Anand Deopurkar | Curriculum Vitae
Mathematical Sciences Institute, The Australian National University

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Positions

Australian National University (ANU)	**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: some rank 2 cases* (with Asilata Bapat, Anthony Licata).
  Pre-print.

- *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.
  Funded by the American Mathematical Society and the Simons Foundation.

- American Institute of Mathematics Workshop Funding, 2016.
  Joint with Maksym Fedorchuk, Ian Morrison, Xiaowei Wang.

- Award for excellence in teaching, 2014.
  Departmental award at Columbia University.

- Jon A. Bucsela prize, 2006.
  Departmental award at MIT for the top graduating mathematics major.

- Rogers family prize, 2006.
  Departmental award at MIT for summer research.

- William Lowell Putnam competition, 2004 (Rank 16–25), 2005 (Honorable mention), 2007 (Honorable mention).

- International Mathematical Olympiad, 2004 (Silver), 2003 (Bronze).

Supervision

- Donghoon Shin, *Honours*, MSI, ANU, 2021, expected. (Joint with Danesh Jogia (Australian Signals Directorate)).

- Ben Leedom, *Honours*, MSI, ANU, 2020, expected.

- Diclehan Erdal, *Masters*, MSI, ANU, 2019.

- Adwait Sengar, *Masters*, MSI, ANU, 2019. (Joint with Uri Onn).

- Sean Caroll, *Summer Research Scholar*, MSI, ANU, 2018. (Joint with Asilata Bapat).

- Dhruva Kelkar, *Future Research Scholar*, MSI, ANU, 2019.

- Sridhar Venkatesh, *Future Research Scholar*, MSI, ANU, 2019.

- Kyle Broder, *Honours*, MSI, ANU, 2018. (Joint with Alex Isaev).

- Likun Yao, *Honours*, MSI, ANU, 2018. (Joint with Amnon Neeman).

Teaching

At the Australian National University...

- Algebraic Geometry (Algebra 3), 2019.

- Reading course on *Elliptic curves and modular forms* by Neil Koblitz, 2018–2019.

- Special topics course on Computational Polynomial Algebra (with Markus Hegland), 2018.

- Reading course on *Algebaric curves and Riemann surfaces* by Rick Miranda, 2018.

At the University of Georgia...
- Math 1113 (Precalculus), 2017.

- Math 8320 (Algebraic curves), 2017.

- Math 2260 (Calculus 2), 2017.

- Math 2250 (Calculus 1), 2016.

At Columbia University...
- Analysis and optimization, 2016.

- Young tableaux in algebra and geometry, 2015.

- Calculus 1, 2015.

- Moduli of curves, 2014.

- Calculus 1, 2014.

- Modern algebra 2, 2014.

- Modern algebra 1, 2013.

- Calculus 3, 2013.

- Calculus 2, 2012.

At Harvard University...
- Linear algebra, 2012.

- Algebraic curves (taching assistant), 2011.

- 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. (Part of a series 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 the Australian Mathematical Society's annual meeting (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, Institute for Computational and Experimental Researhc in Mathematics (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...

- University of California, San Diego, 2020.
  Apparent boundaries of projective varieties.

- 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 minimal model program 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 European Mathematical Society, Journal of Differenital Geometry, Journal of Algebraic Geometry, Annales Scientifiques de l'École Normale Supérieure, Algebra and Number Theory, Journal für die reine und angewandte Mathematik, manuscripta mathematica, Advances in Geometry, Mathematical Research Letters.*

- Review periodically for American Mathematical Society's *Mathematical Reviews.*

- Co-organizing the algebra and topology special year at the MSI at ANU 2022.

- Co-organizing the workshop *Trends in the classification of algebraic varieties and their sheaves* at the Banff International Research Station, Oaxaca, Mexico 2021.

- Serving on the thesis committee of Abhishek Bharadwaj at ANU 2020.

- Served on the *Future research talent* selection committee at the MSI at ANU 2019.

- Served on the director search committee at the MSI at ANU 2019.

- Served on the formal liaison committee at the MSI at ANU 2019.

- Served on the award committee for the *BH Neumann Prize* for best student talk in AustMS 2018.

- Conducted training sessions in algebraic geometry at the *D21 Workshop* at the Australian Signals Directorate 2018.

- Co-organised the workshop *Stability and moduli spaces* at the American Institute of Mathematics 2017.

- Co-organised the *Summer workshop in algebraic geometry* at the University of Georgia 2016.

- Organised the *Fairly informal reading seminar and tea (FIRST)* at the University of Georgia 2016.

- Co-organised the graduate student algebraic geometry seminar at Columbia University 2016.

- Conducted the Putnam competition preparation sessions at Columbia University 2015.

- Lectured in the *Workshop on birational geometry and stability of moduli stacks and spaces of curves* in Hanoi, Vietnam 2014.

- Served on the thesis committees of Natasha Potashnik, Zachary Maddock, and Xuanyu Pan at Columbia University 2012–2016.

- Co-organised the poster session at the *Algebraic Geometry North-Eastern Series (AGNES)* conference in Boston College 2013.

- Organised the student algebraic geometry seminar at Harvard/MIT 2010–2011.

References

- Joseph Harris, Harvard University.

- Brendan Hassett, Brown University.

- Johan de Jong, Columbia University.

- Davesh Maulik, MIT.

- Patrick Gallagher, Columbia University (Teaching).