Anand Deopurkar | Curriculum Vitae

Mathematical Sciences Institute, The Australian National University

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Positions

Australian National University — **Canberra, Australia**
Lecturer — *2018–*

University of Georgia — **Athens, GA**
Assistant Professor (Limited Term) — *2016–2017*

Columbia University — **New York, NY**
J. F. Ritt Assistant Professor — *2012–2016*

Education

Harvard University — **Cambridge, MA**
Ph.D., Advisor: Joseph Harris — *2008–2012*

Massachusetts Institute of Technology (MIT) — **Cambridge, MA**
S.B., Mathematics with Computer Science — *2004–2008*

Publications

- Anticanonical tropical cubic del Pezzos contain exactly 27 lines (with María Angélica Cueto).
- Ramification divisors of general projections (with Anand Patel, Eduard Duryev).
- Stable log surfaces, admissible covers, and canonical curves of genus 4 (with Changho Han).
- Vector bundles and finite covers (with Anand Patel).
  Submitted.
- Syzygy divisors on Hurwitz spaces (with Anand Patel).
  Contemporary Mathematics, vol. 703, 209–222, 2018.
- The canonical syzygy conjecture for ribbons.
  Mathematische Zeitschrift, 288(3), 1157–1164, 2018.
- Covers of stacky curves and limits of plane quintics.
  Transactions of the AMS, 371, 549–588.
- The Picard rank conjecture for the Hurwitz spaces of degree up to five (with Anand Patel).
  Algebra and Number Theory, 9(2):459–492, 2015.
- Groebner techniques for ribbons (with Maksym Fedorchuk, David Swinarski).
  Albanian Journal of Mathematics, 8(1):55–70, 2014.
- Toward GIT stability of syzygies of canonical curves (with Maksym Fedorchuk, David Swinarski).
  Algebraic Geometry (Foundation Compositio Mathematica), 3:1–22, 2016.
- Class of the Hodge eigenbundle using orbifold Riemann-Roch.
  Appendix to Cyclic covering morphisms on $\overline{M}_{0,n}$ by Maksym Fedorchuk.

- Sharp slope bounds for sweeping families of trigonal curves (with Anand Patel). *Mathematical Research Letters, 20(3):868–884, 2013*.
- Modular compactifications of the space of marked trigonal curves. *Advances in Mathematics, 248(0):96–154, 2013*.
- Compactifications of Hurwitz spaces. *International Mathematical Research Notices, 2014(14):3863–3911, 2013*.
- Alternate compactifications of Hurwitz spaces. *Thesis, Harvard, 2012*.

Grants and awards

- Discovery Early Career Researcher Award (DECRA), 2018–2021. *Funded by the Australian Research Council.*
- AMS-Simons Travel Grant, 2016–2018.
- American Institute of Mathematics Workshop Funding (with Maksym Fedorchuk, Ian Morrison, Xiaowei Wang), 2016.
- Award for excellence in teaching, 2014. *Columbia departmental award.*
- Jon A. Bucsela prize, 2006. *MIT departmental award given to the top graduating mathematics major.*
- Rogers prize, 2006. *MIT departmental award for summer research.*
- William Lowell Putnam competition, 2004 (Rank 16–25), 2005 (Honorable mention), 2007 (Honorable mention).
- International Mathematical Olympiad, 2004 (Silver), 2003 (Bronze).

Teaching

At the University of Georgia

- Math 1113 (Precalculus), Fall 2017.
- Math 8320 (Algebraic curves), Fall 2017.
- Math 2260 (Calculus 2 for Science and Engineering), Spring 2017.
- Math 2250 (Calculus 1 for Science and Engineering), Fall 2016.

At Columbia University

- Analysis and optimization, Spring 2016. *A course about linear and non-linear optimization methods.*
- Young tableaux in algebra and geometry, Fall 2015. *Undergraduate seminar based on Fulton's book Young Tableaux.*
- Calculus 1, Spring 2015.
- Moduli of curves, Fall 2014. *Graduate (topics) course in algebraic geometry. The webpage has most of the course notes.*
- Calculus 1, Spring 2014.
- Modern algebra 2, Spring 2014. *Rings, fields, and Galois theory.*
- Modern algebra 1, Fall 2013. *Group theory.*
- Calculus 3, Spring 2013.
- Calculus 2, Fall 2012.

At Harvard University

- Linear algebra, 2012.
- Algebraic curves, 2011. *Course assistant for Joe Harris.*
- Calculus 2, 2010.
- Calculus 1, 2009.

Invited Talks and Presentations

In conferences or workshops

- Workshop on Triangulated Categories in Geometry and Representation Theory, Sydney, 2019. *Groups, spherical twists, and stability conditions (with Asilata Bapat and Anthony Licata)*.
- Character Varieties and Topological Quantum Field Theory, Auckland, New Zealand, 2018. *Geometry of Hurwitz spaces*.
- Number Theory Session at AustMS 2018, Adelaide, 2018. *On the geometric Steinitz problem*.
- Algebraic surfaces and related topics, Xiamen, China, 2018. *Moduli of almost K3 log surfaces and curves of genus 4*.
- Workshop on Algebraic Geometry, Approximation, and Optimization, MATRIX, Creswick, Vic, 2018. *Quadrature and algebraic geometry*.
- Workshop on Topics in Algebraic Geometry, University of North Carolina, Chapel Hill, NC, 2017. *Vector bundles and finite covers*.
- Conference on Moduli and Birational Geometry, Korea, 2016. *Vector bundles and finite covers*.
- Workshop on Cycles on moduli spaces, Geometric Invariant Theory, and Dynamics, ICERM, Brown University, 2016. *Cycles on Hurwitz spaces*.
- Joint mathematics meetings, Seattle, WA (Higher genus curves and fibrations of higher genus curves in mathematical physics and arithmetic geometry II), 2016. *Picard groups of Hurwitz spaces*.
- Joint mathematics meetings, Seattle, WA (Moduli spaces in algebraic geometry I), 2016. *Limits of plane quintics via covers of stacky curves*.
- BC-Northeastern algebraic geometry conference, Boston, MA, 2015. *Limits of plane quintics via covers of stacky curves*.
- SIAM applied algebraic geometry conference, Daejeon, Korea, 2015. *Syzygies of canonical curves and the geometry of* $\overline{M}_g$.
- Mathematisches Forschungsinstitut Oberwolfach, Germany, 2015. *GIT stability of syzygies of curves (mini talk)*..
- Conference on moduli and birational geometry, Postech, Pohang, Korea, 2013. *Towards GIT stability of syzygies of canonical curves*.

In seminars

- Indian Institute of Science, Bengaluru, India, 2018. *What are ribbons and what do they tell us about Riemann surfaces*.
- Monash University, Melbourne, Vic, 2018. *What are ribbons and what do they tell us about Riemann surfaces*.
- Algebra and topology seminar, ANU, Canberra, ACT, 2018. *On the critical loci of finite maps*.
- University of Georgia, Athens, GA, 2017. *Vector bundles and finite covers*.
- Indian Institute of Science Education and Research, Pune, India, 2017. *Quivers and their representations*.

- Emory University, Atlanta, GA, 2017. *Vector bundles and finite covers*.
- Indian Institute of Science Education and Research (IISER), Pune, 2016. *Vector bundles and finite covers*.
- University of South Carolina, Columbia, SC, 2016. *Ribbons and Green's conjecture*.
- University of Georgia, Algebraic Geometry Seminar, 2016. *Ribbons and Green's conjecture*.
- University of Georgia, Oberseminar in Algebra, Geometry, and Number Theory, 2016. *The algebra of canonical curves and the geometry of their moduli space*.
- Purdue University, West Lafayette, IN, 2015. *Syzygies, GIT, and the moduli space of curves*.
- Ohio State University, Columbus, OH, 2015. *Limits of plane curves via stacky branched covers*.
- Harvard/MIT, Cambridge, MA, 2015. *Syzygies, GIT, and the log MMP for* $\overline{M}_g$.
- Courant Institute, New York University, New York, NY, 2015. *Picard groups of Hurwitz spaces*.
- Indian Institute for Science Research and Education, Pune, India, 2015. *The birational geometry of* $\overline{M}_g$.
- Stony Brook University, Stony Brook, NY, 2015. *Syzygies of canonical curves and birational geometry of* $\overline{M}_g$.
- Yale University, New Haven, CT, 2014. *GIT stability of syzygies of canonical curves*.
- Boston College, Boston, MA, 2014. *Toward GIT stability of syzygies of canonical curves*.
- AMS sectional meeting, Philadelphia, PA (Geometry of algebraic varieties), 2013. *Toward GIT stability of syzygies of canonical curves*.
- Stanford University, Palo Alto, CA, 2013. *Alternate compactifications of Hurwitz spaces*.
- Princeton University, Princeton, NJ, 2013. *Compactifying spaces of branched covers*.
- Rice University, Houston, TX, 2012. *Alternate compactifications of Hurwitz spaces*.
- Harvard/MIT, Cambridge, MA, 2011. *Compactifications of Hurwitz spaces*.
- Columbia University, New York, NY, 2011. *Compactifications of Hurwitz spaces*.
- Stony Brook University, Stony Brook, NY, 2011. *Compactifications of Hurwitz spaces*.
- Brown University, Providence, RI, 2011. *Compactifications of Hurwitz spaces*.

Service

- Refereed for the Journal of the EMS, Algebra and Number Theory, Crelle, Manuscripta mathematica, and Advances in geometry.
- Co-organized the workshop "Stability and moduli spaces" at the American Institute of Mathematics. January 2017
- Co-organized the Summer Workshop in Algebraic Geometry at the University of Georgia. August 2016
- Organized the Fairly Informal Reading Seminar and Tea (FIRST) at the University of Georgia. Fall 2016
- Co-organized the graduate student algebraic geometry seminar at Columbia. Spring 2016
- Conducted Putnam preparation sessions at Columbia. Fall 2015
- Supervised an undergraduate independent reading course ("Generatingfunctionology") at Columbia. Fall 2015

- Gave expository sessions for graduate students in the "Workshop on birational geometry and stability of moduli stacks and spaces of curves" in Hanoi, Vietnam. January 2014
- Served on the thesis defense committees of Natasha Potashnik, Zachary Maddock, and Xuanyu Pan at Columbia.
- Co-organized the poster session at AGNES at Boston College. 2013
- Organized the student algebraic geometry seminar at Harvard/MIT. 2010, 2011

References

- **Joseph Harris**
  Harvard University
  1 Oxford Street
  Cambridge, MA 02139, USA.
  Email: harris@math.harvard.edu
  Phone: (617) 495-2171.

- **Brendan Hassett**
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  151 Thayer Street
  Providence, RI 02912, USA.
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  Cambridge MA 02142, USA.
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Teaching

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  Columbia University
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  New York, NY 10027, USA.
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