# Matthew Satriano

Associate Professor
Department of Mathematics
University of Waterloo

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**EMPLOYMENT**

University of Waterloo, Associate Professor, 2020–present

*On Paternity Leave, January–April 2021*

University of Waterloo, Assistant Professor, 2015–20

Johns Hopkins University, Postdoctoral Researcher, 2014–15

University of Michigan, Postdoc Assistant Professor, 2010–14

**EDUCATION**

University of California at Berkeley, 2010

Ph.D. Mathematics
*Stacky Resolutions of Singular Schemes*
Advisor: Martin Olsson

Princeton University, 2005

B.A. Mathematics, *summa cum laude*

**INTERESTS**

Algebraic Geometry, Arithmetic Dynamics, Combinatorial Algebraic Geometry, Geometry Invariant Theory, and Stack Theory

**REFEREED PUBLICATIONS**

Accepted or Published:[1]

1. Jordan Ellenberg, Matthew Satriano, and David Zureick-Brown. Heights on stacks and a generalized Batyrev–Manin–Malle conjecture. *Forum of Mathematics, Sigma*, 11 (2023), Article No. e14, 54 pp.

2. Matthew Satriano and Jeremy Usatine**. Stringy invariants and toric Artin stacks. *Forum of Mathematics, Sigma*, Volume 10, 2022, E9.

3. Nguyen-Bac Dang**, Dragos Ghioca, Fei Hu**, John Lesieutre, and Matthew Satriano. Higher arithmetic degrees of dominant rational self-maps. *Annali della Scuola Normale Superiore di Pisa, Classe di Scienze*, (5) 23 (2022), no. 1, 463–481.

4. Matthew Satriano. Motivic Integration and Toric Stacks *Oberwolfach Reports* 17 (2022), 43–46.

5. Jason P. Bell, Yohsuke Matsuzawa, and Matthew Satriano. On Dynamical Cancellation. *International Mathematics Research Notices*, accepted.

6. John Lesieutre** and Matthew Satriano. Canonical heights on hyper-Kähler varieties and the Kawaguchi-Silverman conjecture. *International Mathematics Research Notices*, Volume 2021, Issue 10, May 2021, Pages 7677–7714.

7. Jason Bell, Dragos Ghioca, and Matthew Satriano. Dynamical Uniform Bounds for Fibers and a Gap Conjecture. *International Mathematics Research Notices*, IMRN 2021, no. 10, 7932–7946.

8. David McKinnon and Matthew Satriano. Approximating rational points on toric varieties. *Transactions of the American Mathematical Society*, 374 (2021), no. 5, 3557–3577.

9. David McKinnon, Rindra Razafy*, Matthew Satriano, and Yuxuan Sun*. On curves with high multiplicity on $\mathbb{P}(a, b, c)$ for $\min(a, b, c) \leq 4$. *New York Journal of Mathematics*, (2021), 1060–1084.

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[1]Co-authors who were graduate or undergraduate students at the time a paper was written have been marked with (*) and Postdoctoral Fellows with (**).

10. Jiahui Huang*, David McKinnon, and Matthew Satriano. What fraction of an $S_n$-orbit can lie on a hyperplane?. *Linear Algebra and Its Applications* 613 (2021), 1–23.

11. Jason P. Bell, Fei Hu**, Matthew Satriano. Height Gap Conjectures, $D$-Finiteness, and a Weak Dynamical Mordell–Lang Conjecture. *Mathematische Annalen*, 378 (2020), no. 3–4, 971–992.

12. Wei Ho and Matthew Satriano. Galois closures of non-commutative rings and an application to Hermitian representations. *International Mathematics Research Notices*, Volume 2020, Issue 21, November 2020, 7944–7974.

13. Yoav Len** and Matthew Satriano. Lifting tropical self intersections. *Journal of Combinatorial Theory, Series A*, 170 (2020), 105138, 21 pp.

14. John Lesieutre** and Matthew Satriano. A rational map with infinitely many points of distinct arithmetic degrees. *Ergodic Theory and Dynamical Systems*, 40 (2020), no. 11, 3051–3055.

15. Dan Edidin and Matthew Satriano. Towards an Intersection Chow Cohomology Theory for GIT Quotients. *Transformation Groups*, 25 (2020), no. 4, 1103–1124.

16. Jenna Rajchgot, Matthew Satriano, and Wanchun Shen*. Some combinatorial cases of the three matrix analog of Gerstenhaber's theorem. Advances in Mathematical Sciences. Association for Women in Mathematics Series, vol 21. Springer, Cham. (2020).

17. Dragos Ghioca and Matthew Satriano. Density of orbits of dominant regular self-maps of semiabelian varieties. *Transactions of the American Mathematical Society*, 371 (2019), no. 9, 6341–6358.

18. J. William Helton, Kyle P. Meyer*, Vern I. Paulsen, and Matthew Satriano. Algebras, Synchronous Games and Chromatic Numbers of Graphs. *New York Journal of Mathematics*, 25 (2019), 328–361.

19. Jenna Rajchgot and Matthew Satriano. New classes of examples satisfying the three matrix analog of Gerstenhaber's theorem. *Journal of Algebra*, 516 (2018), 245–270.

20. Dan Edidin and Matthew Satriano. Strong cycles and intersection products on good moduli spaces. *K-Theory – Proceedings of the International Colloquium, Mumbai, 2016*, 223–238, Hindustan Book Agency, New Delhi, 2018.

21. Anton Geraschenko and Matthew Satriano. A "Bottom Up" characterization of smooth Deligne–Mumford stacks. *International Mathematics Research Notices*, 2017, no. 21, 6469–6483.

22. Jason P. Bell, Dragos Ghioca, Zinovy Reichstein, and Matthew Satriano. On the Medvedev–Scanlon conjecture for minimal threefolds of non-negative Kodaira dimension. *New York Journal of Mathematics*, 23 (2017), 1185–1203.

23. Jason P. Bell, Matthew Satriano, and Susan J. Sierra, On a dynamical Mordell–Lang conjecture for coherent sheaves. *Journal of the London Mathematical Society*, 2017, (2) 96 (2017), no. 1, 28–46.

24. Matthew Satriano. When is a variety the quotient of a smooth variety by a finite group? *Oberwolfach Reports* 19 (2016), 992–996.

25. Benjamin Linowitz, Matthew Satriano, and Roope Vehkalahti. A non-commutative analogue of the Odlyzko bounds and bounds on performance for space-time lattice codes. *IEEE Trans. Inform. Theory*, 61 (2015), no. 4, 1971–1984.

26. Anton Geraschenko and Matthew Satriano. Torus quotients as global quotients by finite groups. *Journal of the London Mathematical Society* (2) 92 (2015), no. 3, 736–759.

27. Anton Geraschenko and Matthew Satriano. Toric stacks I: The theory of stacky fans. *Transactions of the American Mathematical Society*, 367 (2015), no. 2, 1033–1071.

28. Anton Geraschenko and Matthew Satriano. Toric Stacks II: Intrinsic characterization of toric stacks. *Transactions of the American Mathematical Society*, 367 (2015), no. 2, 1073–1094.

29. Manjul Bhargava and Matthew Satriano. On a notion of "Galois closure" for extensions of rings. *Journal of the European Mathematical Society*, 16 (2014), no. 9, 1881–1913.

30. Christian Liedtke and Matthew Satriano. On the birational nature of lifting. *Advances in Mathematics*, 254 (2014), 118–137.

31. Dan Abramovich, Qile Chen, Danny Gillam, Yuhao Huang, Martin Olsson, Matthew Satriano, and Shenghao Sun. Logarithmic Geometry and Moduli. *Handbook of moduli.* Vol. I, 1–61, Adv. Lect. Math. (ALM), 24, Int. Press, Somerville, MA, 2013.

32. Dan Edidin, Anton Geraschenko, and Matthew Satriano. There is no degree map for 0-cycles on Artin stacks. *Transformation Groups*, 18 (2013), no. 2, 385–389.

33. Qile Chen and Matthew Satriano. Chow quotients of toric varieties as moduli of stable log maps. *Algebra & Number Theory*, 7 (2013), no. 9, 2313–2329.

34. Matthew Satriano. Canonical Artin stacks over log smooth schemes. *Mathematische Zeitschrift* (2013), no. 3-4, 779–804

35. Matthew Satriano. de Rham theory for tame stacks and schemes with linearly reductive singularities. *Annales de l'Institut Fourier*, 62, No. 6, 2013–2051 (2012).

36. Matthew Satriano. The Chevalley-Shephard-Todd theorem for finite linearly reductive group schemes. *Algebra & Number Theory*, 6 (2012), no. 1, 1–26

**Submitted:**
37. Jason Bell, Colin Ingalls, Rahim Moosa, Matthew Satriano. A differential analogue of the wild automorphism conjecture. `https://arxiv.org/pdf/2211.02122.pdf`, (2022), 7 pages.

38. Andrew Staal and Matthew Satriano. Galois closures and elementary components of Hilbert schemes of points. `https://arxiv.org/pdf/2210.14310.pdf`, (2022), 26 pages, submitted.

39. Dori Bejleri, Jun-Yong Park, Matthew Satriano. Height moduli on cyclotomic stacks and counting elliptic curves over function fields. `https://arxiv.org/pdf/2210.04450.pdf`, (2022), 56 pages, submitted.

40. Eleonore Faber, Colin Ingalls, Shinnosuke Okawa, and Matthew Satriano. On stacky surfaces and noncommutative surfaces. `https://arxiv.org/pdf/2206.13359.pdf`, (2022), 33 pages, submitted.

41. Oliver Pechenik and Matthew Satriano. Combinatorial models for the cohomology and $K$-theory of some loop spaces. `https://arxiv.org/pdf/2205.12415.pdf`, (2022), 30 pages, submitted.

42. Oliver Pechenik and Matthew Satriano. Proof of a conjectured Möbius inversion formula for Grothendieck polynomials. `https://arxiv.org/abs/2202.02897.pdf`, (2022), 6 pages, submitted.

43. Matthew Satriano and Andrew P. Staal**. Small elementary components of Hilbert schemes of points. `https://arxiv.org/abs/2112.01481`, (2021), 31 pages, submitted.

44. Matthew Satriano and Jeremy Usatine**. A motivic change of variables formula for Artin stacks. `https://arxiv.org/pdf/2109.09800.pdf`, (2021), 23 pages, submitted.

45. Dan Edidin, Matthew Satriano, and Spencer Whitehead*. An intrinsic characterization of cofree representations of reductive groups. `https://arxiv.org/pdf/1905.04845.pdf`, (2020), 26 pages, submitted.

**Mathematical Biology Publications:**

46. Sabina J. Haque**, Matthew Satriano, Miruna-Ştefana Sorea**, Polly Y. Yu**. The disguised toric locus and affine equivalence of reaction networks. *SIAM Journal on Applied Dynamical Systems*, accepted.

47. Sherman TD*, Kagohara LT, Cao R, Cheng R, Satriano M, Considine M, et al. CancerInSilico: An R/Bioconductor package for combining mathematical and statistical modeling to simulate time course bulk and single cell gene expression data in cancer. *PLOS Computational Biology* (2019) 12 pages.

**TEXTBOOKS**

1. Kenneth R. Davidson and Matthew Satriano. *Integer and Polynomial Algebra*, submitted

**GRANTS**

| | | |
|---|---|---|
| 2021–24 | Mathematics Faculty Research Chair | $150,000 |
| 2022–27 | NSERC Discovery Grant | $185,000 |
| 2015–22 | NSERC Discovery Grant | $154,000 |
| 2021–24 | University of Waterloo Research Grant | $25,000 |
| 2015–23 | University of Waterloo Startup | $45,000 |
| 2011–14 | National Science Foundation MSPRF Grant | $108,000 USD |

**AWARDS AND RECOGNITIONS**

| | |
|---|---|
| 2021–24 | Mathematics Faculty Research Chair |
| 2005 | Top undergraduate thesis in mathematics at Princeton |
| | Phi Beta Kappa Highest GPA |
| 2004 | Barry M. Goldwater Scholarship |
| | New Jersey Beta Chapter of Phi Beta Kappa |
| 2001 | First Place Winner, Intel International Science and Engineering Fair |
| | Semi-Finalist, Intel Science Talent Search |

**INVITED MINI-COURSES**

Geometric and Arithmetic Frontiers of Orbifolds, Montreal (May 2022)

**INVITED CONFERENCE TALKS**

Curves: Algebraic, Tropical, and Logarithmic, Banff International Research Station (Aug. 2023)

Non-Archimedean methods in arithmetic and geometry, Swiss Map Research Station, Les Diablerets, Switzerland. (Feb. 2023)

*On Dynamical Cancellation*, Joint Mathematics Meetings, Special Session on Complex and Arithmetic Dynamical Systems, Bostons (Jan. 2023)

Diophantine Arithmetic Geometry and Number Theory, Session of the Canadian Mathematical Society, Toronto (Dec. 2022), declined

*On Dynamical Cancellation*, Dynamical systems and systems of equations, Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy (June 2022)

Descent Methods in Algebra, Geometry, and Topology, Session of the Canadian Mathematical Society, Memorial University of Newfoundland in St. John's (June 2022), declined due to COVID-19

*Motivic integration and toric stacks*, Toric Geometry, Oberwolfach, Germany (Mar. 2022)

Moduli and Algebraic Cycles, Workshop at the Mittag–Leffler Institute (Nov. 2021), declined due to travel ban

Canadian Number Theory Association XVI, Toronto (June 2020), postponed due to COVID-19

Noncommutative Algebra and Noncommutative Geometry, Session of the Canadian Mathematical Society, University of Ottawa (June 2020), postponed due to COVID-19

*Interpolating Between the Batyrev-Manin and Malle Conjectures*, Canadian Western Algebraic Geometry Symposium, University of Saskatchewan (Mar. 2020)

*New types of heights with connections to the Batyrev-Manin and Malle Conjectures*, Arithmetic Dynamics, Special session of the American Mathematical Society, Denver, Colorado (Jan. 2020)

*Lifting Tropical Self-Intersections*, Convexity in Algebraic Geometry and Symplectic Geometry, Session of the Canadian Mathematical Society, University of British Columbia (Dec. 2019)

*A counter-example to a finiteness conjecture of Kawaguchi and Silverman*, Algebraic Geometry Session of the Canadian Mathematical Society, University of British Columbia (Dec. 2018)

*Towards an Intersection Chow Cohomology Theory for GIT Quotients*, Algebraic and Combinatorial Aspects of Tropical Geometry, Ohio State University (Mar. 2018)

*On the Zhang–Amerik–Medvedev–Scanlon conjecture for threefolds of non-negative Kodaira dimension*, Bridges between Noncommutative Algebra and Algebraic Geometry, Banff International Research Station (Sept. 2016)

*When is a variety with quotient singularities a global quotient by a finite group?*, Toric Geometry, Oberwolfach (Mar. 2016)

*Is every variety with quotient singularities a global quotient by a finite group?*, Equivariant Geometry and Algebraic Stacks, Australia National University (Mar. 2016)

*Which varieties are quotients by finite groups?*, New Trends in Toric Varieties, Special session of the American Mathematical Society, Eau Claire (Sept. 2014)

*Toric Stacks and Applications to Cycle Theory*, Algebraic Geometry days: A conference dedicated to the memory of Dan Laksov, Mittag–Leffler Institute (June 2014)

*Stacky Resolutions*, Algebraic Stacks: Progress and Prospects, Banff International Research Station (Mar. 2012)

*Stacky Resolutions of Singular Schemes*, Western Algebraic Geometry Symposium, Stanford University (Apr. 2011)

*Stacky Resolutions and Applications*, Special session on arithmetic, groups and geometry, American Mathematical Society Central Section meeting, Notre Dame (2010)

*Invariant Theory and Canonical Artin Stacks*, Equivariant algebraic geometry and related topics, University of California at Berkeley (2009)

**OTHER INVITED CONFERENCES**

Noncommutative Geometry and Noncommutative Invariant Theory, Banff International Research Station (Sept 2022)

Algebraic Dynamics and its Connections to Difference and Differential Equations, Banff International Research Station (Nov 2021)

Geometry via Arithmetic, Banff International Research Station (July 2021)

Algebraic Dynamics and its Connections to Difference and Differential Equations, Banff International Research Station (Nov 2020)

Simons Symposium on Algebraic, Complex, and Arithmetic Dynamics, Schloss Elmau (May 2019)

Beyond Toric Geometry, Casa Matemática Oaxaca (May 2017)

Foundations of tropical schemes, American Institute of Mathematics (Apr. 2017)

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| **INVITED SEMINAR TALKS** | *Galois closures and Hilbert schemes of points*, Geometry Seminar, University of Missouri (Nov. 2022) |
| | *On Dynamical Cancellation*, Colloquium, McMaster University (Sept. 2022) |
| | *Cancellation Phenomena in Dynamics*, Commutative Algebra and Algebraic Geometry, University of Minnesota (Feb. 2022) |
| | *An Introduction to Fantastacks*, Topics in Algebraic Geometry, Stanford University (May 2021) |
| | *New types of heights with connections to the Batyrev-Manin and Malle Conjectures*, Algebraic Geometry Seminar, UC Riverside (Mar 2021) |
| | *New types of heights with connections to the Batyrev-Manin and Malle Conjectures*, Algebra, Geometry, and Combinatorics Online Seminar (July 2020) |
| | *On Height Gaps, D-finiteness, and a Weak Dynamical Mordell–Lang Conjecture*, Arithmetic Dynamics International Online Seminar (May 2020) |
| | *Characterizing Smoothness of Quotients*, Colloquium, Georgia Institute of Technology (Feb. 2020) |
| | *Characterizing Smoothness of Quotients*, Colloquium, York University (Jan. 2020) |
| | *Interpolating Between the Batyrev–Manin and Malle Conjectures*, Algebra and Number Theory Seminar, Brown University (Nov. 2019) |
| | *On a GIT Characterization of Cofreeness*, Institute for Basic Science, Center for Geometry and Physics, Pohang, Korea (Aug. 2019) |
| | *Cofreeness of representations, purity of the strictly semistable locus, and the periodic table*, Algebraic Geometry Seminar, University of Arizona (Feb. 2019) |
| | *Interpolating Between the Batyrev–Manin and Malle Conjectures*, Algebra and Algebraic Geometry Seminar, University of Washington (Dec. 2018) |
| | *Towards an Intersection Chow Cohomology Theory with a Primer on Toric Stacks*, Pre-talk for graduate students, University of Washington, (Dec. 2018) |
| | *Interpolating Between the Batyrev–Manin and Malle Conjectures*, Algebraic Geometry Seminar, Central Michigan University (Nov. 2018) |
| | *Interpolating Between the Batyrev–Manin and Malle Conjectures*, Algebra and Algebraic Geometry, University of British Columbia (Sept. 2018) |
| | *Interpolating Between the Batyrev–Manin and Malle Conjectures*, Algebra and Number Theory Seminar, Penn State University (Apr. 2018) |
| | *Interpolating Between the Batyrev–Manin and Malle Conjectures*, Algebraic Geometry Seminar, Ohio State University (Dec. 2017) |
| | *The Medvedev–Scanlon Conjecture for Semiabelian Varieties and certain 3-folds*, Algebra Seminar, University of Missouri (Oct. 2017) |
| | *Algebraic and quantum colorings of graphs*, SUMRY Colloquium, Yale (Aug. 2017) |
| | *Stacky Resolutions, Invariant Theory, and Hodge Theory*, Colloquium, University of Saskatchewan (Feb. 2017) |
| | *On the Medvedev–Scanlon Conjecture in dimension 3*, Group, Lie and Number Theory Seminar, University of Michigan (Dec. 2016) |
| | *On the Medvedev–Scanlon Conjecture in dimension 3*, Algebra and Number Theory Seminar, University of Maryland (Nov. 2016) |
| | *An Introduction to Toric Stacks, and Conjectures in Cycle Theory*, Algebraic Geometry Seminar, University of British Columbia (Nov. 2016) |
| | *Stacky resolutions and applications*, Colloquium, University of Western Ontario (Nov. 2016) |
| | *On the Medvedev–Scanlon Conjecture in dimension 3*, Geometric Representation Theory Seminar, University of Toronto (Oct. 2016) |

*Toric Stacks and Applications*, Geometric Structures Seminar, University of Toronto (Aug. 2015)

*When is a variety a quotient of a smooth variety by a finite group?*, Algebraic Geometry Seminar, University of Wisconsin (Nov. 2015)

*Toric Stacks and Applications to Cycle Theory*, Algebraic Geometry Seminar, Ohio State University (Nov. 2015)

*Stacky Resolutions of Singularities*, Colloquium, University of Waterloo (Feb. 2014)

*Stacky Resolutions of Singularities*, Colloquium, University of Missouri (Feb. 2014)

*Stacky Resolutions of Singularities*, Colloquium, University of Arizona (Jan. 2014)

*Stacky Resolutions of Singularities*, Colloquium, University of Notre Dame (Jan. 2014)

*On the birational nature of lifting*, Algebraic Geometry Seminar, University of Colorado at Boulder (Nov. 2013)

*Stacky Resolutions of Singularities*, Algebraic Geometry Seminar, University of Illinois at Urbana-Champaign (Oct. 2013)

*A User's Guide to Stacks*, Colloquium, University of Maryland (Feb. 2013)

*On the birational nature of lifting*, Algebra and Number Theory Seminar, University of Maryland (Feb. 2013)

*Stacky Resolutions*, Colloquium, Purdue University (Jan. 2013)

*Toric Stacks with Applications to Cycle Theory*, Algebraic Geometry Seminar, Stanford University (Nov. 2012)

*Stacky Resolutions of Singular Schemes*, Algebra and Number Theory Seminar, Emory University (Sept. 2012)

*On the birational nature of lifting*, Working Algebraic Geometry Seminar, Purdue University (Apr. 2012)

*When is a variety a quotient of a smooth variety by a finite group?*, Algebraic Geometry Seminar, Brown University (Dec. 2011)

*When is a variety a quotient of a smooth variety by a finite group?*, Algebraic Geometry Seminar, Ohio State University (Nov. 2011)

*Chow quotients of toric varieties as moduli of stable log maps*, Algebraic Geometry Seminar, Caltech (Oct. 2011)

*Toric Stacks*, Algebraic Geometry Seminar, Rice University (Sept. 2011)

*Chow quotients of toric varieties as moduli of stable log maps*, Representation Theory, Geometry and Combinatorics Joint Seminar, UC Berkeley (Apr. 2011)

*Toric Artin Stacks*, Geometry-Topology Seminar, University of Missouri (Feb. 2011)

*Stacky Resolutions of Singular Schemes*, Algebraic Geometry Seminar, University of Wisconsin (Nov. 2010)

*Stacky Resolutions of Singular Schemes*, Algebraic Geometry Seminar, University of Michigan (Jan. 2010)

*Stacky Resolutions of Singular Schemes*, Number Theory and Arithmetic Geometry Seminar, University of Illinois at Chicago (Oct. 2009)

*Stacky Resolutions of Singular Schemes*, Algebraic Geometry Seminar, University of Illinois at Urbana-Champaign (Oct. 2009)

**SUPERVISION**

**Postdoctoral Fellows:**

| | | |
|---|---|---|
| Changho Han[4] | 2022–24 | |
| Brett Nasserden[3] | 2021–23 | Postdoc at University of Western Ontario |
| Lucia Martin Merchan | 2022–24 | |
| Michael Albanese | 2022–24 | |
| Daren Cheng[1] | 2020–22 | Professor at University of Miami |
| Fei Hu | 2019–20 | Postdoc at University of Oslo |
| Andrew Staal[1] | 2019–22 | |
| Simon Crawford[2] | 2018–20 | Heilbronn Postdoc at Bristol |
| Ali Aleyasin[1] | 2017–19 | |
| Michael Bailey[1] | 2017–18 | |
| Ivan Kobyzev | 2017 | Machine Learning Researcher at Huawei |
| Yoav Len | 2016–18 | Professor at St. Andrew's |
| Akos Nagy[1] | 2016–17 | Postdoc at Duke University |
| Yi Zhu[2] | 2015–17 | PNC |

[1] jointly supervised with Geometry and Topology Group
[2] jointly supervised with Bell, McKinnon, and Moosa
[3] jointly supervised with Dhillon
[4] jointly supervised with McKinnon

**Ph.D. Students:**

| | | |
|---|---|---|
| Jiahui Kent Huang | 2023– | |
| Dongshu Dai | 2023– | |
| Anne Johnson | 2021– | |
| Sean Monahan | 2020– | |
| Nicole Kitt | 2020– | |
| Yash Singh | 2020– | |
| Brett Nasserden | 2016–21 | Postdoc at University of Western Ontario |

**Masters Students:**

| | | |
|---|---|---|
| Dongshu Dai | 2022–23 | PhD student at University of Waterloo |
| Nicole Kitt | 2019–20 | PhD student at University of Waterloo |
| Sean Monahan | 2019–20 | PhD student at University of Waterloo |
| Jeffrey Samuelson | 2018–19 | |
| David Urbanik[3] | 2017–18 | PhD student at University of Toronto |
| Dylan Butson[4] | 2016–17 | PhD student at University of Toronto |

[3] co-supervised with David Jao
[4] co-supervised with Kevin Costello

**NSERC Undergraduate Research Experiences, Hires, and Mathematics Undergraduate Research Awards:**

| | | |
|---|---|---|
| Ron Cherny | Spring 2023 | |
| Yohan Song[2] | Spring 2023 | |
| Paul Mcauley[2] | Fall 2022 | |
| Faisal Romshoo[2] | Fall 2022 | |
| Daniel Yunhai Xiang[2] | Spring 2022 | Master's student at Western Ontario |
| Dongshu Dai | Spring 2021 | Master's student at Waterloo |
| Spencer Whitehead | Winter 2021 | PhD Student at Duke |
| Rindra Razafy | Spring 2020 | |
| Austin Sun | Spring 2020 | Master's Student at Waterloo |
| Spencer Whitehead[1] | Spring 2020 | Master's Student at Univ. of Tokyo |
| Ron Meng | Spring 2019 | Software Engineer at LinkedIn |
| Alexander Slamen | Spring 2019 | Master's student at Toronto |
| Jiahui Huang | Winter 2019 | Master's student at ETH |
| Clair Xinle Dai | Winter 2019 | PhD student at Harvard |
| Rosie Wanchun Shen | Winter 2019 | PhD student at Harvard |
| Stephen Wen | Spring 2018 | PhD student at Waterloo |
| Akshay Tiwary | Winter 2018 | PhD student at UCSD |
| Trevor Gunn | Spring 2017 | PhD student at Georgia Tech |
| Xiaoyu Xie | Spring 2016 | PhD student at Brown University |

[1] Awarded the Jessie Zou Award for Excellence in Undergraduate Research

[2] Mathematics Undergraduate Research Award

**Undergraduate Reading Courses:**

| | | |
|---|---|---|
| Chenfangrui Wu | Fall 2017 | |
| Raymond Cheng | Winter 2016 | PhD student at Columbia University |

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| **CONFERENCE ORGANIZATION** | Twentieth workshop: Combinatorial Algebra meets Algebraic Combinatorics, Organization Committee, Toronto (Jan. 2023) |
| | Fields Medal Symposium, Organization Committee, Toronto (Oct. 2021) |
| | Combinatorial Algebraic Geometry (with Jenna Rajchgot), Session of the Canadian Mathematical Society, Toronto (Dec. 2019) |
| | Noncommutative Surfaces and Artin's Conjecture (with Jason Bell and Colin Ingalls), American Institute of Mathematics (Sept. 2019) |
| | Toric and Convex Geometry (with Greg Smith), Session of the Canadian Mathematical Society, Waterloo (Dec. 2017) |
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| **JOURNALS REFEREED** | Acta Mathematica |
| | Advances in Mathematics |
| | Algebra & Number Theory |
| | Algebraic Geometry |
| | Arnold Mathematical Journal |
| | Astérique |
| | Beiträge zur Algebra und Geometrie |
| | Bulletin of the London Mathematical Society |
| | Canadian Mathematical Bulletin |
| | Central European Journal of Mathematics |
| | Colloquium Mathematicum |
| | Communications in Algebra |
| | Compositio Mathematica |
| | Crelle's Journal, Journal für die reine und angewandte Mathematik |
| | Duke Math Journal |

Forum of Mathematics, Sigma

Geometry & Topology

International Mathematics Research Notices

Inventiones

Journal of Algebra

Journal of Algebraic Geometry

Journal of the American Mathematical Society

Journal of Commutative Algebra

Journal of the European Mathematical Society

Journal of Pure and Applied Algebra

Mathematical Reviews / MathSciNet

Mathematical Research Letters

Mathematische Zeitschrift

Münster Journal of Mathematics

Proceedings of the American Mathematical Society

Proceedings of the London Mathematical Society

Publications mathématiques de l'IHÉS

Selecta Mathematica

Transactions of the American Mathematical Society

Conference proceedings such as: Formal Power Series and Algebraic Combinatorics conference, William Fulton's 80th birthday

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|---|---|
| **THESIS COMMITEES** | |

**Ph.D. Thesis Committees:**

| | | |
|---|---|---|
| Yehao Zhou | University of Waterloo (Internal-External) | Sept. 2022 |
| Ben Lovitz | University of Waterloo | Apr. 2022 |
| Ehsaan Hossain | University of Waterloo | May 2020 |
| Cameron Marcott | University of Waterloo (Internal-External) | Aug. 2019 |
| Nickolas Rollick | University of Waterloo | June 2019 |
| Amir Nasr-Azadani | University of New Brunswick (External-External) | Dec. 2018 |
| Tyrone Ghaswala | University of Waterloo | June 2017 |
| Ivan Kobyzev | University of Western Ontario (External-External) | Aug. 2016 |

**Masters Thesis Committees:**

| | | |
|---|---|---|
| Austin Sun | University of Waterloo | July 2022 |
| Xingchi Ruan | University of Waterloo | Aug. 2020 |
| Andrej Vukovic | University of Waterloo | Aug. 2019 |
| David Urbanik | University of Waterloo | Aug. 2018 |
| Brandon Doherty | University of Waterloo | Aug. 2017 |
| Anthony McCormick | University of Waterloo | July 2017 |
| Dylan Butson | University of Waterloo | Sept. 2016 |
| Nickolas Rollick | University of Waterloo | July 2016 |

**TEACHING**

**Courses Taught at Waterloo:**

| | |
|---|---|
| MATH 235: Linear Algebra 2 for Honors Mathematics<br>Enrolment: TBA | Winter 2023 |
| PMATH 965: An Introduction to Toric Varieties<br>Enrolment: 15 | Fall 2022 |
| PMATH 965: Algebraic Stacks<br>Enrolment: 15 | Winter 2022 |
| MATH 145: Advanced Algebra<br>Enrolment: 29 | Fall 2021 |
| PMATH 965: Deformation Theory with a Viewpoint<br>Toward Moduli Spaces<br>Enrolment: 11 | Fall 2020 |
| PMATH 764/464: Algebraic Geometry<br>Enrolment: 26 | Winter 2020 |
| MATH 235: Linear Algebra 2 for Honors Mathematics<br>Enrolment: two sections each 117 | Fall 2019 |
| PMATH 641/441: Algebraic Number Theory<br>Enrolment: 16 | Winter 2019 |
| MATH 135: Algebra for Honors Mathematics<br>Enrolment: 39 | Winter 2019 |
| PMATH 347: Groups and Rings<br>Enrolment: 70 | Fall 2018 |
| MATH 135: Algebra for Honors Mathematics<br>Enrolment: 41 | Winter 2018 |
| PMATH 764/464: Algebraic Geometry    Spring 2017<br>Enrolment: 28 | |
| PMATH 347: Groups and Rings    Spring 2017<br>Enrolment: 59 | |
| PMATH 965: Toric Varieties    Winter 2017<br>Enrolment: 6 | |
| MATH 135: Algebra for Honors Mathematics<br>Enrolment: 66 | Winter 2017 |
| PMATH 764/464: Algebraic Geometry<br>Enrolment: 17 | Winter 2016 |
| MATH 235: Linear Algebra 2 for Honors Mathematics<br>Enrolment: 105 | Fall 2015 |

**SERVICE**

| | | |
|---|---|---|
| Coordinator for Chinese University of Hong Kong Summer Research Exchange Program | | 2019–present |
| Women in Mathematics (WiM) Committee | | 2021–present |
| Committee on Student Awards | | 2022–25 |
| Department Advisory Committee on Appointments (DACA) | | 2021–24 |
| Course Coordinator for MATH 235 | | Winter 2023 |
| Ran Learning Seminar on horospherical varieties (joint with Monahan) | | 2022–23 |
| Peer reviewer for teaching | | 2021 |
| Math Faculty Graduate Council Representative | | 2019–22 |
| Graduate Committee | | 2017–22 |
| Wrote and graded Algebra Comprehensive Exam (with Ruxandra Moraru) | | 2020–21 |
| Algebra Seminar, co-organizer | | 2018–21 |
| Geometry and Topology Seminar, co-organizer | | 2015–21 |
| Meet the Profs Graduate Visitation Day | | Winter 2021 |
| Oral Comprehensive Examiner for Ben Lovitz | | Winter 2020 |
| Ran Learning Seminar on Arakelov Geometry | | Winter 2020 |
| Course Coordinator for MATH 235 | | Fall 2019 |
| Graduate Admissions Subcommittee | | 2017–19 |
| Ran Learning Seminar on Valuative Trees | | 2019–20 |
| Engendering Resident Pathways and Communities Focus Group Participant | | 2018 |
| Ran Learning Seminar on work of Baker–DeMarco | | 2018–19 |
| Committee to select the Pure Math Chair | | 2017–18 |
| Math Faculty Representative to the Environment Faculty Council | 2015–17 | |
| Ran Hot Topics Seminar on Hodge Theory for Combinatorial Geometries | 2016–17 | |
| Oral Comprehensive Examiner for Nickolas Rollick | Winter 2015 | |
| Undergraduate math club talk (PMC) | 2015–16 | |
| Hot Topics Seminar on Berkovich Spaces and Model Theory, co-organizer | 2015–16 | |
| Wrote and graded Algebra Comprehensive Exam (with Yu-Ru Liu) | 2015–16 | |

**GRANT PANEL REVIEWER**

Banff International Research Station Program Reviewer, 2023

Natural Sciences and Engineering Research Council Grant Reviewer, 2023

Natural Sciences and Engineering Research Council Grant Reviewer, 2020

Natural Sciences and Engineering Research Council Grant Reviewer, 2019

National Science Foundation Grant Panel Member, 2018

**MEMBERSHIPS**

Canadian Mathematical Society