

# Anand Deopurkar | Curriculum Vitae

Mathematical Sciences Institute, The Australian National University

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## Positions

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**Australian National University**

*Lecturer*

**Canberra, Australia**

*2018–*

**University of Georgia**

*Assistant Professor (Limited Term)*

**Athens, GA**

*2016–2017*

**Columbia University**

*J. F. Ritt Assistant Professor*

**New York, NY**

*2012–2016*

## Education

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**Harvard University**

*Ph.D., Advisor: Joseph Harris*

**Cambridge, MA**

*2008–2012*

**Massachusetts Institute of Technology (MIT)**

*S.B., Mathematics with Computer Science*

**Cambridge, MA**

*2004–2008*

## Publications and pre-prints

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- 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

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- 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

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- Donghoon Shin, *Honours*, MSI, ANU, 2021, expected. (Joint with Danesh Jokia (ASD)).
- Ben Leedom, *Honours*, MSI, ANU, 2020, expected.
- Diclehan Erdal, *Masters*, MSI, ANU, 2019.
- Adwait Sengar, *Masters*, MSI, ANU, 2019. (Joint with Uri Onn).
- Sean Carroll, *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

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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 *Algebraic 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

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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.....
- 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 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

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- Referee for the *Journal of the EMS*, *Journal of Differential 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*..
- Reviewer for American Mathematical Society's *Mathematical Reviews*..
- Co-organizer of the algebra and topology special year at the MSI at ANU 2022.
- Co-organizer for the workshop *Trends in the classification of algebraic varieties and their sheaves* at the Banff International Research Station, Oaxaca, Mexico 2021.
- Member of the thesis committee of Abhishek Bharadwaj at ANU 2020.
- Member of the *Future research talent* selection committee at the MSI at ANU 2019.
- Member of the director search committee at the MSI at ANU 2019.
- Member of the formal liaison committee at the MSI at ANU 2019.
- Member of the award committee for the *BH Neumann Prize* for best student talk in AustMS 2019.
- Co-organizer of the workshop *Stability and moduli spaces* at the American Institute of Mathematics 2017.
- Co-organizer of the *Summer workshop in algebraic geometry* at the University of Georgia 2016.
- Organizer of the *Fairly informal reading seminar and tea (FIRST)* at the University of Georgia 2016.
- Co-organizer of the graduate student algebraic geometry seminar at Columbia University 2016.
- Organizer and lecturer for the Putnam competition preparation sessions at Columbia University 2015.
- Lecturer in the *Workshop on birational geometry and stability of moduli stacks and spaces of curves* in Hanoi, Vietnam 2014.
- On the thesis committees of Natasha Potashnik, Zachary Maddock, and Xuanyu Pan at Columbia University 2012–2016.
- Co-organizer of the poster session at the *Algebraic Geometry North-Eastern Series (AGNES)* conference in Boston College 2013.
- Organizer of the student algebraic geometry seminar at Harvard/MIT 2010–2011.

## References

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Teaching.....

○ **Patrick Gallagher**

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