

# Angela GIBNEY

Curriculum Vitæ

---

Department of Mathematics, Rutgers University  
Hill Center for the Mathematical Sciences  
110 Frelinghuysen Rd.  
Piscataway, NJ 08854-8019  
[angela.gibney@gmail.com](mailto:angela.gibney@gmail.com)  
<http://angelagibney.org>

## Education

2000 Ph.D. Mathematics University of Texas, Austin  
1994 B.S Mathematics University of California, Santa Barbara  
1993-94 Mathematics Research Institute, The Netherlands (study abroad)  
1992 Budapest Semesters in Mathematics (study abroad)

## Employment

|             |                           |                            |
|-------------|---------------------------|----------------------------|
| 2017-       | Professor                 | Rutgers University         |
| 2017 -2017  | Professor                 | University of Georgia      |
| 2013 - 2017 | Associate Professor       | University of Georgia      |
| 2009-2013   | Assistant Professor       | University of Georgia      |
| 2004-08     | Assistant Professor       | University of Pennsylvania |
| 2003-04     | Gibbs Assistant Professor | Yale University            |
| 2000-03     | VIGRE Assistant Professor | University of Michigan     |

## Visiting Research Positions (with funding)

Feb, April 2009 Jumbo Semester in Algebraic Geometry MSRI, Berkeley

## Research Interests

Moduli of Curves and Generalizations; Vector Bundles on Curves and their Moduli;  
Vector Bundles of Conformal Blocks; Nef and Effective Cycles on Projective Varieties.

## Individual Research Grants: Principal Investigator

2016-19 National Science Foundation Grant DMS-1601909  
*Vector bundles of conformal blocks on  $\overline{\mathcal{M}}_{g,n}$*

2012-16 National Science Foundation Grant DMS-1201268  
*Conformal blocks and positive cycles on the moduli space of curves*

2005-09 National Science Foundation Grant DMS-0509319  
*The birational geometry of the moduli spaces of curves*

### **Conference Funding: Principal Investigator**

- 2015 National Science Foundation Grant DMS - 1500652  
*Bootcamp for the 2015 Algebraic Geometry Summer Research Institute;*
- 2015 National Security Agency - 141006  
*Bootcamp for the 2015 Algebraic Geometry Summer Research Institute;*
- 2011-15 National Science Foundation Grant DMS-1139200  
*The Georgia Algebraic Geometry Symposium;*
- 2010 National Science Foundation Grant DMS-1028536  
*Compact Moduli and Vector Bundles Conference; \$35,164*

### **External Funding: Co-Principal Investigator**

- 2015-18 National Science Foundation Grant DMS-1522813  
*The Georgia Algebraic Geometry Symposium;*
- 2014-19 National Science Foundation Grant DMS-1344994  
*Algebraic Geometry, Algebra, and Number Theory RTG Grant;*
- 2010-15 National Science Foundation VIGRE Grant DMS-0738586;

### **Internal Funding**

- 2017 UGA Office of the Vice President for Research Conference Grant,
- 2017 UGA President's Venture Fund Conference Grant,
- 2014 UGA Office of the Vice President for Research Conference Grant,
- 2014 UGA President's Venture Fund Conference Grant,
- 2012 UGA Office of the Vice President for Research Conference Grant,
- 2012 UGA President's Venture Fund Conference Grant,
- 2010 UGA Office of the Vice President for Research Conference Grant,
- 2010 UGA President's Venture Fund Conference Grant,

### **Other Honors and Awards**

- 2000 Clay Mathematics Institute, Liftoff Fellow
- 2000 American Association of University Women, Dissertation Fellowship, offered
- 2001 Outstanding Doctoral Dissertation Award, University of Texas at Austin
- 2006 Teaching Award, University of Pennsylvania

## Publications

1. *On finite generation of the section ring of the determinant of cohomology line bundle* (with P. Belkale), Transactions of the AMS, to appear  
<https://arxiv.org/abs/1606.08726>
2. *Scaling of conformal blocks and generalized theta functions over  $\overline{\mathcal{M}}_{g,n}$*  (with P. Belkale and A. Kazanova), Mathematische Zeitschrift, 1–27, 2016;  
<http://link.springer.com/article/10.1007/s00209-016-1682-1>
3. *Nonvanishing of conformal blocks divisors on  $\overline{\mathcal{M}}_{0,n}$*  (with P. Belkale and S. Mukhopadhyay), Transformation Groups, Volume 21, Issue 2, 329–353, 2016
4. *Vanishing and identities of conformal blocks divisors on  $\overline{\mathcal{M}}_{0,n}$*  (with P. Belkale and S. Mukhopadhyay), Algebraic Geometry, Volume 2, Issue 1, 62–90, 2015
5. *Higher level conformal blocks divisors on  $\overline{\mathcal{M}}_{0,n}$*  (with V. Alexeev and D. Swinarski) Proc. Edinb. Math. Soc. (2), Volume 57, Number 1, 7–30, 2014
6. *Veronese quotient models of  $\overline{\mathcal{M}}_{0,n}$  and conformal blocks* (with D. Jensen, H-B. Moon, and D. Swinarski) Michigan Math. J. Volume 62, Number 4, 721–751, 2013
7.  *$sl_n$  level 1 conformal blocks divisors on  $\overline{\mathcal{M}}_{0,n}$*  (with D. Swinarski, J. Stankewicz and M. Arap) Int. Math. Res. Not., Number 7, 1634–1680, 2012
8. *Lower and upper bounds for nef cones* (with D. Maclagan) Int. Math. Res. Not., Number 14, 3224–3255, 2012
9. *The cone of type A, level one conformal blocks divisors,* (with N. Giansiracusa) Adv. Math. Volume 231, Number 2, 798–814, 2012
10. *On extensions of the Torelli map* Geometry and arithmetic, EMS Ser. Congr. Rep., 125–136, 2012
11. *Equations for Chow and Hilbert Quotients* (with D. Maclagan), Algebra and Number Theory, Volume 4, Number 7, 855–885, 2010
12. *Numerical criteria for a divisor in  $\overline{\mathcal{M}}_g$  to be nef,* Compos. Math., Volume 145, Number 5, 1227–1248, 2009;

13. *Pointed trees of projective spaces*,  
(with L. Chen and D. Krashen)  
J. Algebraic Geom., Volume 18 , Number 3, 477–509, 2008
14. *Mori cones of moduli spaces of curves of small genus*,  
(with G. Farkas)  
Trans Amer Math Soc, Volume 355, Number 3, 1183–1199, 2003
15. *Towards the ample cone of  $\overline{\mathcal{M}}_{g,n}$* ,  
(with S. Keel, and I. Morrison)  
J. Amer Math Soc, Volume 15, Number 2, 273–294, 2002

### Editorial

16. *Surveys on Recent Developments in Algebraic Geometry*  
(editor, with I. Coskun, T. de Fernex, and M. Lieblich),  
Proc of Symposia in Pure Mathematics, American Math. Soc., Jul 2017
17. *Proceedings of the 2010 conference at the University of Georgia, Athens*,  
(editor, with V. Alexeev, E. Izadi, E. Looijenga, J. Kollár)  
Contemporary Mathematics, American Math. Soc., Volume: 564, 2011

### Preprints

18. *On higher Chern classes of vector bundles of conformal blocks*  
(with S. Mukhopadhyay), submitted, <https://arxiv.org/abs/1609.04887>

### Expository

19. *Conformal blocks divisors and the birational geometry of  $\overline{\mathcal{M}}_{g,n}$*   
Oberwolfach Reports, Moduli Spaces in Algebraic Geometry, 2013

## Service as a Conference Co-Organizer

- 2018 Algebraic Geometry Northeast Sectional, AGNES  
(with L. Borisov, A. Buch, and D. Krashen)
- 2017 The Georgia Algebraic Geometry Symposium  
(with V. Alexeev, B. Bakker, D. Krashen, and D. Lorenzini)
- 2016 Combinatorial Moduli Spaces and Intersection Theory, The Fields Institute  
(with D. Abramovich, I. Coskun, G. Smith, and M. Stillman)
- The Georgia Summer Workshop in Algebraic Geometry at UGA  
(with A. Deopurkar, J. Kass, and N. Tarasca)
- 2015 The graduate student 'Bootcamp' for the Algebraic Geometry Institute  
Salt Lake City, Utah, (with I. Coskun, T. DeFernex, and M. Lieblich)
- AWM Research Symposium, Special Session in Algebraic Geometry, UM  
(with L. Chen)
- 2014 The Georgia Algebraic Geometry Symposium  
(with V. Alexeev, N. Giansiracusa, and D. Krashen)
- 2013 The Georgia Algebraic Geometry Symposium  
(with V. Alexeev, E. Izadi, and D. Krashen)
- 2012 VIGRE Summer School and Georgia Algebraic Geometry Symposium  
(with V. Alexeev and E. Izadi, and D. Krashen)
- 2010 Mathematical Research Communities Workshop, Snowbird, Utah  
(with D. Abramovich, I. Coskun, J. McKernan and T. deFernex)
- The Compact Moduli and Vector Bundles Conference at UGA  
(with V. Alexeev and E. Izadi)
- 2009 The Connections for Women Workshop at MSRI  
(with D. Maclagan and J. Sidman)
- 2007 Combinatorial Algebraic Geometry, (AMS meeting, Hoboken, NJ)  
(with D. Maclagan)
- 2002 Curves and their Moduli, (AMS meeting, Ann Arbor, MI)  
(with G. Farkas and R. Lazarsfeld)

## Activities Promoting Elementary and High-School Education

- 2014, 16, 18 UGA MathCamp, organized 5 days of activities at UGA for high-school students  
A program for high school students that involved coordinating UGA undergrads, grad students, postdocs, and faculty. Co-organized with D. Krashen
- 2010-11 Mentoring and Advice for Talented High-school Students program, involving UGA grad students, and Co-organized with D. Krashen
- 2009-10 UGA Summer Stem Academy, lectures for high-school students
- 2009 Barrow Elementary School Career Day, presentation
- 2000-01 King/Chavez/Parks Workshop, activities for 7th graders from inner-city Detroit
- 1999-00 Saturday Morning Math Group, activities for highschool students in Austin, TX  
co-organizer <https://www.ma.utexas.edu/news/newsletter/Outreach/>.

## Activities Promoting Undergraduate Education (since 2010)

- 2014, 16 UGA MathCamp, Co-organized with D. Krashen
- 2011 UGA Math Club Talk
- 2010 Organized lunch and talk for students by David Saltman, director of IDA  
topic: Nonacademic Math Jobs in the Defense Industry
- 2010 UGA Math Club talk  
UGA Math Major Fair Presenter

## Activities Promoting Graduate Education

- 2016 RTG Summer Coordinator for the RTG grant  
Academic Year Coordinator for the RTG grant
- 2015 'Bootcamp' for the Algebraic Geometry Institute, Salt Lake City, Utah  
(Co-Organizer with I. Coskun, T. DeFernex, and M. Lieblich)  
Graduate Student Mock AMS Conference, UGA
- 2012 Algebraic Geometry Summer School at UGA (with V. Alexeev and D. Krashen)
- 2010 - 14 VIGRE Summer Program Coordinator  
Graduate Student Mock AMS Conference, UGA
- 2010-11 M.A.T.H. Students program,
- 2010 Organized lunch and talk for students by David Saltman, director IDA  
Topic: Nonacademic Math Jobs in the Defense Industry
- 2009 Connections for Women, Co-Organizer, with Diane Maclagan, MSRI
- 2007 Institute for Advanced Study, Women's program, Princeton, NJ
- 2005 mentor, 'Bootcamp', Summer Institute in Algebraic Geometry
- 2004 AMS Presentations By Young Researchers Conference,  
MRC Program, ed working group on moduli spaces, Snowbird, Utah
- 2002 Learning Stacks and Computational Methods through Problem Solving,  
University of Illinois at Urbana Champagne
- 1998-00 started and ran Junior Geometry At UT Austin (with D. Krashen)  
still running: <https://www.ma.utexas.edu/research/seminars.php>

### **Service on a Thesis Committee**

- 2017 Luca Schaffler, University of Georgia
- 2015 Xiayan Hu, PhD, University of Georgia
- 2011-17 Natalie Hobson, PhD, (PhD Advisor), University of Georgia
- 2011 Noah Giansiracusa, PhD, Brown University
- 2010-13 Gulden Cinar, Masters Degree, (Advisor), University of Georgia
- 2010 Paul Larsen, PhD, Humboldt University, Berlin
- 2008 David Swinarski, PhD, Columbia University
- 2005 Damiano Testa, PhD, MIT

### **Service as a Postdoctoral Advisor**

- 2018 Chiara Damiolini, Research advisor
- 2017-19 Nicola Tarasca, research advisor
- 2016-17 Anand Deopokur, research co-advisor with V. Alexeev  
Michael Schuster, research advisor
- 2015-16 Julian Rosen, teaching advisor
- 2013-16 Anna Kazanova, Research Advisor
- 2012-15 Amber Russell, teaching advisor
- 2011-13 Han-Bom Moon, Research Advisor
- 2008-11 David Swinarski, Research Co-Advisor with V. Alexeev

### **Other Advising (since 2009)**

- 2015-16 Academic Advisor for undergraduate students  
K. Boe, K. A. Hoyt, E. Quinche, and N. Mendrano
- 2014-15 Academic Advisor for under-graduate student Noemy Mendrano
- 2013-14 Preliminary Academic Advisor for graduate student Daniel McKenzie
- 2012-13 Academic Advisor for undergraduate students  
M. Edwards, E. T. LaPaquette, and A. McMillan  
Teaching mentor to Jacob Hicks
- 2011-12 Preliminary Advisor for graduate students  
Maren Turbow and Gulden Cinar  
Academic Advisor for undergraduate students  
E. T. LaPaquette, G. Mabon, A. McMillan, T. Purvis
- 2010-11 Teaching Mentor to graduate students  
Jacob Hicks and Joshua Wood  
Academic advisor for undergraduate students  
Devon Harvey and Brandy Seilre
- 2009-10 Academic Advisor for undergraduate student Elizabeth Wang

## Activities Benefitting Women and Girls in Mathematics

- 2018 speaker, Strength In Numbers, workshop, Queen's Univ., CA, May 11-12 (expected)  
speaker, Graduate workshop in Alg Geom for Women & Mathematicians of Minority Genders, Harvard/MIT, February 17-18
- 2017 EDGE (Enhancing Diversity in Graduate Education), mentor
- 2010-16 Co-Organizer AWM events at UGA
- 2015 AWM Research Symposium, Algebraic Geometry Special Session, (Co-Organizer with Linda Chen), University of Maryland
- 2009 Connections for Women Conference, MSRI (Co-Organizer, with Diane Maclagan)
- 2007 IAS Women's program, Women in Science Seminar Speaker, Princeton, NJ
- 2005 EDGE (Enhancing Diversity in Graduate Education), Follow Up Mentor  
Helped with *Algebraic Geometry, Symplectic Geometry and Theoretical Physics*: (organized by A. Grassi), University of Pennsylvania
- 2004-08 Co-Organizer (with A. Grassi) of AWM events at UPenn
- 2002 Expanding Your Horizons in Science and Engineering, presenter

## Departmental and University service

- AY 2016-17 Algebra Qualifying Exam, Personnel, University Council  
RTG Summer Coordinator (UGA)
- AY 2015-16 Personnel, University Council, RTG Academic Year Coordinator (UGA)
- AY 2014-15 University Council, VIGRE Co-director, RTG Summer Coordinator (UGA)
- AY 2013-14 Algebra Qualifying Exam Committee, Graduate, VIGRE Co-director (UGA)
- AY 2012-13 Algebra Qualifying Exam, Graduate, VIGRE Co-director (UGA)
- AY 2010-11 Algebra Qualifying Exam, Cantrell Lecture Series, Personnel, VIGRE Co-PI (UGA)
- AY 2006-07 Committee to increase number of math majors, Committee to write a VIGRE proposal (UPenn)
- AY 2005-06 Committee to write a VIGRE proposal, Mathematics Graduate Admissions Committee (UPenn)

## Other community service

- 2014-15 Member of the Mathematics Research Communities Advisory Board
- 2012-16 Served on various funding panels for NSF
- 2004-17 Refereed for various journals



## Teaching Experience, Courses taught

|          |           |  |   |
|----------|-----------|--|---|
| Michigan | 2000      | 116  | Calculus III  |
|          | 2001      | 216  | Introduction to Differential Equations                    |
|          |           | 731  | Topics in Algebraic Geometry (The Moduli Space of Curves) |
|          | 2002      | 115  | Calculus I  |
| 116      |           | Calculus III                                 |   |
| Yale     | 2003      | 480b   | Introduction to Algebraic Geometry                        |
|          | 2004      | 115a   | Calculus II   |
| Penn     | 2004      | 370  | Algebra I   |
|          | 2005      | 371  | Algebra II  |
|          |           | 520  | Graduate topics course (Moduli of stable maps)            |
|          | 2006      | 624  | Graduate algebraic geometry I                             |
|          | 2007      | 103  | Introduction to calculus                                  |
|          |           | 312/402                                      | Advanced linear algebra                                   |
|          |           | 625  | Graduate algebraic geometry II                            |
| UGA      | 2008      | 724  | Graduate topics course (Introduction to moduli spaces)    |
|          | 2009      | 2250   | Calculus I for Science and Engineering (2 sections)       |
|          |           | 2260   | Calculus II for Science and Engineering                   |
|          |           | 3000   | Linear Algebra  |
|          | 2010      | 8850   | Directed Collaborative Research (VRG)                     |
|          |           | 4000/6000                                    | Modern Algebra and Geometry I                             |
|          |           | 8330   | Topics in Algebraic Geometry (Toric Varieties)            |
|          | 2011      | 7005/9005                                    | Graduate Student Seminar (Mock AMS Conference)            |
|          |           | 2260   | Calculus II for Science and Engineering (2 sections)      |
|          |           | 7005/9005                                    | Graduate Student Seminar (Mock AMS Conference)            |
|          | 2012      | 8850   | Directed Collaborative Research (VRG, Spring and Fall)    |
|          |           | 8000   | Graduate Algebra  |
|          |           | 8850   | Directed Collaborative Research (VRG) (2 semesters)       |
|          | 2013      | 2250   | Calculus I for Science and Engineering (2 sections)       |
|          |           | 8850   | Directed Collaborative Research (VRG)                     |
|          | 2014      | 2260   | Calculus II for Science and Engineering (2 sections)      |
|          |           | 8850   | Directed Collaborative Research (VRG)                     |
|          |           | 8330   | Topics Alg Geometry (Quantum Cohomology)                  |
|          | 2015      | 9000   | Doctoral Research   |
|          |           | 2260   | Calculus II for Science and Engineering (2 sections)      |
|          |           | 8310   | Geometry of Schemes                                       |
|          |           | 8850   | Directed Collaborative Research (VRG)                     |
|          |           | 8800   | Directed Reading and/or Projects                          |
|          |           | 9000   | Doctoral Research   |
|          | 2016      | 2260   | Calculus II for Science and Engineering (2 sections)      |
|          |           | 8330   | Topics Alg Geometry (Conformal Blocks, Spring)            |
| 8330     |           | Topics Alg Geometry (Moduli of Curves, Fall) |   |
| 8800     |           | Directed Reading and/or Projects             |   |
| 2017     | 4010/6010 | Modern Alg and Geometry                      |   |
|          | 9000      | Doctoral Research                            |   |

**Lectures 2001–05 (15 talks); 2006–10 (12 talks); 2011–15 (30 talks)**

**Select talks since 2010**

- 2018 School on the Geometry of Moduli Spaces of Curves, Trieste, ITALIA (expected),  
Algebraic Geometry Seminars at Harvard/MIT, and Princeton
  
- 2017 Colloquium, and Undergraduate Colloquium, UPenn, September  
GAeL (Géométrie Algébrique en Liberté), Bath University, UK  
Texas Algebraic Geometry Symposium (TAGS), Rice U, TX,
  
- 2016 Canadian Maths Society Winter Meeting, “Comb. Alg. Geom”  
Colloquium at Cornell, UCI, UCLA, University of Oregon, OSU, and Rutgers  
Algebra Seminars at Penn, UCI and UCLA  
Intro Workshop, Comb Alg Geom Program, Fields, CA (2 invited lectures)  
American Institute of Mathematics, San Jose, CA  
Algebraic Cycles and Moduli, CRM, Université de Montreal, CA
  
- 2015 University of Maryland Colloquium  
The second annual MAAGC workshop, Philadelphia, PA  
Developments in Moduli and Geometric Invariant Theory, UNC
  
- 2014 Southern California Algebraic Geometry Seminar (SoCalAGS), USC  
Algebraic Geometry Seminar, Warwick University, Coventry, England  
Moduli and Automorphic Forms, Berlin, Germany  
New connections for recent PhDs, University of Washington
  
- 2013 Workshop on Moduli Spaces in Algebraic Geometry, Oberwolfach, Germany  
Universita Sapienza, Rome, Italy (5 invited lectures)  
Algebraic Geometry Northeast Sectional Meeting (AGNES), Yale University
  
- 2012 Columbia University, Algebraic Geometry Seminar, New York, NY
  
- 2011 Institut Fourier, Université Grenoble I, France  
Warwick Mathematics Institute, Coventry, England  
Imperial College London MAGIC Seminar, England  
Texas Algebraic Geometry Symposium (TAGS), Rice, TX  
Workshop on Moduli and Birational Geometry, Pohang, Korea
  
- 2010 Oberwolfach Moduli Spaces in Algebraic Geometry  
Workshop on Moduli and Birational Geometry, Postech University, Korea,  
Algebraic Geometry Seminar, Humboldt University, Berlin, Germany