

Curriculum Vitae
Alexander Borisov
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Contact Information

Department of Mathematics
University of Pittsburgh
Pittsburgh, PA 15260

office: (414)624-2314
home: (724)591-0784
borisov@pitt.edu
<http://www.pitt.edu/~borisov/>

Research Interests

Algebraic Geometry, Number Theory and related areas.

Professional Experience

2006 – current Assistant professor, University of Pittsburgh.

2000–2006 Visiting assistant professor, the Pennsylvania State University.

1999–2000 William Chauvenet assistant professor, Washington University, St. Louis.

1997–1999 Instructor, the Pennsylvania State University.

1996–1997 Post-Doc, the University of Georgia.

Education

1996 Ph.D., Penn State University, adviser Yuri Zarhin.

1992 M.S., Moscow State University, adviser V. Iskovskikh.

Honors and Grants

2011–2012 Standard Award, from the National Security Agency (NSA).

2008–2010 Standard Award, from the National Security Agency (NSA).

2005–2007 Young Investigator Award, from the National Security Agency (NSA).

1993–95 Haskell B. Curry Fellowship from the mathematics department of Penn State University.

1996 Vollmer-Kleckner Scholarship in Science from the Eberly College of Science and mathematics department of Penn State University.

1992 Diploma cum laude from the Moscow State University. (Had straight A-s while a student there, and received some honorary fellowships).

1985–87 First and Second awards at the all-USSR Mathematical Olympiads.

Publications

1) M. Barile, D. Bernardi, A. Borisov, J.-M. Kantor. On Empty Lattice Simplices in Dimension 4, *Proc. AMS*, to appear.

2) A. Borisov, M. Dickinson, S. Hastings. A Congruence Problem for Polyhedra. *American Mathematical Monthly*, **131** (2010) 232–249.

- 3) A. Borisov, M. Sapis. Polynomial maps over p -adics and residual properties of mapping tori of group endomorphisms. *International Mathematics Research Notices*, (2009) no. 16, 3002–3015.
- 4) A. Borisov. Quotient singularities, integer ratios of factorials, and the Riemann hypothesis. *Int. Math. Res. Not. IMRN* 2008, no. 15, Art. ID rnn052, 19 pp.
- 5) A. Borisov, M. Sapis. Polynomial maps over finite fields and residual finiteness of mapping tori of group endomorphisms. *Invent. Math.* **160** (2005), no. 2, 341–356.
- 6) A. Borisov, Y. Wang, M. Nathanson. Quantum integers and cyclo-tomy. *J. Number Theory* **109** (2004), no. 1, 120–135.
- 7) A. Borisov. Convolution structures and arithmetic cohomology, *Compositio Math.*, **136** (2003), no. 3, 237–254.
- 8) A. Borisov. On a question of Craven and a theorem of Belyi. *Proc. Amer. Math. Soc.* **131** (2003), 3677–3679.
- 9) A. Borisov, V. Shokurov. Directional rational approximations with some applications to algebraic geometry. (Russian) *Tr. Mat. Inst. Steklova* **240** (2003), *Biratsion. Geom. Linein. Sist. Konechno Porozhdennyye Algebrы*, 73–81.
- 10) A. Borisov. Boundedness of Fano threefolds with log-terminal singularities of given index. *J. Math. Sci. Univ. Tokyo* **8** (2001), no. 2, 329–342.
- 11) A. Borisov. On classification of toric singularities. Algebraic Geometry. 9. *J. Math. Sci. (New York)* **94** (1999), no. 1, 1111–1113.
- 12) A. Borisov, M. Filaseta, T.-Y. Lam, O. Trifonov. Classes of polynomials having only one non-cyclotomic irreducible factor. *Acta Arithmetica*, **90** (1999), no. 2, 121–153.
- 13) A. Borisov. On some polynomials allegedly related to the abc conjecture. *Acta Arithmetica*, **84** (1998), no. 2, 109–128.
- 14) A. Borisov. Minimal discrepancies of toric singularities. *Manuscripta Math.* **92** (1997), no. 1, 33–45.
- 15) A. Borisov. Boundedness theorem for Fano log-threefolds. *J. Algebraic Geom.* **5** (1996), no. 1, 119–133.
- 16) A. Borisov, L. Borisov. Singular toric Fano varieties, *Russian Acad. Sci. Sb. Math.* **75** (1993), no. 1, 277–283.

Preprints

- 1) A. Borisov. A geometric approach to the two-dimensional Jacobian Conjecture. Preprint (2008, expanded in 2009).
- 2) A. Borisov. Positive positive-definite functions and measures on locally compact abelian groups, preprint (1999).

- 3) A. Borisov. Convex lattice polytopes and cones with few lattice points inside, from a birational geometry viewpoint, preprint (1999).
- 4) A. Borisov, L. Borisov. Three-dimensional toric Fano varieties with terminal singularities, preprint (1990) (Russian).

Work in Progress

- 1) On resolution of compactifications of locally free planar self-maps.
- 2) On the discrete Nyman-Beurling criterion for the Riemann Hypothesis.

Referee Activity

I have refereed papers for *Inventiones Mathematicae*, *Duke Mathematical Journal*, *American Journal of Mathematics*, *Proceedings of the Royal Society A*, *Memoirs of the American Mathematical Society*, *International Journal of Mathematics and Mathematical Sciences*, *Journal of the Franklin Institute*, *Taiwanese Journal of Mathematics*, *Journal of Number Theory*, *International Journal of Number Theory*, *Proceedings of the AMS*, and *London Mathematical Society journals*. I have refereed grants for the National Science Foundation (NSF) and the U.S. Civilian Research and Development Foundation (CRDF).

Reviewer Activity

I have been reviewing for *Math Reviews* since 2001.

Talks

Since 1996 I have given invited talks at Rutgers University, Ohio State University, Columbia University, UC Santa Barbara, Johns Hopkins University, University of Missouri, University of South Carolina, and George Mason University. I also gave some “in house” talks at University of Pittsburgh, Penn State University, Washington University and University of Georgia. I also gave talks at a number of conferences, including the *Birational Geometry Conference in Memory of Wei-Liang Chow* (Baltimore, 1996), the *Workshop on Diophantine Geometry Related to the ABC Conjecture*, (University of Arizona, 1998) and the *Geometric and Combinatoric Group Theory Conference* (Vanderbilt, 2006).

Teaching Experience

As an instructor and visiting assistant professor at Penn State University, I taught Calculus 1 and 2 for several years. At the University of Pittsburgh, I have taught a broader collection of courses:

Fall 2006: Calculus 1

Spring 2007: Algebra 2 (graduate)

Fall 2007: Calculus 3

Spring 2008: Abstract Algebra

Fall 2008: Linear Algebra (course coordinator)
Spring 2009: Calculus 1 (course coordinator)
Fall 2009: Matrices and Linear Operators 1 (graduate); Algebra 1 (graduate)
Spring 2010: Matrices and Linear Operators 2 (graduate)
Fall 2010: Matrices and Linear Operators 1 (graduate); Introduction of Theoretical Mathematics; Algebraic Number Theory (reading course, 2 students)
Spring 2011: Matrices and Linear Operators 2 (graduate); Introduction to Analysis (honors); Introduction to Algebraic Geometry (reading course, 1 student)

Graduate Students Supervision

Daman Bouya, M.A. (Spring 2010)
Andrew Perriello, M.S. (Fall 2010)
Dan Juncos, M.S. (Spring 2011 expected)

Service

Apr./ Aug. 2007: Linear Algebra Preliminary Examination Committee
Apr./ Aug. 2008: Analysis Preliminary Examination Committee
Apr./ Aug. 2009: Linear Algebra Preliminary Examination Committee
Apr./Aug. 2010: Linear Algebra Preliminary Examination Committee
Apr./Aug. 2011: Linear Algebra Preliminary Examination Committee
Fall 2007 - current: Graduate Committee
Fall 2007 - Spring 2008: Computing Committee
Fall 2008, Fall 2009/Spring 2010: Topology Search Committee
Fall 2010/Spring 2011: Differential Geometry Search Committee
Spring 2009: Calculus Textbook Committee
December 2007: Comprehensive Examination Committee: Onyeka Obi
April 2010: MA Defense committee chairman: Daman Bouya
July 2010: MA Defense committee: Jared Burns, Sean Evans, Alex Tonchingsub
December 2010: MS Thesis committee chairman: Andrew Perriello
April 2011: MA Defense committee: Amine Hallab, Evan Jenkins
Since 2007: undergraduate advisor

Mathematics Competitions Organization Experience

1987–1993 Actively participated in the scientific part of the organization of high school mathematical Olympiads in USSR, specifically problem inventing and grading of all-USSR Olympiads and training camps for International Olympiads. A member of all-USSR Mathematical Olympiad Jury 1990–1992, a coordinator at the International Mathematical Olympiad in Moscow (1992).

Recent Outreach and Other Professional Activity

Spring 2011: Math talk for CMU undergraduates.

Spring 2011: Math Club talk, University of Pittsburgh.

2008/2009: Coached the Carson Middle School Math Counts team.

Personal Information

Born in Minsk, Belarus, June 11, 1971. Married to Inna Sysoeva, we have three school-age children. Citizen of U.S.A. since February 2008.