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 and pre-prints

- The Thurston compactification of the space of stability conditions: the A_2 case (with Asilata Bapat, Anthony Licata).
  In preparation.
- Anticanonical tropical cubic del Pezzos contain exactly 27 lines (with María Angélica Cueto).
  Pre-print, arXiv:1906.08196.
- Ramification divisors of general projections (with Anand Patel, Eduard Duryev).
  Pre-print, arXiv:1901.01513.
- Stable log surfaces, admissible covers, and canonical curves of genus 4 (with Changho Han).
  Transactions of the AMS, to appear.
- Vector bundles and finite covers (with Anand Patel).
  Pre-print, arXiv:1608.01711.
- 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 Australian National University

- Algebraic Geometry (Algebra 3), Term 2, 2019.
- Reading course on Elliptic curves and modular forms (Koblitz), Summer, 2018–2019.
- Special topics course on Computational Polynomial Algebra (with Markus Hegland), Term 2, 2018.
- Reading course on Algebaric curves and Riemann surfaces (Miranda), Term 1, 2018.

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, Journal of Differenital Geometry, Journal of Algebraic Geometry, Annales scientifiques de l'École normale supérieure, Algebra and Number Theory, Crelle, Manuscripta mathematica, Advances in geometry, et cetera.
- 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**
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  Phone: (617) 495-2171.

- **Brendan Hassett**
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  Providence, RI 02912, USA.
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Teaching

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