

Curriculum Vitae

Alexander Esterov

Education, degrees

Doctor of Science	2017	Tropical singularity theory and geometry of polytopes with indeterminate coefficients
PhD	2005	Moscow State University, Thesis "Poincare-Hopf indices, resultants, and Newton polyhedra"
M.S. in Mathematics	2001	Moscow State University, Diploma "Densities of Betti numbers for level sets of almost periodic functions"

Research interests

Singularity theory, toric geometry, Newton polyhedra, tropical and convex geometry, enumerative and combinatorial algebraic geometry

Publications, available at <https://arxiv.org/search/?searchtype=author&query=Esterov%2C+A>

1. A. Esterov, L. Lang, *Braid monodromy of univariate fewnomials*, arXiv:2001.01634
2. *Galois theory for general systems of polynomial equations*, Compositio Mathematica 155 (2019) 229-245
3. *Characteristic classes of affine varieties and Plucker formulas for affine morphisms*, J. EMS 20 (2018) 15-59
4. A. Esterov, K. Takeuchi, *On vanishing theorems for local systems associated to Laurent polynomials*, Nagoya Math. J., 231 (2018) 1-22
5. *Tropical nearby monodromy eigenvalues*, arXiv:1807.00609
6. A. Esterov, L. Lang, *Sparse polynomial equations and other enumerative problems whose Galois groups are wreath products*, arXiv:1812.07912
7. A. Esterov, *The degree of the bifurcation set of a generic polynomial map*, Russ. Math. Surv. 72 (2017) 773-774
8. A. Arkhipova, A. Esterov, *Signs of leading coefficients of the resultant*, Geom. and Funct. Analysis 27 (2017) 33-66
9. A. Esterov, G. Gusev, *Multivariate Abel-Ruffini*, Math. Ann 365 (2016) 1091-1110
10. A. Esterov, K. Takeuchi, *Confluent A-hypergeometric functions and rapid decay homology cycles*, American Journal of Mathematics, 137 (2015) No. 2 365-409
11. A. Esterov, K. Takeuchi, K. Ando, *Monodromies at infinity of confluent A-hypergeometric functions*, Adv. in Math. 272 (2015) 1-19
12. A. Esterov, G. Gusev, *Systems of equations with a single solution*, Journal of symbolic computation. 68-2 (2015) 116-130
13. *The discriminant of a system of equations*, Adv. in Math. 245 (2013) 534-572
14. A. Esterov, A. Lemahieu, K. Takeuchi, *On the monodromy conjecture for non-degenerate hypersurfaces*, arXiv:1309.0630

15. *Multiplicities of degenerations of matrices and mixed volumes of Cayley polyhedra*, Journal of Singularities 6 (2012) 27-36
16. A.Esterov, K.Takeuchi, *Motivic Milnor fibers over complete intersection varieties and their virtual Betti numbers*, IMRN 2012 (2012) 3567-3613
17. *Polynomially weighted tropical varieties and corner loci of piecewise polynomials*, Moscow Math. J. 12 (2012) 55-76
18. *Newton polyhedra of discriminants of projections*, Discr. and Comput. Geom. 44 (2010) 96-148
19. *Densities of Betti numbers of quasiperiodic subanalytic sets*, Izvestiya: Math. 73 (2009) 611-626
20. *On the existence of mixed fiber bodies*, Moscow Math. J., 8 (2008), 433-442
21. *Orientability of real resultant singularities*, RIMS Kokyuroku, 1610 (2008), 18-29
22. A. Esterov, A.G. Khovanskii, *Elimination theory and Newton polytopes*, Funct. An. and Other Math. 2 (2008) 45-71
23. *Determinantal singularities and Newton polyhedra*, Proc. of the Steklov inst. 259 (2007) 16-34
24. *Indices of 1-forms, intersection indices, and Newton polyhedra*, Sb. Math. 197 (2006) 1085-1108
25. *Indices of 1-forms, resultants, and Newton polyhedra*, Russian Math. Surveys 60 (2005) 352-353
26. *Indices of 1-forms and Newton polyhedra*, Revista Matemática Complutense 18 (2005) 233-242
27. *Index of a real singular point and its Newton diagram*, Moscow Univ. Math. Bull. 58 (2003) 7-11
28. *Densities of the Betti numbers of pre-level sets of quasi-periodic functions*, Russian Math. Surveys 55 (2000) 338-339
29. A. Esterov, D. Lopatnikov, *The use of the index of regional economic development in the comparative economic-geographical analysis*, Proceedings RAS, geography, 1997, No.2, 85-88

Teaching

- 2018-present professor; NRU HSE Moscow
- 2011-2018 associate professor; NRU HSE Moscow
- 2005-2011 Postdoctorant/lecturer at the University of Toronto, Complutense University of Madrid, Institut de Mathématiques, Université Paul Sabatier, and Laboratoire Dieudonné, Université de Nice Sophia-Antipolis
- 2003-2005 Teaching assistant; Independent University of Moscow
- 2000-2003 Teacher; Moscow high school No.57

Supervision

- 2018-2022 E. Statnik, PhD
- 2018-2022 I. Nikitin, PhD
- 2018-2020 I. Suvanov, MSc
- 2018-2020 A. Bykov, MSc
- 2017-2021 A. Arkhipova, PhD
- 2017-2019 Y. Rud'ko, MSc
- 2017-2019 A. Zagvozdkin, MSc

Research projects

- 2016-2021 RSF 16-11-10316 (participant) Characteristic classes and intersection theory
- 2018-2020 NRU HSE 18-01-0029 (personal) Nearby monodromy and tropical characteristic classes
- 2016-2018 NRU HSE 16-01-0079 (personal) Algebro-geometric applications of invariants of lattice polytopes modulo a prime number
- 2014-2016 NRU HSE 14-01-0152 (personal) Tropical multisingularity theory
- 2012-2013 MESRF MK-6223.2012.1 (leader) Geometry of polynomials with indeterminate coefficients
- 2012-2013 RFBR 12-01-31233 (leader) Enumerative geometry of polytopes and polyhedra
- 2010-2012 MESRF T3-78.0 New methods of study of integrable systems and moduli spaces in geometry, topology and mathematical physics
- 2006-2007 JSPS-RFBR 06-01-91063 Geometry and Analysis on Complex Algebraic Varieties

2005-2008 INTAS 05-7805 Singularities, bifurcations and monodromy
2001-2003 INTAS 00-0259 Singularity Theory and Bifurcations
2001-present RFBR 01-01-00739, 04-01-00762, 07-01-00539, 10-01-00678, 13-01-00755,
16-01-00409 Topological invariants of singularities

Miscellaneous

2020-present Member of the academic council of the Master programme "Mathematics", NRU HSE
2018-2019 Creator and coordinator of the freshmen summer school "Math faculty: the prequel"
2015-2020 Deputy dean for admissions and external relations, faculty of mathematics, NRU HSE
2014-2016 Member of the curriculum council at the faculty of mathematics, NRU HSE
2011-2015 Coordinator of the class of 2015 at the faculty of mathematics, NRU HSE
2011-2013 Coordinator of the Highest Hallmark national mathematical olympiad
2011 Dynasty foundation award for young mathematicians
2004 First prize at the Möbius Mathematical Contest
2002 ISSEP graduate student scholarship
Languages Russian, English