# Kalina Mincheva

Curriculum Vitae

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## 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 Hahn M.A., Mincheva K., Hilbert Schemes for Generalized Cameras
- in prep Friedenberg N., Mincheva K., Tropical Adic Spaces II: Uniform Semirings
  - 2025 Joó D. and Mincheva K., Varieties of prime tropical ideals and the dimension of the coordinate semiring arXiv:2501.18053
  - 2025 Jun J., Mincheva K., and Tolliver J., Matroidal representations of low rank arXiv:2502.08810
  - 2025 Jun J., Mincheva K., and Tolliver J., Representation theory over semifields arXiv:2411.19883
  - 2024 Jun J., Mincheva K., and Tolliver J., Tropical representations and valuated matroids arXiv:2411.19889
  - 2024 Jun J., Mincheva K., and Tolliver J., Equivariant vector bundles on toric schemes over semirings arXiv:2406.06933
  - 2024 Friedenberg N., Mincheva K., Tropical Adic Spaces I: Topological Semirings, Res. Math. Sci.
  - 2023 Friedenberg N., Mincheva K., Geometric interpretation of valuated term (pre)orders arXiv:2306.05538

- 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., *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

- 2025 NSF Conference grant, PI organize Macaulay2 Workshop
- 2024-2029 Simons Foundation Travel Grant
  - 2024 School of Science and Engineering Outreach and Diversity Award
  - 2023 COR Tulane University's Council on Research internal grant (travel)
- 2022 -2024 AAU Ideas grant, 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

Summer 2025	SIAMAG'25 mini-symposium: Tropical Linear Spaces, Matroids, and Rep. Theory
Spring 2025	Macaulay2 Workshop
Spring 2025	Math For All in NOLA conference
Spring 2024	Math For All in NOLA conference
Fall 2023	$SIAM\xspace$ 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, $\mathbb{F}_1\text{-}connections$ 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 - Spring 2020	Co-organizing the algebraic and tropical geometry seminar at Yale

# Invited Talks and Posters

- Dec 2024 Algebra/Geometry Seminar at University of New Mexico
- Nov 2024 Saint Louis University Mathematics & Statistics Colloquium
- Oct 2024 AMS Fall Eastern Section Meeting
- 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 2020Macaulay2 Workshop, Warwick - group leaderJune 2018Macaulay2 Workshop, Leipzig

## Research Programs Attended

- August 2021Collaborate@ICERM, Tropical degree two del Pezzo surfaces and their 56 linesJuly 2020VIRTUAL 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 2025 Calculus I
- 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

- Spring 2025 Jiya Deepak senior seminar paper
- Spring 2024 Zifei Yang senior seminar paper
- Spring 2024 Mackenzie Bookamer honors thesis reader
- 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 2024 Advanced Teaching Evaluations a weekend workshop at UGA.
- 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.

#### Departamental Service

Spring 2025	Undergraduate Studies Committee at the Department of Mathematics
Fall 2024	Graduate Student Recruitment - Field of dreams conference
2020-present	Grade Grievance committees: Spring 2021 and Spring 2024
2021 -	Member of the AAU Teaching Evaluation Learning community
present	
2020 - present	Graduate thesis defense committee for Sankhnaneel Bisui, Joseph Skelton, Aram Bingham, Yiyang She, Thai Nguyen, Vaishavi Sharma
2020 - present	Oral exam committee for Yiyang She, Vinh Pham, Naufil Sakran, Dipendranath Mahato, Nathaniel Vaduthala, Dillon Montero
- Fall 2021 Summer 2023	Director of Graduate Admissions at the Department of Mathematics
Fall 2021 - Summer 2023	Graduate Committee member at the Department of Mathematics

- Fall 2020 Member of the "Inclusivity in Math Task Force" group in the Tulane Math Departpresent ment, working towards a more inclusive and welcoming mathematics community.
   Fall 2018 - Communications of International Discontinue in Math. et Value
- 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 2025 Panelist at the Math Alliance Conference at SUNO.
- Spring 2024 AMS/AWM Student Chapter talk
- 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

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