Automorphisms of finite-dimensional algebras

Research publications

Affine algebraic monoids as endomorphisms' monoids of finite-dimensional algebras, **Proceedings of the American Mathematical Society** **137** (2009), 3227–3233.

Flexibility of affine cones over del Pezzo surfaces of degree 4 and 5, **Functional Analysis and Applications** **47** (2013), no. 4, 45–52.

On solvability of the automorphism group of a finite-dimensional algebra, **Journal of Algebra** **403** (2014), pp. 445–458.

(with Ivan Arzhantsev and Hendrik Süß) *Infinite transitivity on universal torsors*, **Journal of the London Mathematical Society** **89** (2014), no. 3, 762–778.

(with Kevin Langlois) *Demazure roots and spherical varieties: the example of horizontal $SL(2)$ -actions*, preprint; arXiv:1406.5744.

(with Sergei Kovalenko and Mikhail Zaidenberg) *On automorphism groups of affine surfaces*, **Advanced Studies in Pure Mathematics** **75** (2017), Algebraic Varieties and Automorphism Groups, pp. 207–286; arXiv:1511.09051.

(with Mateusz Michalek and Hendrik Süß) *Flexible affine cones and flexible coverings*, **Mathematische Zeitschrift** **290** (2018), no. 3-4, 1457–1478.

(with Nikolay Bogachev) *Vinberg's Algorithm for Hyperbolic Lattices*, **Mathematical Notes** **103**, (2018), no. 5–6, 836–840.

(with Vsevolod Gubarev) *Injective Rota–Baxter operators of weight zero on $F[x]$* , **Mediterranean Journal of Mathematics** **18:267** (2021), DOI:0.1007/s00009-021-01909-z.

Affine cones over cubic surfaces are flexible in codimension one, **Forum Mathematicum** **33** (2021), no.2, 339–348, DOI:10.1515/forum-2020-0191.

Automorphisms of Surfaces of Markov Type, **Mathematical Notes** **110** (2021), no.5, 732–737, DOI:10.1515/forum-2020-0191.

(with Andriy Regeta) *When is the automorphism group of an affine variety nested?*, **Transformation Groups** **28** (2023), no.1, 401–412.

(with Andriy Regeta) *Automorphism groups of affine varieties without non-algebraic elements*, arXiv:2203.08950.

(with Mikhail Zaidenberg) *Automorphism groups of rigid affine surfaces: the identity component*, arXiv:2208.09738.

(with Ivan Arzhantsev and Kirill Shakhmatov) *Radiant toric varieties and unipotent group actions*, arXiv:2209.04021.

Generic flexibility of affine cones over del Pezzo surfaces in Sagemath, arXiv:2305.06462.

Talks

- June 2009 **Summer School “Lie Algebras, Algebraic Groups and Invariant Theory”**, Samara, Russia, Talk “Affine algebraic monoids as endomorphisms’ monoids of finite-dimensional algebras”
- May 2010 **Conference “Malt’shev meeting”**, Novosibirsk, Russia, Presentation “Affine algebraic monoids as endomorphisms’ monoids of finite-dimensional algebras”
- March 2011 **Seminar “Lie Groups and Invariant Theory”**, Moscow, Russia, Talk “Flexibility of affine cones over del Pezzo surfaces of degree 5 and 4”
- May 2011 **Mini-course on a flexibility of affine toric varieties at Sobolev Institute of Mathematics**, Novosibirsk, Russia, In the context of the project 14.740.11.0346, *Actual problems of modern algebra*, supported by the Ministry of education and science of Russian Federation
- February 2012 **“Swiss-French workshop on algebraic geometry”**, Enney, Switzerland, Talk “Flexibility of affine cones over del Pezzo surfaces of degree 5 and 4”
- June 2012 **International Conference dedicated to the 65-th anniversary of Askold G. Khovanskii**, Moscow, Russia, Talk “Flexibility of affine cones over del Pezzo surfaces of degree 4 and 5”
- June 2012 **Third Summer School “Lie Algebras, Algebraic Groups and Invariant Theory”**, Togliatti, Russia, Talk “Flexibility of affine cones over del Pezzo surfaces of degree 4 and 5”
- April 2013 **the Seminar of Algebra and Geometry**, Basel, Switzerland, Talk “Flexibility of universal torsors”
- January 2014 **Fourth School “Lie Algebras, Algebraic Groups and Invariant Theory”**, Moscow, Russia, Talk “Flexibility of affine varieties”
- July 2014 **Kyoto Workshop on Algebraic Varieties and Automorphism Groups**, Kyoto, Japan, Talk “Flexible varieties covered by toric charts”
- July 2014 **International Short-School/Conference “Affine Algebraic Geometry & the Jacobian Conjecture”**, Tianjin, China, Talk “Flexible varieties covered by toric charts”
- December 2014 **Talk “Flexibility of affine cones and total coordinate spaces” at the Algebraic Geometry Seminar at IBS Center for Geometry and Physics**, Pohang, Korea
- June 2015 **Conference “Meeting of generations” by Dynasty Foundation**, Moscow, Russia, Talk “Automorphism groups of affine surfaces”
- June 2015 **Fifth School “Lie Algebras, Algebraic Groups and Invariant Theory”**, Samara, Russia, Talk “Automorphism groups of affine surfaces without additive actions”
- August 2015 **School (and Workshop) on Finite Subgroups of Cremona Groups**, Trento, Italy, Talk “Automorphism groups of affine surfaces without additive actions”
- January 2017 **Christmas meetings**, Moscow, Russia, Talk “Automorphism groups of affine varieties consisting of algebraic elements”
- January 2017 **Sixth School “Lie Algebras, Algebraic Groups and Invariant Theory”**, Moscow, Russia, Talk “Automorphism groups of affine varieties consisting of algebraic elements”
- January 2018 **Conference “Polynomial Rings and Affine Algebraic Geometry”**, Tokyo, Japan, Talk “Nested automorphism groups”

- May 2018 **Conference “Algebraic Geometry - Mariusz Koras in memoriam”**, *Warsaw, Poland*, Talk “Nested automorphism groups”
- April 2019 **Seminar “Lie Groups and Invariant Theory”**, *Moscow, Russia*, Talk “Nested automorphism groups”
- September 2019 **Conference “Emerging Research in Algebraic Groups, Motives, and K-Theory”**, *St.Petersburg, Russia*, Talk “Nested automorphism groups”
- August 2020 **Conference “2020 Ural Workshop on Group Theory and Combinatorics”**, *(online) Yekaterinburg, Russia*, Talk “Automorphisms of affine surfaces and the Thompson group T”
- November 2020 **Conference “Topology and geometry of group actions”**, *St.Petersburg, Russia*, Talk “Automorphisms of affine surfaces, the Markov numbers, and the Thompson group T”
- September 2020 **Zoom Algebraic Geometry Marathon**, *(online)*, Talk “Generic flexibility of cubic cones”
- August 2021 **Ninth School Conference “Lie Algebras, Algebraic Groups and Invariant Theory”**, *Samara, Russia*, Talk “Generic flexibility of affine cones over cubic surfaces”
- October 2021 **Conference “Topology of Torus Actions and Related Topics”**, *Sochi, Russia*, Talk “Generic flexibility of affine cones over cubic surfaces”
- June 2022 **Conference “GEOMETRY, GROUPS, OPERATOR ALGEBRAS, AND INTEGRABILITY 2022”**, *Moscow, Russia*, Talk “Automorphism groups consisting of algebraic elements”
- July 2022 **Conference “Algebraic groups: the White Nights season II”**, *St.Petersburg, Russia*, Talk “Automorphism groups consisting of algebraic elements”
- September 2022 **Conference “Algebraic groups, their friends and relations”**, *St.Petersburg, Russia*, Talk “Automorphism groups of rigid affine surfaces: the identity component”
- October 2022 **Conference “Toric topology, combinatorics and data analysis”**, *St.Petersburg, Russia*, Talk “Common refinements of simplicial complexes and Oda’s strong factorization conjecture”
- January 2023 **Tenth School Conference “Lie Algebras, Algebraic Groups and Invariant Theory”**, *Moscow, Russia*, Talk “Radiant toric varieties II”
- March 2023 **Workshop “Affine spaces, algebraic group actions, and LNDs”**, *Kolkata, India*, Talk “Nested automorphism groups”
- June 2023 **Seminar “Algebra and Geometry”**, *Jena, Germany*, Talk “Automorphism groups of rigid affine surfaces: the identity component”
- July 2023 **Conference “Algebraic groups: the White Nights season III”**, *St.Petersburg, Russia*, Talk “Cylinders on (weak) del Pezzo surfaces and flexibility of affine cones”

Languages

Russian	native
English	advanced
French	intermediate