# BJORN POONEN

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## LONG-TERM ACADEMIC POSITIONS

**Massachusetts Institute of Technology** (2019–) Distinguished Professor in Science.
(2009–2019) Claude Shannon Professor.
(2008–2009) Professor.

**University of California at Berkeley** (2004–2008) Professor.
(2001–2004) Associate professor.
(1997–2001) Assistant professor.

**Princeton University** (1995–97) Instructor and NSF postdoctoral fellow.

**Mathematical Sciences Research Institute, Berkeley** (1994–95) Postdoctoral fellow.

## VISITING POSITIONS

**Centre Interfacultaire Bernoulli**, Lausanne, Switzerland (Summer and Fall 2012) Program co-organizer.

**Hausdorff Research Institute for Mathematics**, Bonn, Germany (January-February 2009)

**Harvard University and MIT**, Cambridge, Massachusetts (Fall 2007) Visiting scholar/professor.

**Isaac Newton Institute**, Cambridge, England (June–July 2005)

**Institut Henri Poincaré**, Paris (Fall 2004)

**Pacific Institute for the Mathematical Sciences**, Vancouver (June–July 2004) Distinguished chair.

**Université Paris-Sud**, Orsay, France (June 2001) Professeur invité.

**Isaac Newton Institute**, Cambridge, England (Spring 1998) Rosenbaum fellow.

## EDUCATION

**University of California at Berkeley**, Ph. D., Mathematics, 1994.

**Harvard**, A. B., Mathematics and Physics, 1989, summa cum laude.

## HONORS

- Teaching
    - MIT School of Science Prize in Undergraduate Teaching
    - MIT Teaching with Digital Technology Award Nomination, 2019
- Writing

- The 2023 Doob Prize (offered once every 3 years for a recent research book), for *Rational points on varieties*
- The 2011 Chauvenet Prize, for the article "Undecidability in number theory"
- Thomas T. Hoopes Prize, for an undergraduate thesis written under J. Tate

- Professorships
  - Simons Investigator, 2016–2026.
  - Distinguished Professorship in Science, 2019–.
  - Claude Shannon Professorship, 2009–2019.
  - Miller Professorship, Fall 2005

- Fellowships
  - American Academy of Arts and Sciences
  - American Mathematical Society Fellow (inaugural class)
  - Simons Fellow in Mathematics
  - Guggenheim Fellowship
  - Packard Fellowship
  - Sloan Research Fellowship
  - Rosenbaum Fellowship
  - NSF Postdoctoral Fellowship
  - Sloan Doctoral Dissertation Fellowship
  - Office of Naval Research Graduate Fellowship

- Competitions
  - Putnam Undergraduate Mathematics Competition: winner in 1985, 1986, 1987, and 1988 (one of eight four-time winners in the 70-year history of the competition)
  - International Mathematical Olympiad: silver medalist in 1985 (while on the 6-person U. S. team)
  - U. S. A. Mathematical Olympiad: winner in 1985
  - American High School Mathematics Exam: only participant (out of 380,000) to receive a perfect score in 1985

- Other awards
  - Blumberg Creative Science Award
  - The 1988-89 Wister Prize
  - Phi Beta Kappa

## MAJOR EDUCATIONAL INITIATIVES

- **18.03, Differential equations:** Created the 200+ pages of lecture notes (adapted from earlier notes by others) that currently serve as the basis for the MITx online text, and created the content for 100+ automatically-graded online problems for MITx with detailed solutions (in 2014). Worked with K. Chu and J. French to revise the MITx text again to improve clarity and motivation (in 2017–2018).

- **18.782, Introduction to arithmetic geometry:** Created this new undergraduate class (in 2009), along with a 70-page PDF of lecture notes to serve as a basis for future instructors.

## MAJOR RESEARCH COLLABORATION

- **Simons Collaboration on Arithmetic Geometry, Number Theory, and Computation**, 2017–2024 (a $14M initiative of the Simons Foundation): PI alongside J. Balakrishnan (Boston U.), N. Elkies (Harvard), B. Hassett (Brown), A. Sutherland (MIT), and J. Voight (Dartmouth).

## SELECTED INVITED LECTURES

- Vinberg Distinguished Lecture, 2022.
- The Rouse–Ball Lecture, University of Cambridge, 2021.
- Simons Public Lecture, 2021.
- Clay Lectures, Arizona Winter School, Tucson, 2020.
- Distinguished Lectures in Mathematics, Brown University, 2020.
- The Arnold Ross Lecture, Penn State, 2019.
- ICM Invited Lecture, Rio de Janeiro, 2018.
- The Rademacher Lectures, University of Pennsylvania, 2017.
- The Phillips Lectures, Michigan State University, 2016.
- The Coven–Wood Lectures, Wesleyan, 2015.
- The Hedrick Lectures, MathFest, Portland, OR, 2014.
- Lecture series, Arizona Winter School, Tucson, 2014.
- The DePrima Lecture, Caltech, 2013.
- Plenary lecture, Canadian Number Theory Association meeting, Lethbridge, 2012.
- The Spring Lectures in Geometry, Ann Arbor, Michigan, 2012.
- Séminaire Bourbaki, Paris, 2012.
- Minicourse, Arithmetic Aspects of Rational Curves summer school, Grenoble, 2010.
- The Dressler Lecture, Manhattan, Kansas, 2010.
- Lecture series, Explicit Methods in Number Theory workshop, Oberwolfach, 2009.
- The Cantrell Lectures, Athens, Georgia, 2008.
- AMS invited address, Joint Mathematics Meetings, New Orleans, 2007.
- Lecture series, Clay Summer School in Arithmetic Geometry, Göttingen, 2006.
- Plenary lecture, Journées Arithmétiques, Marseille, 2005.
- Plenary lecture, Effective Methods in Algebraic Geometry, Alghero, 2005.
- Association of Symbolic Logic invited address, Joint Mathematics Meetings, Atlanta, 2005.
- Distinguished lecture series, Workshop on Computational Arithmetic Geometry, Vancouver, 2004.
- Lecture series, Explicit Methods in Number Theory trimester, Paris, 2004.
- Lecture series, Arizona Winter School, Tucson, 2003.
- Plenary lecture, Modular Forms and Abelian Varieties, Barcelona, 2002.
- Plenary lecture, Algorithmic Number Theory Symposium V, Sydney, 2002.

- The Beeger Lecture, 38th Nederlands Mathematisch Congres, Eindhoven, 2002.
- Plenary lecture, Millennial Conference on Number Theory, Urbana-Champaign, 2000.
- Plenary lecture, Foundations of Computational Mathematics, Oxford, 1999.
- Lecture series, Arizona Winter School, Tucson, 1998.
- Plenary lecture, Algorithmic Number Theory Symposium II, Bordeaux, 1996.

## GRADUATE STUDENTS SUPERVISED

1. Kirsten Eisenträger, Ph.D. 2003.
2. Patrick Corn, Ph.D. 2005.
3. Dragos Ghioca, Ph.D. 2005. (co-supervised by Thomas Scanlon)
4. Nghi Nguyen, Ph.D. 2005.
5. Oscar Villareal, Ph.D. 2005.
6. Bonnie Huggins, Ph.D. 2005.
7. Greta Panova, M.A. 2006.
8. Shahed Sharif, Ph.D. 2006.
9. Aaron Greicius, Ph.D. 2007. (co-supervised by Hendrik Lenstra)
10. David Zywina, Ph.D. 2008.
11. Anthony Várilly-Alvarado, Ph.D. 2009.
12. Bianca Viray, Ph.D. 2010.
13. David Zureick-Brown, Ph.D. 2010.
14. Kaloyan Slavov, Ph.D. 2011.
15. Kęstutis Česnavičius, Ph.D. 2014.
16. Jennifer Park, Ph.D. 2014.
17. Ruthi Hortsch, Ph.D. 2016.
18. Padmavathi Srinivasan, Ph.D. 2016.
19. Soohyun Park, M.A. 2018.
20. Renee Bell, Ph.D. 2018.
21. David Corwin, Ph.D. 2018.
22. Nicholas Triantafillou, Ph.D. 2019.
23. Isabel Vogt, Ph.D. 2019.
24. Vishal Arul, Ph.D. 2020.
25. Atticus Christensen, Ph.D. 2020.
26. Campbell Hewett, Ph.D. 2020.
27. Borys Kadets, Ph.D. 2020.
28. Hyuk Jun Kweon, Ph.D. 2021.
29. Niven Achenjang, Ph.D. 2025 (expected).

**POSTDOCTORAL FELLOWS SUPERVISED** (most of these really supervised themselves)

- Hui June Zhu, Fall 1998 and 2000–2002.
- Nils Bruin, Fall 2000.
- Joseph Loebach Wetherell, Spring 2001.
- Ernest S. Croot III, 2001–2003.
- CheeWhye Chin, 2002–2003.
- Kevin Hare, 2002–2003.
- Andrew Snowden, 2010–2013.
- Yifeng Liu, 2012–2015.
- Tomer Schlank, 2012–2015.
- Stefan Patrikis, 2014–2015.
- Giacomo Micheli, Fall 2015.
- Holly Krieger, 2013–2016.
- Naoki Imai, 2015–2016.
- Ananth Shankar, 2017–2020.
- Junho Peter Whang, 2018–2021 (co-supervised by W. Zhang).
- David Roe, 2018–2024 (co-supervised by A. Sutherland).
- Edgar Costa, 2018–2024 (co-supervised by A. Sutherland).
- Maarten Derickx, 2018–2019 (co-supervised by A. Sutherland).
- Dohyeong Kim, 2018–2019 (co-supervised by A. Sutherland).
- Francesc Fité, 2019–2021 (co-supervised by A. Sutherland).
- Wanlin Li, 2019–2021 (co-supervised by A. Sutherland).
- Sam Schiavone, 2019–2024 (co-supervised by A. Sutherland).
- Raymond van Bommel, 2019–2024 (co-supervised by A. Sutherland).
- Alexander Smith, 2020–2021.
- Shiva Chidambaram, 2021–2024 (co-supervised by A. Sutherland).
- Aaron Landesman, 2022–2024.

**EDITORIAL POSITIONS**

- **Algebra & Number Theory**, founding managing editor, 2007–2021; editor, 2021–present.
- **Involve**, editor, 2007–present.
- **Journal of the American Mathematical Society**, associate editor, 2000–2003 and 2004–2010.
- **A K Peters Research Notes in Mathematics book series**, editorial board member, 2005–2014.
- **International Mathematics Research Notices**, editor, 2006–2008.

- **London Mathematical Society Journal of Computation and Mathematics**, editor, 2007–2011.
- **Journal de Théorie des Nombres de Bordeaux**, editor, 1998–2006.
- **Journal of Number Theory**, editor, 2003–2004.

## CONFERENCES I HAVE HELPED ORGANIZE

- **Lehmer Conference**, U. C. Berkeley, August 24–26, 2000, co-organizer with J. Brillhart, H. Lenstra, and H. Williams.
- **MSRI semester on algorithmic number theory**, August 14–December 15, 2000, co-organizer with J. Buhler, C. Dwork, H. Lenstra, A. Odlyzko, and N. Yui.
- **CMI Introductory Workshop in Algorithmic Number Theory**, MSRI, August 14–23, 2000, co-organizer with D. Bailey, J. Buhler, C. Dwork, H. Lenstra, A. Odlyzko, W. Velez, and N. Yui.
- **Arithmetic geometry**, MSRI, December 11–15, 2000, chair of organizing committee consisting of N. Elkies, W. McCallum, J.-F. Mestre, and R. Schoof.
- **Journées Arithmétiques XXII**, July 2–6, 2001, Lille, France, member of scientific committee.
- **Rational and integral points on higher-dimensional varieties**, a workshop at the American Institute of Mathematics, Palo Alto, CA, December 11–20, 2002, co-organizer with Yu. Tschinkel.
- **Arizona Winter School 2003** on "Logic and Number Theory", a conference at the University of Arizona, Tucson, AZ, March 15–19, 2003, co-organizer with M. Kim and A. Pillay.
- **Geometry and arithmetic over finite fields**, a special session at the AMS meeting in San Francisco, May 3–4, 2003, co-organizer with J. Buhler.
- **Algorithmic Number Theory Symposium VI (ANTS VI)**, June 13–18, 2004, member of program committee.
- **An Introduction to Recent Applications of Model Theory**, a workshop in the "Model Theory and Applications to Algebra and Analysis" program at the Isaac Newton Institute, March 29 to April 8, 2005.
- **MSRI semester on "Rational and integral points on higher-dimensional varieties"**, January 9 to May 19, 2006, member of organizing committee and chair of introductory workshop committee.
- **MSRI Introductory Workshop on Rational and Integral Points on Higher-Dimensional Varieties**, January 17–21, 2006, chair of organizing committee consisting of F. Bogomolov, J.-L. Colliot-Thélène, D. R. Heath-Brown, J. Kollár, A. Silverberg, Yu. Tschinkel.
- **Arizona Winter School 2006** on "Computational and algorithmic aspects of algebra and arithmetic", a conference at the University of Arizona, Tucson, AZ, March 11–15, 2006, co-organizer with F. Rodriguez-Villegas and D. Ulmer.
- **Arithmetic geometry**, an AMS special session at the Joint Mathematics Meetings in New Orleans, January 8, 2007, co-organizer with M. Baker.
- **Explicit methods for rational points on curves**, a conference at the Banff International Research Station, February 4–9, 2007, co-organizer with N. Bruin.

- **Berkeley Undergraduate Research Conference**, April 7, 2007, co-organizer with a team of Berkeley undergraduates headed by Steven Sam.

- **Modular forms and arithmetic**, U. C. Berkeley and MSRI, June 28–July 2, 2008, co-organizer with Frank Calegari, Samit Dasgupta, and Richard Taylor.

- **New methods in Hilbert's 10th problem**, Hausdorff Research Institute for Mathematics, February 9–13, 2009, co-organizer with Yuri Matiyasevich and Boris Moroz.

- **Rational points on varieties**, an AMS special session at the Joint Mathematics Meetings in Boston, January 5 and 6, 2012, co-organizer with Jennifer Balakrishnan, Bianca Viray, and Kirsten Wickelgren.

- **BIRS summer school on contemporary methods for solving diophantine equations**, co-organized with Michael Bennett, Nils Bruin, Yann Bugeaud, and Samir Siksek, Banff, June 10–17, 2012.

- **Rational points and algebraic cycles**, a semester-long program at the Centre Interfacultaire Bernoulli in Lausanne, Switzerland, July–December 2012, co-organizer with Hélène Esnault, Andrew Kresch, and Alexei Skorobogatov.

- **Cohomological methods in arithmetic geometry**, a workshop at the Universität Zürich during the Lausanne program above, co-organized with Hélène Esnault, Andrew Kresch, and Alexei Skorobogatov, September 10–14, 2012.

- **Arithmetic of abelian varieties in families**, a workshop during the Lausanne program above, co-organized with Hélène Esnault, Andrew Kresch, and Alexei Skorobogatov, November 12–16, 2012.

- **Explicit methods in number theory**, an Oberwolfach workshop, co-organized with Karim Belabas and Don B. Zagier, July 14–20, 2013.

- **Connections between logic and arithmetic geometry**, special session at MAA MathFest, Portland, Oregon, August 7, 2014.

- **Explicit methods in number theory**, an Oberwolfach workshop, co-organized with Karim Belabas and Fernando Rodriguez–Villegas, July 5–11, 2015.

- **Rational points**, one of the seminars during the last week of the three-week AMS Summer Institute in Algebraic Geometry, University of Utah, July 27–31, 2015.

- **Grothendieck memorial afternoon**, MIT, December 11, 2015.

- **Graduate workshop in algebraic geometry for women and mathematicians of minority genders**, Harvard and MIT, February 17–18, 2018.

- **Explicit methods in number theory**, an Oberwolfach workshop, co-organized with Karim Belabas and Fernando Rodriguez–Villegas, July 22–28, 2018.

- **Arithmetic geometry, number theory, and computation**, MIT, August 20–24, 2018, co-organizer with Jennifer Balakrishnan, Noam Elkies, Brendan Hassett, Andrew Sutherland, and John Voight.

- **Simons Collaboration on Arithmetic Geometry, Number Theory, and Computation Annual Meeting 2019**, Simons Foundation, January 10-11, 2019, co-organizer with Jennifer Balakrishnan, Noam Elkies, Brendan Hassett, Andrew Sutherland, and John Voight.

- **Arithmetic of low-dimensional abelian varieties**, ICERM, June 3–7, 2019 (co-organizer with Jennifer Balakrishnan, Noam Elkies, Brendan Hassett, Andrew Sutherland, and John Voight).

- **Rational points on irrational varieties**, Institut Henri Poincaré, June 24–28, 2019, co-organizer with Alexei Skorobogatov.

- **Simons Collaboration on Arithmetic Geometry, Number Theory, and Computation Annual Meeting 2020**, Simons Foundation, January 9–10, 2020, co-organizer with Jennifer Balakrishnan, Noam Elkies, Brendan Hassett, Andrew Sutherland, and John Voight.

- **Workshop on Arithmetic Geometry, Number Theory, and Computation**, ICERM, June 1–5, 2020 (co-organizer with Jennifer Balakrishnan, Noam Elkies, Brendan Hassett, Andrew Sutherland, and John Voight).

- **Number theory informed by computation**, Park City Mathematics Institute summer school, July 26–30, 2021, co-organizer with Jennifer Balakrishnan and Akshay Venkatesh.

- **Explicit methods in number theory**, an Oberwolfach workshop, co-organized with Karim Belabas and Fernando Rodriguez–Villegas, July 18–24, 2021.

- **Skorobogatov 60**, co-organized with Timothy Browning, Jean-Louis Colliot-Thélène, and David Harari, Institut Henri Poincaré, November 3-5, 2021.

- **Joint International Meeting of the American Mathematical Society, the Société Mathématique de France, and the European Mathematical Society**, Grenoble, France, July 18-22, 2022 (chair).

- **Number theory informed by computation**, Park City Mathematics Institute, July 17–August 6, 2022, co-organizer with Jennifer Balakrishnan and Akshay Venkatesh.

- **Arithmetic geometry informed by computation**, an AMS special session at the Joint Mathematics Meetings in Boston, January 4 and 5, 2023, co-organizer with Jennifer Balakrishnan and Andrew Sutherland.

- **Simons Collaboration on Arithmetic Geometry, Number Theory, and Computation Annual Meeting 2023**, Simons Foundation, January 11–12, 2023, co-organizer with Jennifer Balakrishnan, Noam Elkies, Brendan Hassett, Andrew Sutherland, and John Voight.

## SERVICE TO MIT

- **Presidential Committee for Distinguished Fellowships**, 2023–2027.

- **Office of Minority Education Faculty Advisory Committee**, 2021–.

- **Department of Athletics, Physical Education, and Recreation Advisory Board**, 2017–2020.

- **Pure Mathematics Committee** (hiring), 2008–2015 and 2016–.

- **Mathematics Department Nominations Committee**, 2008–2015 and 2016– (chair 2017–).

- **Mathematics Department Teaching Assignment Area Captain for Logic**, 2008–.

- **Mathematics Department Education Committee**, 2008–2009 and 2016–

- **Mathematics Major Advisor**, 2009–.

- **First-Year Advisor**, 2013–2015, 2016–2017, 2019–.

- **Mathematics Council** (hiring), 2013–2015, 2016–17, and 2018–19.
- **Mathematics Department Executive Committee**, 2009–2015.
- **Mathematics Department Committee on Graduate Admissions**, 2008–2015.
- **Committee on Graduate Admissions**, 2012–2013.
- **Mathematics Department Graduate Co-chair**, 2009–2012.
- **Task Force on Improving Graduate Admissions Processes**, 2011.

## SERVICE TO THE UNIVERSITY OF CALIFORNIA

- **Mathematics Department Vice Chair for Undergraduate Affairs**, 2006–2008.
- **Mathematics Department Calculus and Course Committee**, chair 2006–2007.
- **Mathematics Department Preliminary Examination Committee**, 1998–2007 (chair 2002–2007).
- **Academic Senate Committee on Computing and Communications**, 2006–2008.
- **Academic Senate Committee on Prizes**, 2000–2006 (chair 2003–2006).
- **Mathematics Department Bowen Lectures Committee**, co-chair 2002–2004.
- **Mathematics Department Graduate Adviser**, 2000–2003.
- **Mathematics Department Chair Selection Committee**, 1999 and 2002.
- **Mathematics Department Non-Major Undergraduate Adviser**, 1999–2001.
- **various ad hoc committees**, including the **Hellman Family Faculty Fund Panel**.

## OTHER PROFESSIONAL EXPERIENCE

- **Center for Communications Research**, Research on sorting and other mathematical algorithms.
- **Lucent Technologies** (6/96–7/96), Research in probabilistic packing and reservation under E. G. Coffman, Jr.
- **AT&T** (6/96–7/96, 5/94–8/94, 5/92–8/92, and 7/87–9/87) Research in combinatorics and number theory under Andrew M. Odlyzko.
- **University of Minnesota at Duluth** (7/88–9/88) Research on combinatorial problems under Joseph A. Gallian.
- **Mathematical Association of America** (6/88–7/88 and 6/87–7/87) Assistant at the Math Olympiad Program, under Cecil Rousseau.

## OTHER PROFESSIONAL ACTIVITIES

- **AMS Leroy P. Steele Prize Selection Committee**, 2024–2027.
- **AMS Frank Nelson Cole Prize Selection Committee**, 2025–2026.
- **American Academy of Arts and Sciences Membership Panel for Mathematics, Applied Mathematics, and Statistics**, 2023–.
- **SASTRA Ramanujan Prize Committee**, 2023–2025.
- **AMS Colloquium Lecture Committee**, 2022–2025. Chair during 2022–2023.

- **ICM Algebraic and Complex Geometry panel**, 2022.
- **AMS Current Events Bulletin Committee**, 2019–2021.
- **International Consortium of Chinese Mathematicians best paper award**, global committee member, 2017, 2018, 2019, 2020, 2021.
- **AMS Graduate Studies in Mathematics Editorial Committee**, 2018–2022.
- **AMS Nominating Committee**, 2017–2019.
- **AMS Committee to Select the Winner of the E. H. Moore Research Article Prize**, 2012–2018 (chair 2014–2016).
- **AMS Centennial Fellowship Committee**, 2015–2017.
- **Girls' Angle Advisory Board**, 2009–.
- **Museum of Mathematics Advisory Council**, 2008–.
- **Arizona Winter School**, co-PI 2002–2006, Advisory Board 2006–.
- **MAA Committee on the Putnam Prize Competition**, 2008, 2009, 2010.
- **AMS-MSRI Math Circle Library Advisory Board**, 2007–2016.
- **Mathematical Reviews**, reviewer, 2006–2007.
- **Berkeley Math Circle**, 1998–2008.
- **Zentralblatt für Mathematik und ihre Grenzgebiete**, reviewer, 2001–2002.
- **Committee on American Mathematics Competitions**, 1989–2003 (duties included submitting and reviewing problems for the U. S. A. Mathematical Olympiad).
- **Bay Area Mathematical Olympiad committee**, 1998–2001.
- **American Mathematical Monthly Problem Section**, reviewer, 1996–1999.

## PUBLICATIONS

1. Brauer–Manin obstructions requiring arbitrarily many Brauer classes, with J. Berg, C. Pagano, M. Stoll, N. Triantafillou, B. Viray, and I. Vogt, *Bull. London Math. Soc.* **56** (2024), no. 5, 1587-1604, `https://doi.org/10.1112/blms.12999`

2. The proportion of derangements characterizes the symmetric and alternating groups, with K. Slavov, *Bull. Lond. Math. Soc.* **54** (2022), no. 4, 1439–1447, `https://doi.org/10.1112/blms.12639`

3. The local-global principle for integral points on stacky curves, with M. Bhargava, *J. Alg. Geom.* **31** (2022), no. 4, 773–782, `https://doi.org/10.1090/jag/796`

4. Introduction to Drinfeld modules, pp. 167–186 in: *Arithmetic, Geometry, Cryptography, and Coding Theory* (edited by S. Anni, V. Karemaker, and E. Lorenzo Garcia), *Contemporary Math.* **779** (2022), Amer. Math. Soc., `https://doi.org/10.1090/conm/779/15675`

5. The exceptional locus in the Bertini irreducibility theorem for a morphism, with K. Slavov, *IMRN* **2022** (2022), no. 6, 4503–4513, `https://doi.org/10.1093/imrn/rnaa182`

6. Research seminars: a new hope, with E. Costa, D. Roe, and A. Sutherland, pp. 113–115 in: *Math in the time of Corona*, Math. Online First Collect., Springer, 2021, `https://doi.org/10.1007/16618_2020_21`

7. *Arithmetic geometry, number theory, and computation*, edited with J. Balakrishnan, N. Elkies, B. Hassett, A. Sutherland, and J. Voight, Simons Symposia, Springer, 2021, `https://doi.org/10.1007/978-3-030-80914-0`

8. The $S$-integral points on the projective line minus three points via finite covers and Skolem's method, pp. 583–587 in *Arithmetic Geometry, Number Theory, and Computation*, Simons Symposia, Springer, 2021, `https://doi.org/10.1007/978-3-030-80914-0_21`

9. Lattices in Tate modules, with S. Rybakov, *Proc. Nat. Acad. Sciences* **118** (49) e2113201118, `https://doi.org/10.1073/pnas.2113201118`

10. Linear independence in linear systems on elliptic curves, with B. Brock, B. Jordan, A. Scholl, and J. Wetherell, *Comment. Math. Helv.* **96** (2021), no. 2, 199–213. `https://doi.org/10.4171/CMH/511`

11. A $p$-adic approach to rational points on curves, *Bull. Amer. Math. Soc.* **58** (2021), no. 1, 45–56. `https://doi.org/10.1090/bull/1707`

12. The analytic class number formula for 1-dimensional affine schemes, with B. Jordan, *Bull. London Math. Soc.* **52** (2020), no. 5, 793–806. `https://doi.org/10.1112/blms.12357`

13. Gonality of dynatomic curves and strong uniform boundedness of preperiodic points, with J. Doyle, *Compositio Math.* **156** (2020), no. 4, 733–743. `https://doi.org/10.1112/S0010437X20007022`

14. Statistics of $K$-groups modulo $p$ for the ring of integers of a varying quadratic number field, with B. Jordan, Z. Klagsbrun, C. Skinner, Y. Zaytman, *Tunisian J. Math.* **2** (2020), no. 2, 287–307. `https://doi.org/10.2140/tunis.2020.2.287`

15. A heuristic for boundedness of ranks of elliptic curves, with J. Park, J. Voight, and M. Wood, *J. Europ. Math. Soc.* **21** (2019), 2859–2903. `https://doi.org/10.4171/JEMS/893`

16. Why all rings should have a 1, *Math. Magazine* **92** (2019), no. 1, 58–62.

17. Using zeta functions to factor polynomials over finite fields, pp. 141–147 in: *Arithmetic, geometry, cryptography, and coding theory*, edited by Y. Aubry, E. Howe, and C. Ritzenthaler, *Contemporary Math.* **722** (2019), American Math. Soc.

18. Heuristics for the arithmetic of elliptic curves, pp. 399-414 in: Proceedings of the International Congress of Mathematicians—Rio de Janeiro 2018. Vol. II. Invited lectures, World Sci. Publ., 2019. `https://doi.org/10.1142/11060`

19. Machine-assisted proofs, with J. Davenport, J. Maynard, H. Helfgott, P. H. Tiep, and L. Cruz-Filipe, pp. 1085–1110 in: Proceedings of the International Congress of Mathematicians—Rio de Janeiro 2018. Vol. I. Plenary lectures, World Sci. Publ., 2019. `https://doi.org/10.1142/11060`

20. Local arboreal representations, with J. Anderson, S. Hamblen, and L. Walton, *IMRN* **2018**, no. 19, 5974–5994.

21. Abelian varieties isogenous to a power of an elliptic curve, with B. Jordan, A. Keeton, E. Rains, N. Shepherd-Barron, and J. Tate, *Compositio Math.* **154** (2018), no. 5, 934–959. `https://doi.org/10.1112/S0010437X17007990`

22. A computable functor from graphs to fields, with R. Miller, H. Schoutens, and A. Shlapentokh, *J. Symbolic Logic* **83** (2018), no. 1, 326–348.

23. *Rational points on varieties*, Graduate Studies in Mathematics **186**, Amer. Math. Soc., Providence, 2017.[1] `https://doi.org/10.1090/gsm/186`

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[1]Awarded the 2023 Doob Prize.

24. Automorphisms of Harbater–Katz–Gabber curves, with F. Bleher, T. Chinburg, and P. Symonds, *Math. Annalen* **368** (2017), no. 1, 811–836. `https://doi.org/10.1007/s00208-016-1490-2`

25. Galois points on varieties, with M. Jarden, *J. Ramanujan Math. Soc.* **31** (2016), no. 2, 189–194.

26. Generalized explicit descent and its application to curves of genus 3, with N. Bruin and M. Stoll, *Forum Math. Sigma* **4** (2016), e6, 80 pages.

27. The work of the 2014 Fields Medalists, with W. de Melo, J. Quastel, and A. Zorich, *Notices Amer. Math. Soc.* **62** (2015), no. 11, 1335–1349.

28. Bertini irreducibility theorems over finite fields, with F. Charles, *J. Amer. Math. Soc.* **29** (2016), no. 1, 81–94. Erratum in *J. Amer. Math. Soc.* **32** (2019), no. 2, 605–607.

29. Modeling the distribution of Selmer groups, Shafarevich–Tate groups, and ranks of elliptic curves, with M. Bhargava, D. Kane, H. Lenstra, and E. Rains, *Cambridge J. Math.* **3** (2015), no. 3, 275–321.

30. Computing Néron–Severi groups and cycle class groups, with D. Testa and R. van Luijk, *Compositio Math.* **151** (2015), 713–734.

31. Berkovich spaces embed in Euclidean spaces, with E. Hrushovski and F. Loeser, *L'Enseignement Math.* **60** (2014), no. 3-4, 273–292.

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