

Andrew Putman

Curriculum Vitae
April 2017

Department of Mathematics
University of Notre Dame
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Notre Dame, IN 46556

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Employment

- 2016– **University of Notre Dame**, Notre Dame, IN
Professor
- 2010–2016 **Rice University**, Houston, TX
Associate Professor, 2013–2016
Assistant Professor, 2010–2013
- 2007–2010 **Massachusetts Institute of Technology**, Cambridge, MA
C. L. E. Moore Instructor
- 2007 (Fall) **Mathematical Sciences Research Institute**, Berkeley, CA
Postdoctoral fellow

Education

- 2007 **University of Chicago**, Chicago, IL
Ph.D. in Mathematics (advisor: Benson Farb)
- 2002 **Rice University**, Houston, TX
B.A. in Mathematics

Awards

- 2018 Plenary address at AMS Fall Central Sectional Meeting
- 2014, Nov Séminaire Bourbaki talk by Djament, “La propriété noethérienne pour les foncteurs entre espaces vectoriels [d’après A. Putman, S. Sam et A. Snowden]”
- 2013–2015 Sloan Research Fellowship
- 2007 NSF Postdoctoral Fellowship (awarded but declined)
- 2007 Finalist for the AIM 5-year fellowship

Grants

- 2017–2018 NSF conference grant DMS-1664688 (pi, \$25,000)
Braids in Algebra, Geometry, and Topology
- 2013–2018 NSF grants DMS-1255350 & DMS-1737434 (pi, \$515,385)
CAREER: The topology of infinite groups
- 2013 NSF conference grant DMS-1308209 (co-pi, \$18,420)
3-Manifolds: Heegaard Splittings, the Curve Complex, and Hyperbolic Geometry
- 2010–2013 NSF grant DMS-1005318 (pi, \$136,969)
The algebra and topology of the mapping class group

Published Papers (available at <http://www.math.rice.edu/~andyp/papers/>)

29. A. Putman, S. Sam
Representation stability and finite linear groups
to appear in Duke Math. J.
28. M. Day, A. Putman
On the second homology group of the Torelli subgroup of $\text{Aut}(F_n)$
to appear in Geom. Topol.
27. T. Church, A. Putman
The codimension-one cohomology of $SL_n\mathbb{Z}$
Geom. Topol. 21 (2017), no. 2, 999–1032.
26. M. Day, A. Putman
A Birman exact sequence for the Torelli subgroup of $\text{Aut}(F_n)$
Internat. J. Algebra Comput. 26 (2016), no. 3, 585–617.

25. A. Putman
The Johnson homomorphism and its kernel
to appear in J. Reine Angew. Math.
24. A. Putman
Stability in the homology of congruence subgroups
Invent. Math. 202 (2015), no. 3, 987–1027.
23. J. Malestein, A. Putman
Pseudo-Anosov dilatations and the Johnson filtration
Groups Geom. Dyn. 10 (2016), no. 2, 771–793.
22. T. Church, A. Putman
Generating the Johnson filtration
Geom. Topol. 19 (2015), 2217–2255.
21. T. Brendle, D. Margalit, A. Putman
Generators for the hyperelliptic Torelli group and the kernel of the Burau representation at $t = -1$
Invent. Math. 200 (2015), no. 1, 263–310.
20. T. Church, B. Farb, A. Putman
A stability conjecture for the unstable cohomology of $SL_n\mathbb{Z}$, the mapping class group, and $Aut(F_n)$
in *Algebraic Topology: Applications and New Directions*, 55–70, Contemp. Math., 620, Amer. Math. Soc., Providence, RI.
19. A. Putman, B. Wieland
Abelian quotients of subgroups of the mapping class group and higher Prym representations
J. London Math. Soc. (2) 88 (2013), no. 1, 79–96.
18. M. Day, A. Putman
The complex of partial bases for F_n and finite generation of the Torelli subgroup of $Aut(F_n)$
Geom. Dedicata 164 (2013), 139–153.
17. M. Day, A. Putman
A Birman exact sequence for $Aut(F_n)$
Adv. Math. 231 (2012), 243–275
16. A. Putman
Small generating sets for the Torelli group
Geom. Topol. 16 (2012), 111–125.
15. A. Putman
The second rational homology group of the moduli space of curves with level structures
Adv. Math. 229 (2012), 1205–1234.
14. T. Church, B. Farb, A. Putman
The rational cohomology of the mapping class group vanishes in the virtual cohomological dimension
Int. Math. Res. Not. (2012), no. 21, 5025–5030.
13. A. Putman
The Torelli group and congruence subgroups of the mapping class group
in *Moduli spaces of Riemann surfaces (Park City, UT, 2011)*, 167–194, IAS/Park City Math. Ser., 20 Amer. Math. Soc., Providence, RI.
12. A. Putman
The Picard group of the moduli space of curves with level structures
Duke Math. J. 161 (2012), no. 4, 623–674.
11. A. Putman
Abelian covers of surfaces and the homology of the level L mapping class group
J. Topol. Anal. 3 (2011), no. 3, 265–306.
10. A. Putman
Obtaining presentations from group actions without making choices
Algebr. Geom. Topol. 11 (2011), 1737–1766.

9. N. Broaddus, B. Farb, A. Putman
Irreducible Sp -representations and subgroup distortion in the mapping class group
Comment. Math. Helv. 86 (2011), 537–556.
8. J. Malestein, A. Putman
On the self-intersections of curves deep in the lower central series of a surface group
Geom. Dedicata. 149 (2010), no. 1, 73–84.
7. A. Putman
A note on the abelianizations of finite-index subgroups of the mapping class group
Proc. Amer. Math. Soc. 138 (2010), no. 2, 753–758.
6. A. Putman
An infinite presentation of the Torelli group
Geom. Funct. Anal. 19 (2009), no. 2, 591–643.
5. J. Birman, D. Johnson, A. Putman
Symplectic Heegaard splittings and linked abelian groups
in *Groups of Diffeomorphisms*, Adv. Stud. Pure Math., 52, Math. Soc. Japan, Tokyo, 135–220.
4. A. Putman
A note on the connectivity of certain complexes associated to surfaces
Enseign. Math. (2) 54 (2008), no. 3-4, 287–301.
3. N. Broaddus, B. Farb, A. Putman
The Casson invariant and the word metric on the Torelli group
C. R. Math. Acad. Sci. Paris 345 (2007), no. 8, 449–452.
2. A. Putman
Cutting and pasting in the Torelli group
Geom. Topol. 11 (2007), 829–865.
1. A. Putman
The rationality of sol manifolds
J. Algebra 304 (2006), no. 1, 190–215.

Submitted Papers (available at <http://www.math.rice.edu/~andyp/papers/>)

4. A. Ash, A. Putman, S. Sam
Homological vanishing for the Steinberg representation
2017 preprint.
3. T. Church, A. Putman
Generating the Johnson filtration II: finite generation
2017 preprint.
2. N. Fullarton, A. Putman
The high-dimensional cohomology of the moduli space of curves with level structures
2016 preprint.
1. T. Church, B. Farb, A. Putman
Integrality in the Steinberg module and the top-dimensional cohomology of $GL_n \mathcal{O}_K$
2014 preprint.

Informal Notes (available at <http://www.math.rice.edu/~andyp/notes/>)

14. One-relator groups
13. A quick proof of the Seifert-Van Kampen theorem
12. The isoperimetric inequality in the plane
11. The generalized Schoenflies theorem
10. Homotopy groups of spheres and low-dimensional topology
9. The complex of cycles on a surface (after Bestvina-Bux-Margalit)
8. Rochlin’s theorem on signatures of spin 4-manifolds via algebraic topology
7. The congruence subgroup problem for $SL_n(\mathbb{Z})$
6. The fundamental theorem of projective geometry
5. The Borel density theorem
4. The action on homology of finite groups of automorphisms of surfaces and graphs

3. A categorical construction of free groups
2. A quick proof of the classification of surfaces
1. The abelianization of the level L mapping class group

Lecture Series

- 08.2018 Workshop on representation stability, Ann Arbor, MI
TBA (3 lectures)
- 06.2017 Summer school of the IMJ-PRG, Paris, France
TBA (3 lectures)
- 05.2017 Master Class: Cohomology of arithmetic groups, Copenhagen, Denmark
Buildings, duality, and the high-dimensional cohomology of arithmetic groups (4 lectures)
- 05.2013 Arithmetic groups in topology and number theory, Chicago, IL
Homological stability (2 lectures)
- 07.2011 Park City Math Institute
Mapping class groups and Torelli groups (4 lectures)
- 03.2008 Center for the topology and quantization of moduli spaces, Aarhus, Denmark
Master Class on the Torelli group (20 lectures)

Invited Talks

- 07.2018 ICM Satellite Conference in Geometric Group Theory, Campinas, Brazil
TBA
- 05.2018 International Conference on Manifolds, Groups and Homotopy, Gaelic College Sabhal Mor Ostaig
TBA
- 04.2018 Geometry of Teichmüller space and mapping class groups, Warwick, UK
TBA
- 10.2017 No Boundaries: Groups in Algebra, Geometry, and Topology, Chicago, IL
TBA
- 05.2017 Georgia International Topology Conference
The high dimensional cohomology of the moduli space of curves with level structures
- 02.2017 Colloquium, Purdue University
The high dimensional cohomology of the moduli space of curves with level structures
- 02.2017 Math For Everyone, University of Notre Dame
The geometry of tilings
- 01.2017 Northwestern Topology Seminar
The high dimensional cohomology of the moduli space of curves with level structures
- 01.2017 Special Session, Mapping Class Groups and Their Subgroups, AMS/MAA Joint Meeting
The high dimensional cohomology of the moduli space of curves with level structures
- 12.2016 Vanderbilt Topology and Group Theory Seminar
The high dimensional cohomology of the moduli space of curves with level structures
- 12.2016 Oberwolfach workshop on “Surface bundles”
The high dimensional cohomology of the moduli space of curves with level structures
- 11.2016 IU/PU/IUPUI Joint Topology Seminar, Indianapolis, IN
The high dimensional cohomology of the moduli space of curves with level structures
- 10.2016 Undergraduate Mathematics Symposium, University of Illinois at Chicago
The geometry of tilings (Plenary Lecture)
- 04.2016 Free Resolutions, Representations, and Asymptotic Algebra, Banff International Research Station
Stability in the homology of congruence subgroups
- 02.2016 Colloquium, University of Oklahoma
The topology of lattices
- 02.2016 Geometry and Topology Seminar, University of Oklahoma
The high-dimensional cohomology of the moduli space of curves with level structures

- 12.2015 Colloquium, University of Notre Dame
The topology of lattices
- 11.2015 Workshop on the cohomology of $\text{Aut}(F_n)$, University of Copenhagen
The high-dimensional cohomology of the moduli space of curves with level structures
- 10.2015 University of Minnesota Topology Seminar
Stability in the homology of congruence subgroups
- 06.2015 Oberwolfach workshop on “New Perspectives on the Interplay between Discrete Groups in Low-Dimensional Topology and Arithmetic Lattices”
The high dimensional cohomology of $SL_n\mathcal{O}$
- 05.2015 Conference on the mapping class group and $\text{Aut}(F_n)$, University of Texas at Austin
The second homology group of IA_n
- 05.2015 Texas A&M Groups and Dynamics Seminar
The topology of lattices
- 05.2015 New York Group Theory Seminar
The stable cohomology of congruence subgroups
- 05.2015 Colloquium, City College of New York
The topology of lattices in Lie groups
- 04.2015 Colloquium, University of Virginia
Integrality in the Steinberg module and the high-dimensional cohomology of $SL_n\mathcal{O}_K$
- 04.2015 Topology Seminar, University of Virginia
Representation-theoretic patterns in the stable cohomology of congruence subgroups
- 04.2015 13th Annual Bloomington Geometry Workshop
Integrality in the Steinberg module and the high-dimensional cohomology of $SL_n\mathcal{O}_K$
- 03.2015 Teichmüller Modular Groups: A Celebration of Nikolai Ivanov’s 60th Birthday, Chicago
Stability in the homology of congruence subgroups of the mapping class group
- 03.2015 40th Spring Lecture Series, University of Arkansas
Integrality in the Steinberg module and the top-dimensional cohomology of $GL_n\mathcal{O}_K$
- 02.2015 Rice University Topology Seminar
Integrality in the Steinberg module and the top-dimensional cohomology of $GL_n\mathcal{O}_K$
- 10.2014 University of Cambridge Topology Seminar
Tits buildings, class numbers, and the top-dimensional cohomology of $SL_n\mathcal{O}$
- 10.2014 Warwick Mathematics Institute Geometry and Topology Seminar
Tits buildings, class numbers, and the top-dimensional cohomology of $SL_n\mathcal{O}$
- 10.2014 University of Southampton Pure Mathematics Colloquium
Tits buildings, class numbers, and the top-dimensional cohomology of $SL_n\mathcal{O}$
- 10.2014 University of Glasgow Geometry and Topology Seminar
Representation stability and finite linear groups
- 09.2014 Oberwolfach workshop on “Topologie”
Modular symbols, class numbers, and the top-dimensional cohomology of $SL_n\mathcal{O}$
- 05.2014 Georgia Topology Conference
Modular symbols, class numbers, and the top-dimensional cohomology of $SL_n\mathcal{O}$
- 03.2014 Geometric groups on the gulf coast, Pensacola, FL
Modular symbols, class numbers, and the top-dimensional cohomology of $SL_n\mathcal{O}$
- 03.2014 Geometric groups on the gulf coast, Pensacola, FL
Graduate Student Talk: Introduction to the cohomology of the mapping class group
- 03.2014 Cornell Topology and Geometric Group Theory Seminar
On the second homology group of the Torelli subgroup of $\text{Aut}(F_n)$
- 01.2014 Six Crash Courses on Mapping Class Groups, AMS/MAA Joint Meeting
Introduction to mapping class groups
- 11.2013 Columbia Geometric Topology Seminar
Vanishing and nonvanishing in the high-dimensional cohomology of $SL_n(\mathcal{O}_k)$

- 10.2013 The Power of Ideas, Part II; Scientia colloquium, Houston, TX
What we can't know
- 10.2013 Rice University Topology Seminar
On the second homology group of the Torelli subgroup of $Aut(F_n)$
- 10.2013 University of Chicago Geometry/Topology Seminar
On the second homology group of the Torelli subgroup of $Aut(F_n)$
- 08.2013 Workshop on homological stability, University of Copenhagen
On the second homology group of IA_n
- 07.2013 Interactions of low dimensional topology and geometric group theory, Max Planck Institute, Bonn
Generating the Johnson filtration
- 06.2013 Conference on the Johnson homomorphisms, University of Tokyo
Generating the Johnson filtration
- 06.2013 Conference on the Johnson homomorphisms, University of Tokyo
Generators for the hyperelliptic Torelli group and the kernel of the Burau representation at $t = 1$
- 05.2013 Atkin Memorial Workshop on Cohen-Lenstra Heuristics, University of Illinois at Chicago
Stability in the homology of congruence subgroups
- 03.2013 GATSBY (Geometry and Topology Seminar at Brown and Yale)
Stability in the homology of congruence subgroups
- 02.2013 University of Rochester Topology Seminar
Stability in the homology of congruence subgroups
- 02.2013 SUNY at Buffalo Geometry/Topology Seminar
Stability in the homology of congruence subgroups
- 11.2012 Cohomological Methods in Geometric Group Theory, Banff International Research Station
Unstable homological stability
- 11.2012 Cohomological Methods in Geometric Group Theory, Banff International Research Station
Stability in the homology of congruence subgroups
- 10.2012 Rice University Topology Seminar
On the Burau representation at -1
- 10.2012 University of Texas Topology Seminar
Stability in the homology of congruence subgroups
- 10.2012 Stanford Topology Seminar
Stability in the homology of congruence subgroups
- 09.2012 PATCH Seminar (Temple, Bryn Mawr, Haverford, and University of Pennsylvania)
Stability in the homology of congruence subgroups
- 06.2012 Mapping Class Groups and Quantum Topology, IRMA, Strasbourg
Stability in the homology of congruence subgroups
- 03.2012 Texas A&M Groups and Dynamics Seminar
Small generating sets for the Torelli group
- 02.2012 Spring Texas Geometry and Topology Conference
Representation stability, congruence subgroups, and mapping class groups
- 01.2012 Rice University Colloquium
Representation stability and congruence subgroups
- 12.2011 Michigan State University Topology Seminar
Congruence subgroups and homological stability
- 12.2011 Michigan State University RTG Seminar
Small generating sets for the Torelli group
- 11.2011 Texas Christian University Colloquium
Congruence subgroups and homological stability
- 10.2011 Georgia Tech Topology Seminar
Congruence subgroups and homological stability

- 09.2011 University of Arkansas Topology Seminar
Abelian quotients of subgroups of the mapping class group and higher Prym representations
- 09.2011 University of Arkansas Colloquium
Small generating sets for the Torelli group
- 06.2011 Oberwolfach workshop on “Arithmetic Groups vs. Mapping Class Groups: Similarities, Analogies and Differences”
Abelian quotients of subgroups of the mapping class group and higher Prym representations
- 05.2011 Ohio State University Torelli Group Workshop
Small generating sets for the Torelli group
- 04.2011 Special Session, Geometric Group Theory and Dynamics, AMS Sectional Meeting
Abelian quotients of subgroups of the mapping class group and higher Prym representations
- 03.2011 Special Session on Geometric Group Theory, 45th Spring Topology and Dynamics Conference
Abelian quotients of subgroups of the mapping class group and higher Prym representations
- 03.2011 Aarhus University Topology Seminar
The Picard group of the moduli space of curves with level structures
- 03.2011 University of Copenhagen Algebra/Topology Seminar
Equivariant homological stability for congruence subgroups
- 03.2011 University of Copenhagen Topology Seminar
The Picard group of the moduli space of curves with level structures
- 12.2010 LA Joint Topology Seminar
Equivariant homological stability for congruence subgroups
- 11.2010 Rice University Topology Seminar
Abelian quotients of subgroups of the mapping class group and higher Prym representations
- 11.2010 Special Session, Arithmetic, Groups, and Geometry, AMS Sectional Meeting
Equivariant homological stability for congruence subgroups
- 10.2010 Rice University Topology Seminar
Equivariant homological stability for congruence subgroups
- 08.2010 Rice University Colloquium
The Torelli group
- 04.2010 Harvard Dynamics and Geometry Seminar
The Picard group of the moduli space of curves with level structures
- 04.2010 Special Session, Topics in Geometric Group Theory, AMS Sectional Meeting
Equivariant homological stability for pure braid groups
- 02.2010 MIT Colloquium
The Picard group of the moduli space of curves with level structures
- 02.2010 Yale University Colloquium
The Picard group of the moduli space of curves with level structures
- 02.2010 University of Wisconsin at Madison Colloquium
The Picard group of the moduli space of curves with level structures
- 02.2010 University of British Columbia Topology Seminar
An infinite presentation of the Torelli group
- 02.2010 University of British Columbia Colloquium
The Picard group of the moduli space of curves with level structures
- 01.2010 Louisiana State University Colloquium
The Picard group of the moduli space of curves with level structures
- 01.2010 Syracuse University Colloquium
The Picard group of the moduli space of curves with level structures
- 01.2010 Indiana University at Bloomington Colloquium
The Picard group of the moduli space of curves with level structures
- 01.2010 University of Kentucky Colloquium
The Picard group of the moduli space of curves with level structures

- 01.2010 University of Pittsburgh Colloquium
The Picard group of the moduli space of curves with level structures
- 12.2009 MIT Geometry Seminar
The Picard group of the moduli space of curves with level structures
- 12.2009 University of Chicago Geometry/Topology Seminar
The Picard group of the moduli space of curves with level structures
- 12.2009 University of Maryland Geometry/Topology Seminar
The Picard group of the moduli space of curves with level structures
- 11.2009 Rice University Colloquium
The Picard group of the moduli space of curves with level structures
- 11.2009 Ohio State University Geometric Group Theory Seminar
The Picard group of the moduli space of curves with level structures
- 10.2009 Michigan State University Topology Seminar
The Picard group of the moduli space of curves with level structures
- 04.2009 Columbia Geometric Topology Seminar
The Picard group of the moduli space of curves with level structures
- 04.2009 Tufts Geometric Group Theory Seminar
On the self-intersections of curves deep in the lower central series of a surface group
- 01.2009 Duke Geometry/Topology Seminar
The second rational homology group of the moduli space of curves with level structures
- 12.2008 Caltech Geometry and Topology Seminar
The second rational homology group of the moduli space of curves with level structures
- 11.2008 Workshop on Geometry and Topology of Mapping Class Groups, Akita (two talks)
An infinite presentation of the Torelli group, A Birman exact sequence for $\text{Aut}(F_n)$
- 11.2008 University of Tokyo Topology Seminar
The second rational homology group of the moduli space of curves with level structures
- 10.2008 Brown Geometry and Topology Seminar
The second rational homology group of the moduli space of curves with level structures
- 10.2008 Tufts Geometric Group Theory Seminar
The second rational homology group of the moduli space of curves with level structures
- 10.2008 Special Session, Low-Dimensional Topology, AMS Sectional Meeting
The second rational homology group of the moduli space of curves with level structures
- 06.2008 Rice University Colloquium
The second rational homology group of the moduli space of curves with level structures
- 03.2008 Finite Type Invariants, Fat Graphs and Torelli-Johnson-Morita Theory, CTQM
Subgroup distortion in the mapping class group
- 02.2008 Tufts Geometric Group Theory Seminar
Subgroup distortion in the mapping class group
- 11.2007 Topics in Geometric Group Theory, MSRI
On the Homology of Finite Index Subgroups of the Mapping Class Group
- 03.2007 Columbia Geometric Topology Seminar
An infinite presentation of the Torelli group
- 03.2007 Yale Topology/Geometry Seminar
An infinite presentation of the Torelli group
- 02.2007 Cornell Topology and Geometric Group Theory Seminar
An infinite presentation of the Torelli group
- 01.2007 Special Session, Mapping Class Groups and Handlebodies, AMS/MAA Joint Meeting
An infinite presentation of the Torelli group
- 12.2006 University of Illinois at Urbana-Champaign Group Theory Seminar
An infinite presentation of the Torelli group
- 10.2006 Special Session, Low Dimensional Topology and Geometry, AMS Sectional Meeting
An infinite presentation of the Torelli group

- 07.2006 Torelli Group Workshop
Cutting and pasting in the Torelli group
- 02.2005 Georgia Tech Geometry and Topology Seminar
The rationality of three-dimensional sol-manifolds

Graduate Students and Postdocs

Postdocs

- 2014–2016 Neil Fullarton
2012–2016 Yunhui Wu

Graduate students, primary advisor

- 2012– Corey Bregman
2015–2016 Kenan Ince (Ph.D. 2016; first position: assistant professor, Westminster College)
2010–2015 David Cohen (Ph.D. 2015; first position: NSF postdoc, University of Chicago)
2010–2014 James Cooper (Ph.D. 2014; first position: Reasoning Mind)

Graduate students, thesis committee

- 2016 Katherine Vance
2011 Fei Xu

Service to the Department

Notre Dame

- 2016–2017 Algebra Search Committee
2016–2017 Graduate Admissions Committee

Rice

- 2015–2016 Wolfe Lecture Committee
2014–2016 Graduate admissions
Chair, 2015–2016
- 2013–2016 Appointments committee
2013–2014 Graduate grievance committee
2012–2013 Colloquium committee
2010–2014 Evans hiring committee
Chair, 2013–2014
- 2010–2016 Undergraduate committee
Chair 2014–2015

Service to the University

Rice

- 2015–2016 University Research Committee
2011–2016 Faculty Associate, Baker College
2011–2015 University Teaching Committee

Service to the Community

- 2014–2018 Founder, Rice Program in Mathematics for High School Students

Conferences Organized

- 2017 Braids in algebra, geometry, and topology
Coorganizers: T. Brendle, J. Ellenberg, A. Ranicki
- 2017 Representation stability and its applications (special session, AMS central sectional meeting)
Coorganizers: P. Hersh, J. Miller
- 2016 Representation stability (AIM workshop)
Coorganizers: S. Sam, A. Snowden, D. Speyer
- 2013 3-Manifolds: Heegaard Splittings, the Curve Complex, and Hyperbolic Geometry
Coorganizers: T. Cochran, S. Harvey
- 2012 Texas Geometry/Topology Conference
Coorganizer: B. Hassett

- 2011 Ahlfors-Bers Colloquium
Local organizer
- 2011 Geometric group theory and dynamics (special session, AMS western sectional meeting)
Coorganizers: D. Calegari, M. Day, J. Louwsma

Professional Service

- 2017 AMS Subcommittee on Membership and Member Benefits
- 2015–2018 AMS–Simons Travel Grants Committee
- Referee Many journals, e.g. Ann Math, Duke Math J, Invent Math, and Jour Amer Math Soc
- Reviewer NSF, Danish Council for Independent Research, and Simons foundation grants

Teaching

Notre Dame

- 2017, Spring Math 10560: Calculus II (2 sections)
- 2016, Fall Math 60330: Basic Geometry and Topology

Rice

- 2015, Fall Math 102: Single Variable Calculus II
- 2015, Fall Math 444/539: Geometric Topology
- 2015, Fall Math 681: Topology Seminar
- 2015, Spring Math 681: Topology Seminar
- 2014, Fall Math 681: Topology Seminar
- 2014, Spring Math 212: Multivariable calculus
- 2014, Spring Math 541: Topics in Topology (The Torelli group)
- 2014, Spring Math 681: Topology Seminar
- 2013, Fall Math 490: Directed reading on representation theory, Nick Ryder
- 2013, Fall Math 681: Topology Seminar
- 2013, Spring Math 366: Geometry
- 2013, Spring Math 680: Mathematics Colloquium
- 2013, Spring Math 681: Topology Seminar
- 2012, Fall Math 428/518: Topics in Complex Analysis (Compact Riemann Surfaces)
- 2012, Fall Math 680: Mathematics Colloquium
- 2012, Fall Math 681: Topology Seminar
- 2012, Spring Math 464/564: Abstract Algebra III
- 2011, Fall Math 541: Topics in Topology (The Mumford conjecture)
- 2011, Spring Math 212: Multivariable calculus
- 2011, Spring Math 699: Reading course on the mapping class group
- 2010, Fall Math 444/539: Geometric topology

MIT

- 2010, Spring 18.904: Seminar in Topology
- 2009, Fall 18.700: Linear Algebra
- 2009, Spring 18.901: Introduction to Topology
- 2008, Fall 18.02: Calculus (Recitation Instructor)
- 2008, Spring 18.03: Differential Equations (Recitation Instructor)

University of Chicago

- 2006–2007 Math 195/6: Math Methods for Biological/Social Sciences I/II (Instructor)
- 2005–2006 Math 131/2/3: Elementary Functions and Calculus I/II/III (Instructor)
- 2004–2005 Math 131: Elementary Functions and Calculus I (Instructor)
- 2003–2004 Math 270/3/4: Complex Analysis, Diff Equations, Diff Manifolds (TA)