

Kalina Mincheva

Curriculum Vitae

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Academic Positions

Spring 2018 **Member**, *Institute Mittag-Leffler*, Program on Tropical Geometry, Amoebas and Polytopes.

July 2016 - **Gibbs Assistant Professor**, *Yale University*.

Present

Education

May 2016 **Ph.D. in Mathematics**, *Johns Hopkins University*, Baltimore, MD, USA.

Thesis title: Tropical geometry and idempotent semirings.

Thesis Advisor: Caterina Consani

June 2010 **M.Sc. in Mathematics**, *Central European University*, Budapest, Hungary.

Thesis title: Automorphisms of non-abelian p-groups.

Thesis Advisor: Pál Hegedűs

May 2008 **B.A. Summa Cum Laude**, *American University in Bulgaria*, Blagoevgrad, Bulgaria.

Computer Science (major), Mathematics (major)

Senior project title: Gröbner Basis Cryptosystems

Research interests

My research is in algebraic geometry, in particular tropical geometry and semiring algebra. I am interested in studying the geometry of tropical schemes and varieties in terms of the congruences on the polynomial and Laurent polynomial semiring with coefficients in the tropical semifield or other idempotent semifields.

Publications

2017 Jun J., Mincheva K., and Tolliver J., Picard groups for tropical toric varieties, eprint arXiv:1709.03130

2017 Bossinger L., Lamboglia S., Mincheva K. and Mohammadi F. Computing toric degenerations of flag varieties, *Combinatorial Algebraic Geometry*. Fields Institute Communications, vol 80. Springer, p 247-281, (2017)

2016 Mincheva, K. Prime congruences and tropical geometry, eprint, JHU Electronic Theses and Dissertations Collection.

2015 Joó, D. and Mincheva, K. On the dimensions of polynomial semirings, eprint arXiv:1510.02493

2014 Joó, D. and Mincheva, K. Prime congruences of idempotent semirings and a Nullstellensatz for tropical polynomials, *Sel. Math. New Ser.* (2017).

2010 Mincheva K., Automorphisms of non-Abelian p-groups, eprint, CEU Electronic Theses and Dissertations Collection.

Invited Talks and Posters

- August 2018 Tropical geometry and moduli spaces, ICM satellite - talk
- March 2018 Tropical Geometry meets Representation Theory - poster
- January 2018 Workshop on Tropical algebra and applications, IML - talk
- August 2017 Toric Degenerations Focused Research Workshop in Bristol - talk
- April 2017 University of Utah - Algebraic Geometry Seminar - talk
- April 2017 AIM Workshop - Foundations of tropical schemes - talk
- April 2017 Noncommutative Geometry: Number Theory (part of Alain Connes' 70th birthday celebration) - talk
- March 2017 Yale University - Algebraic Geometry Seminar - talk
- March 2016 AMS Sectional Meetings, AMS Special Session on Interactions Between Algebraic and Tropical Geometry - talk
- January 2016 Joint Math Meetings, AMS Session on Algebraic Geometry - talk
- Nov 2015 George Mason University - Combinatorics, Algebra and Geometry Seminar - talk
- October 2015 University of Pennsylvania - Algebra seminar - talk
- October 2015 Binghamton University, SUNY - Algebra seminar - talk
- May 2015 Aspects of Algebraic Geometry - Program for Women and Mathematics, IAS - talk
- April 2015 Student Tropical Algebraic Geometry Symposium 2015 - talk
- March 2015 Number Theory Seminar at Johns Hopkins University - talk
- Nov 2014 AGNES - poster

Programs Attended

- August 2016 Apprenticeship weeks, Fields Institute
- June 2015 Non-commutative Geometry workshop, Oberwolfach
- May 2015 Aspects of Algebraic Geometry - Program for Women and Mathematics, IAS
- June 2012 MSRI Summer School - Non-commutative algebraic geometry

Awards, Honors and Fellowships

- 2016 Clay Mathematics Institute scholarship to attend the Apprenticeship weeks at the Fields Institute
- 2016 William Kelso Morrill Award for Excellence in Mathematics
- 2016 AMS travel grant to attend AMS Sectional Meetings
- 2016 Member of the Phi Beta Kappa Society
- 2010 Pro-Rector Award for highest GPA in the department
- 2010 Outstanding Academic Achievement Award
- 2008 Award for special achievements in Computer Science
- 2008 Award for special achievements in Mathematics
- 2007 10th AUBG Programming competition – 3rd place
- 2007 American Foundation for Bulgaria essay scholarship

- 2005-2008 President's list for high GPA
- 2004-2008 Dean's list for high GPA

Teaching

Instructor

- Fall 2017 Tropical Scheme Theory - Graduate course
- Spring 2017 Tropical Geometry - Graduate course
- Fall 2016 Single Variable Calculus II
- Fall 2014 Introduction to Calculus
- Summer 2013 On-line Linear Algebra - co-instructor

Head Graduate Teaching Assistant

- 2010 - 2016 Linear Algebra, Calculus III, Calculus I

Graduate Teaching Assistant

- 2010 - 2016 Linear Algebra, Calculus I, Calculus II, Calculus III, Honors Linear Algebra, Abstract Algebra I

Exam preparation

- Fall 2015 Preparing problem sets for the PILOT learning - a peer-led-team learning program
- Spring 2012 Created and graded the JHU Future scholars exam

Undergraduate Teaching Assistant

- 2005 - 2006 Introductory Mathematics, Linear Algebra, Calculus I

Undergraduate Tutor

- 2006 Mathematics tutor at the math center

Undergraduate Grader

- 2006 - 2008 Differential Equations, Introductory Mathematics, Calculus II, Calculus III, Linear Algebra

Teaching Development Workshops

Johns Hopkins Teaching Academy - One year intensive program (3 phases) designed to provide an overview and foundation for new methods in teaching and give the opportunity for hands-on in introduction to college level teaching.

Service

- Fall 2017 AWM student chapter sponsor

Extracurricular activities

- Fall 2013 Organizing the JHU Math TA lunches - a place where math TAs can share and discuss their experience in the classroom

Memberships

- AMS American Mathematical Society
- AWM Association for Women in Mathematics
- CIRTL The Center for the Integration of Research, Teaching, and Learning

Languages

- Bulgarian Native
- English Fluent
- French Advanced
- German Beginner