

Kalina Mincheva

Curriculum Vitae

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Google Scholar page

Academic Positions

July 2020 - **Assistant Professor**, *Tulane University*.

Present

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

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

June 2020

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

Publications

- in prep Joó D. and Mincheva K., Applications of congruence methods to tropical geometry
- in prep Jun J., Mincheva K., and Tolliver J., Toric Vector Bundles on Tropical Toric Schemes
- in prep Hahn M.A., Mincheva K., Hilbert Schemes for Generalized Cameras
- in prep Friedenberg N., Mincheva K., Tropical Adic Spaces II: Uniform Semirings
- 2023 Friedenberg N., Mincheva K., Geometric interpretation of valuated term (pre)orders
arXiv:2306.05538
- 2022 Friedenberg N., Mincheva K., Tropical Adic Spaces I: Topological Semirings arXiv:
2209.15116
- 2023 Jun J., Mincheva K., and Tolliver J., Vector Bundles on Tropical Toric Schemes,
Journal of Algebra.
- 2022 Jun J., Mincheva K., and Rowen L., \mathcal{T} -Semiring Pairs, *Kybernetika*, special volume.
- 2022 Jun J., Mincheva K., and Rowen L., Homology of systemic modules, *Manuscripta
Mathematica*.
- 2019 Jun J., Mincheva K., and Rowen L., Projective systemic modules, *Journal of Pure
and Applied Algebra*.
- 2018 Jun J., Mincheva K., and Tolliver J., Picard groups for tropical toric varieties,
Manuscripta Mathematica.

- 2018 Joó D. and Mincheva K., On the dimensions of polynomial semirings, J. of Algebra.
- 2017 Bossinger L., Lamboglia S., Mincheva K., and Mohammadi F., Computing toric degenerations of flag varieties, Combinatorial Algebraic Geometry. Fields Institute Communications.
- 2017 Joó D. and Mincheva K., Prime congruences of idempotent semirings and a Nullstellensatz for tropical polynomials, Sel. Math. New Ser.

Theses

- 2016 Mincheva K., Prime congruences and tropical geometry, eprint, JHU Electronic Theses and Dissertations Collection, PhD thesis.
- 2010 Mincheva K., Automorphisms of non-Abelian p-groups, eprint, CEU Electronic Theses and Dissertations Collection, MSc thesis.

Awards, Honors and Fellowships

- 2023 COR - Tulane University's Council on Research - internal grant (travel)
- 2022 AAU Evaluating effective and equitable teaching, learning community, co-recipient
- 2022-2025 NSF Conference grant, PI - organize Math For All Conference
- 2021 BoR Targeted Enhancement Grant, Co-PI
- 2019 NSF Conference grant, Co-PI - organize JAMI 2019 Conference
- 2018 AWM Mentoring grant to spend a month at Warwick University, mentor Diane Maclagan
- 2018 AMS travel grant to attend ICM 2018
- 2016 Clay Mathematics Institute scholarship to participate in the Apprenticeship weeks at the Fields Institute
- 2016 (declined) INdAM-COFUND-2012 Fellowships in Mathematics and/or Applications for experienced researchers co-funded by Marie Curie actions
- 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, JHU

Seminars/Conferences (co)-organized

- Spring 2024 Math For All in NOLA conference
- Fall 2023 SIAM LA-TX Sectional Meetings, Mini-Symposium: Combinatorial algebraic geometry and rigidity theory
- Spring 2023 Southern Regional Algebra Conference 2023 (SRAC)
- Spring 2023 Math For All in NOLA conference
- Spring 2022 Math For All in NOLA conference
- Fall'21 - '23 Co-organizing the Algebraic Geometry and Geometric Topology seminar at Tulane
- Fall 2020 - present Co-organizing the Algebra and Combinatorics seminar at Tulane

- Spring 2020 AMS Sectional Meetings, Special Session: Tropical Geometry, \mathbb{F}_1 -connections and Matroids
- Fall 2019 JAMI - Japan-U.S. Mathematics Institute conference at Johns Hopkins University
- Summer 2019 SIAM Conference on Applied Algebraic Geometry - Mini-symposium: Computational tropical geometry
- Fall 2018 BATMOBYLE - Bi-annual Algebraic and Tropical Meetings of Brown and Yale
- Fall 2017 BATMOBYLE - Bi-annual Algebraic and Tropical Meetings of Brown and Yale
- Fall 2017 - Co-organizing the algebraic and tropical geometry seminar at Yale
- Spring 2020

Invited Talks and Posters

- Sept 2024 AMS Fall Central Section Meeting
- June 2024 Noncommutativity at the interface of topology, geometry and analysis, Italy
- April 2024 Southern Regional Algebra Conference (SRAC)
- April 2024 Lloyd Roeling Conference
- Sept 2023 The 2023 AWM Research Symposium, Tropical Geometry Session
- July 2023 SIAM AG 2023 mini-symposium: Matroidal and tropical methods in Algebraic and Enumerative geometry
- April 2023 Southern Regional Algebra Conference (SRAC)
- Feb 2023 South Central Topology Conference
- Jan 2023 Tulane University - Algebra and Combinatorics seminar
- Nov 2022 The 5th Annual Meeting of the SIAM Texas-Louisiana Section
- June 2022 Second Annual Meeting of Young Bulgarian Mathematicians
- March 2022 \mathbb{F}_1 -World Seminar
- Nov 2021 SIAM mini-symposium: Algorithmic Algebraic Geometry
- October 2021 Algebra and Logic Seminar, IMI-BAS
- October 2021 AUBG 30th Anniversary Multidisciplinary Academic Conference
- August 2021 SIAM mini-symposium: Foundations of Tropical Geometry
- April 15, 2021 University of Pittsburgh - Algebra, Combinatorics, and Geometry Seminar
- June 2020 Tropical Geometry in Frankfurt (TGIF) Seminar
- March 2020 AMS Sectional Meetings: Moduli of curves, Hilbert schemes, and tropical geometry (cancelled due to COVID-19)
- Feb 2020 Utah State University - Colloquium
- Feb 2020 George Washington University - Colloquium
- January 2020 Tulane University - Colloquium
- January 2020 McMaster University - Algebra Seminar
- January 2020 Auburn University - Algebra seminar
- October 2019 JAMI: Riemann-Roch in characteristic one and related topics
- October 2019 University of Kentucky - Algebra Seminar

- August 2019 Banff workshop - Mutations: Mirror Symmetry, Deformations, and Combinatorics
- May 2019 Non-Archimedean and Tropical Geometry, Regensburg
- May 2019 BATMOBYLE@Amherst
- April 2019 Harvard - Algebraic Geometry Seminar
- April 2019 Georgia Tech - Algebraic Geometry Seminar
- March 2019 Johns Hopkins University - Algebraic Geometry Seminar
- October 2018 Brown University - Algebraic Geometry Seminar
- August 2018 Tropical geometry and moduli spaces, ICM satellite
- June 2018 TU Berlin - Research Seminar
- May 2018 York University - Algebra seminar
- May 2018 Tropical Mathematics and its Applications Meeting, Warwick
- April 2018 Workshop on Tropical varieties and amoebas in higher dimension
- January 2018 Workshop on Tropical algebra and applications, IML
- August 2017 Toric Degenerations Focused Research Workshop in Bristol
- April 2017 University of Utah - Algebraic Geometry Seminar
- April 2017 AIM Workshop - Foundations of tropical schemes
- April 2017 Noncommutative Geometry: Number Theory (part of Alain Connes' 70th birthday celebration)
- March 2017 Yale University - Algebraic Geometry Seminar

Macaulay2 Workshops

- June 2020 Macaulay2 Workshop, Warwick - group leader
- June 2018 Macaulay2 Workshop, Leipzig

Research Programs Attended

- August 2021 Collaborate@ICERM, Tropical degree two del Pezzo surfaces and their 56 lines
- July 2020 VIRTUAL Workshop Women in Algebraic Geometry, ICERM
- March 2019 Non-Archimedean Geometry and Applications workshop, Oberwolfach
- August 2016 Apprenticeship weeks, Fields Institute

Teaching

Instructor - Tulane University

- Spring 2024 Abstract Algebra II
- Fall 2023 Abstract Algebra I
- Fall 2023 Calculus I
- Fall 2023 Tropical Geometry - Reading course
- Spring 2023 Algebra II - Graduate course
- Fall 2022 Algebra I - Graduate course
- Fall 2022 Calculus I

- Spring 2022 Real Analysis I
 - Fall 2021 Tropical Geometry - Graduate Course
 - Spring 2021 Linear Algebra
 - Fall 2020 Calculus II
- Instructor - Yale University**
- Spring 2020 Modern Algebra II - Graduate course
 - Fall 2019 Linear Algebra and Matrix Theory
 - Fall 2019 Single Variable Calculus I
 - Spring 2019 Modern Algebra II - Graduate course
 - Fall 2018 Introduction to Algebraic Geometry - Graduate course (cross-listed)
 - Fall 2018 Linear Algebra and Matrix Theory
 - Fall 2017 Tropical Scheme Theory - Graduate course
 - Spring 2017 Tropical Geometry - Graduate course
 - Fall 2016 Single Variable Calculus II

Exam preparation/Committee

- Spring 2023 Algebra graduate qualifying exam
- Fall 2022 Algebra graduate qualifying exam
- Fall 2022 Linear algebra graduate placement exam
- Spring 2022 Algebra graduate qualifying exam
- Fall 2021 Algebra graduate qualifying exam
- Fall 2021 Linear algebra graduate placement exam

————— **Academic Advising and Directed Student Learning**

- Fall 2023 Mackenzie Bookamer - service learning
- Spring 2023 T.H.Williamson - Master's student thesis
- Spring 2023 Eric Christenson - senior seminar paper
- Spring 2022 Emily Gilbert - senior seminar paper

————— **Professional Development Workshops**

- Summer 2023 CELT week-long *Inclusive and Equitable Course (re)design institute*.
- Spring 2023 NSF *Broadening Participation Workshop* in the Mathematical and Physical sciences.
- Fall 2022 CELT book club on *Inclusive Teaching*.
- Fall 2022 AAU Teaching Evaluation Learning Community Workshops.
- Fall 2022 CELT workshop on decolonizing your syllabus.
- Fall 2022 Tulane's Sparking Success Conference on excellence in teaching.
- Spring 2021 CELT workshop on Anti-racism and Social Justice Workshop.
- Spring 2021 Workshop on re-humanizing mathematics led by Rochelle Gutierrez.
- Summer 2020 Tulane Center for Engaged Learning and Teaching (CELT) training - 5-week teaching training with focus on online and HyFlex teaching.

Service

- 2021 - Member of the AAU Teaching Evaluation Learning community
present
- 2020 - Graduate thesis defense committee for Sankhaneel Bisui, Joseph Skelton, Aram
present Bingham, Yiyang She, Thai Nguyen, Vaishavi Sharma
- 2020 - Oral exam committee for Yiyang She, Vinh Pham, Naufil Sakran, Dipendranath
present Mahato
- Fall 2021 - Director of Graduate Admissions at the Department of Mathematics
Summer 2023
- Fall 2021 - Graduate Committee member at the Department of Mathematics
Summer 2023
- Fall 2020 - Member of the "Inclusivity in Math Task Force" group in the Tulane Math Depart-
present ment, working towards a more inclusive and welcoming mathematics community.
- Fall 2018 - Co-organizer of Intersections, Diversity seminar in Math at Yale
Spring 2020
- Fall 2018 Mentor for female graduate students in STEM at Yale (WISAY)
- Fall 2017 - Faculty sponsor for the AWM student chapter
Spring 2020

Outreach

- Spring 2024 Lunch and activity for 8th grade girls as part of involvement with National coalition
of 100 black women - co-organzier
- Summer 2023 'Role models series' - talk
- Fall 2022 AMS/AWM Student Chapter - talk
- Summer 2021 Lead a faculty book club on *Mathematics for Human Flourishing*
- Spring 2021 Panelist at the Math for All conference at Tulane.
- Spring 2021 Panelist at the Women in STEM virtual Town Hall meeting at Tulane.
- Fall 2018 Yale Dimensions (AWM chapter) - discussion
- Fall 2017 Yale math club - talk

Memberships

- AWM Association for Women in Mathematics
- SIAM Society for Industrial and Applied Mathematics