

Andrew J. Blumberg

Curriculum Vitae
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Department of Mathematics
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Personal

Born: 1976
Citizenship: US

Education

- 2001–2005 **The University of Chicago**, Chicago, IL
Ph.D. in Mathematics, June 2005.
Thesis advisors : J. Peter May and Michael A. Mandell
M.S. in Mathematics, Dec 2001.
- 1994–1998 **Harvard College**, Cambridge, MA
A.B in Mathematics, May 1998.
Awards: Magna cum laude with highest honors in mathematics

Employment

- 2019-present **Professor**, University of Texas at Austin (on leave 2019-2020)
- 2014-2019 **Associate Professor (with tenure)**, University of Texas at Austin (on leave 2018-2019)
- 2008-2014 **Assistant Professor**, University of Texas at Austin (on leave 2008-2009, 2013-2014)
- 2007-2009 **Hans Samelson Postdoctoral Fellow**, Stanford University
- 2006-2007 **Member**, Institute for Advanced Study
- 2005-2006 **Hans Samelson Postdoctoral Fellow**, Stanford University
- 1999-2001 **Chief technology officer and founder**, HotDispatch Inc.
- 1995–1999 **Research scientist**, MIT Artificial Intelligence Laboratory

Visiting positions

- 2018–2020 **Visiting Professor**, Columbia University
- 2017 **Member**, Hausdorff Institute for Mathematics, June
- 2016 **Senior member**, ICERM Program “Topology in motion”, October (1 week)
- 2015 **Member**, Hausdorff Institute for Mathematics, June-July
- 2014 **Organizer**, MSRI program on algebraic topology, January-May
- 2013 **Organizer**, IMA program on topological data analysis, September-December

2013	Visitor , University of Copenhagen, August (2 weeks)
2013	Visiting Scholar , MIT, June-August
2012	Visiting Scholar , MIT, June-August
2011	Visiting Scholar-in-Residence , Indiana University, May (1 week)
2010	Visitor , University of Copenhagen, February (1 week)
2009	Visiting Scholar , University of Chicago, May-June
2008	Visiting Scholar , University of Chicago, May-June
2007	Visiting Scholar , MIT, November-December
2007	Visiting Scholar , University of Chicago, May-June
2006	Member , Mittag-Leffler Institute, February

Honors

2020	AMS Lecture at the SIAM Annual Meeting
2013	Invited participant, Microsoft Faculty Summit.
2012-2017	NSF CAREER Award
2012	Plenary speaker, birthday conference for Gunnar Carlsson, Ralph Cohen, and Ib Madsen.
2010-2012	DARPA Young Faculty Award
2005-2009	NSF Postdoctoral Fellowship
2005	Clay Mathematics Institute Liftoff Fellowship
1998–1999	McCormick Fellowship, University of Chicago (deferred)
1998	NSF Graduate Fellowship, Honorable mention

Grants

2020-2024	Co-principal investigator (with S. Angel, J. Bonneau, P. Cousot, J. Thaler, M. Walfish, and T. Wies), Scaling zero-knowledge proofs with the power of abstraction, DARPA research grant, HR001119S0076-SIEVE-FP-014, \$500000 (out of \$6.1M)
2018-2021	New frontiers in execution integrity, AFOSR research grant, FA9550-18-1-0415, \$450202
2018-2021	Principal investigator, New frontiers in execution integrity, AFOSR research grant, FA9550-18-1-0415, \$450202
2018-2021	Principal investigator, Collaborative Research: Algebraic K-Theory, Topological Periodic Cyclic Homology, and Noncommutative Algebraic Geometry, NSF Division of Mathematical Sciences grant DMS #1812064, \$275315
2016-2019	Co-principal investigator (with M. Abouzaid, M. Hill, R. Lipshitz, T. Lawson, C. Manolescu, and S. Sarkar), FRG: Floer homotopy theory, NSF Division of Mathematical Sciences grant DMS #1564289, \$199293 (out of \$1058411)
2015-2020	Co-principal investigator (with R. Rabadan, A. Iavarone, A. Lasorella, B. Mishra, M. Shen, C. Wiggins, G. Carlsson, P. Sims), Topology of cancer evolution and heterogeneity, NIH grant 5U54CA193313, \$250000 (out of approximately \$12M)
2015-2020	Co-principal investigator (with R. Rabadan and D. Rosenbloom, Columbia Medical School), Uncovering evolutionary history using the topology of genomic data, with applications to HIV, NIH grant GG010211-R01-HIV, \$350000 (out of approximately \$1.2M)

- 2015-2020 Co-principal investigator (with M. Walfish and T. Wies, NYU), TWC: Medium: Scaling proof-based verifiable computation, NSF Division of Computer and Network systems, CNS #1514422, \$220000 (out of \$1151830)
- 2015-2018 Co-principal investigator (with M. Walfish, NYU), Realizing the promise of proof-based verifiable computation, AFOSR research grant, FA9550-15-1-0302, \$450000 (out of \$900000).
- 2012-2017 Principal investigator, CAREER: Algebraic K-theory, trace methods, and non-commutative geometry, NSF CAREER grant, DMS #1151577, \$425874.
- 2010-2012 Principal investigator, Applied algebraic topology: categorical foundations, topological statistics, and practical implementations, DARPA YFA grant #N66001-10-1-4043, \$300000.
- 2009-2012 Principal investigator, Algebraic invariants of structured ring spectra, arithmetic, and geometry, NSF Division of Mathematical Sciences grant #0906105, \$146595.

Classroom teaching

- 2017–2018 **Associate Professor** in Mathematics, University of Texas at Austin
 Mathematics 343 : Applied number theory
 Mathematics 380 : Algebra
- 2016–2017 **Associate Professor** in Mathematics, University of Texas at Austin
 Mathematics 343 : Applied number theory
 Mathematics 392 : Equivariant stable homotopy theory
- 2015–2016 **Associate Professor** in Mathematics, University of Texas at Austin
 Mathematics 343 : Applied number theory
 Mathematics 341 : Linear algebra
- 2014–2015 **Associate Professor** in Mathematics, University of Texas at Austin
 Mathematics 342 : Homotopy type theory
 Mathematics 341 : Linear algebra
- 2012–2013 **Assistant Professor** in Mathematics, University of Texas at Austin
 Mathematics 392 : Homological algebra
 Mathematics 362 : Probability
 Mathematics 367 : Algebraic topology II
- 2011–2012 **Assistant Professor** in Mathematics, University of Texas at Austin
 Mathematics 408C : Calculus
 Mathematics 341 : Linear algebra
- 2010–2011 **Assistant Professor** in Mathematics, University of Texas at Austin
 Mathematics 378 : Mathematical statistics
 Mathematics 392 : Topics in algebraic topology
- 2009–2010 **Assistant Professor** in Mathematics, University of Texas at Austin
 Mathematics 365 : Real analysis
 Mathematics 341 : Linear algebra

- 2005–2006 **Lecturer** in Mathematics, Stanford University
Mathematics 51 : Linear algebra and differential calculus of several variables
- 2002–2005 **Lecturer in the college** in Mathematics, University of Chicago
Mathematics 195-196 : Mathematical methods for biological or social sciences
Mathematics 131-132 : Calculus
- 2001–2002 **College Fellow** in Mathematics, University of Chicago
Mathematics 203-205: Analysis in \mathbb{R}^n , mentors: N. Monod, A. Kiselev

Additional teaching

- 2010–2018 **Research supervision**, seven regular research students (Clough, Gregoric (co-advised), Grindstaff, McGuirl (co-advised, at Brown), Meth, Miyagi (co-advised, at Harvard), Wong), nine graduated (Campbell, Fontes, Franklin, Pancia, Reyes, Royer (NSF post-doctoral fellowship), Sulyma, Wu, Zhu (terminal masters))
- 2015–2017 **Research supervision**, four graduate student RAs, AFOSR and NIH grants, (Grindstaff, Kennedy, Villar, Wu)
- 2011–2013 **Research supervision**, jointly with M. Walfish (CS department), supervising undergraduate students V. Vu and B. Braun (senior thesis for Braun). Braun and Vu are Dean's Honored Graduates, and Vu was a co-winner of the first prize Mitchell award.
- 2010–2017 **Undergraduate reading courses**, including theoretical computer science, analysis, privacy, representation theory, and genomic analysis of flu.
- 2010–2012 **Research supervision**, three graduate student RAs, DARPA grant, (Gal, Pancia, Orem)
- 2009–2011 **Co-advisor**, Master's thesis in CS (Raluca Popa, MIT). Won prize, best master's thesis.
- 2002–2004 **Undergraduate mentor**, Directed research program (University of Chicago)
- 2001–2004 **Course assistant**, Summer research experience for undergraduates (REU)
- 2001–2003 **Lecturer**, Warm-up program for entering graduate students

Editorial positions

- 2018–present **Editor**, Journal of Applied and Computational Topology
- 2015–present **Associate Editor**, Advances in Mathematics
- 2013–present **Editor**, Journal of Topology

Service

- 2022 **Co-organizer**, MSRI emphasis semester on Floer homotopy theory.
- 2020 **Co-organizer**, Banff workshop on equivariant stable homotopy theory and p -adic Hodge theory.
- 2020 **Co-organizer**, AIM workshop on equivariant techniques in stable homotopy theory.
- 2019 **Co-organizer**, 80th birthday conference in honor of J. Peter May
- 2018 **Co-organizer**, Symplectic Geometry and Homotopy Theory.

- 2018 **Co-organizer**, Homotopy theory summer: Berlin, equivariant homotopy theory and K -theory workshop.
- 2018 **Co-organizer**, Austin gerrymandering workshop.
- 2017 **Co-organizer**, FRG summer school and workshop on Floer homotopy theory.
- 2016 **Co-organizer**, AIM workshop on equivariant derived algebraic geometry.
- 2016 **Co-organizer**, BIRS workshop on equivariant derived algebraic geometry.
- 2015-2016 **Organizer**, Texas undergraduate topology and geometry conference.
- 2014 **Co-organizer**, West coast algebraic topology summer school: Topological field theories.
- 2014 **Co-organizer**, Algebraic Topology: Methods, Computation, and Science (ATMCS) 6.
- 2014 **Co-organizer**, MSRI emphasis semester on algebraic topology
- 2013–2014 **Co-organizer**, IMA emphasis year on computational and applied algebraic topology
- 2013–present **Organizer**, Directed research program (UT Austin)
- 2012 **Co-organizer**, West coast algebraic topology summer school: Advances in algebraic K -theory
- 2012 **Co-organizer**, BIRS Workshop on Algebraic K -theory and equivariant homotopy theory
- 2011-2012 **Organizer**, Student seminars on algebraic topology and computational topology
- 2010–present **Technical advisor**, Patient privacy rights
- 2010 **Co-organizer**, Workshop at Indiana University on algebraic K -theory and fixed point theory
- 2009 **Co-organizer**, 70th birthday conference in honor of J. Peter May
- 2008–2009 **Organizer**, “Infinity categories” reading group and lecture series
- 2007–2009 **Co-organizer**, Stanford topology progress seminar
- 2005–2006 **Co-organizer**, Stanford topology progress seminar
- 2003–2005 **Committee member**, Directed research program
- 2004 **Co-organizer**, Summer research experience for undergraduates (REU)

Peer-review

- Referee Over fifty articles, for top journals including Algebraic and Geometric Topology, International Math Research Notices, Advances in Mathematics, Journal of Topology, Math Zeitschrift, Journal of K -theory, Journal of Pure and Applied Algebra, Journal of the AMS, “Homotopy, Homology, and Applications”, Compositio Mathematica, Proceedings of the London Mathematics Society, Transactions of the American Mathematical Society, Geometry and Topology, Acta Mathematica.
- Grant review NSF regular grants (five times, in-person), NASA (by mail), ESPRC (by mail).

Invited Lectures

Conference talks :

1. AMS Lecture at the SIAM Annual Meeting, Toronto, July 2020
2. Symposium on random matrices in biology, November 2019

3. Equivariant topology and derived algebra, University of Trondheim, August 2019
4. Symplectic Geometry and Homotopy Theory, UCLA, December 2018
5. Midwest topology seminar, University of Kentucky, September 2018
6. Higher structures in homotopy theory, Newton Institute, Cambridge, UK, July 2018
7. Abel Symposium 2018: topological data analysis, Geiranger, Norway, June 2018
8. Cancer Genomics and Mathematical Data Analysis Symposium, Columbia University, February 2018
9. Triangulated Categories and Geometry – a conference in honour of Amnon Neeman, Bielefeld, May 2017
10. Cornell Topology Festival, Cornell University, May 2017
11. Algebraic topology: Manifolds unlocking higher structures, Oxford, October 2015
12. Johns Hopkins-University of Maryland Algebra and Number Theory Day, March 2015
13. Oberwolfach meeting on homotopy theory, March 2015
14. ICM Satellite Conference on Algebraic K -theory, Beijing, August 2014
15. Midwest Topology Seminar, IUPUI, April 2014
16. Workshop on order in complex systems, Rutgers University, November 2013
17. Workshop on group actions in homotopy theory, University of Copenhagen, August 2013
18. Northwestern workshop on equivariant, chromatic, and motivic homotopy theory, March 2013
19. AMS Sectional meeting, Special session of computational algebraic topology, University of Akron, October 2012
20. Birthday conference for Gunnar Carlsson, Ralph Cohen, and Ib Madsen, plenary speaker, July 2012
21. Graduate student topology conference, young faculty speaker, March 2012
22. BIRS Workshop on Algebraic K -theory and equivariant homotopy theory, February 2012
23. Conference on applied algebraic topology, Fields Institute, November 2011
24. Conference on structured ring spectra, Hamburg, August 2011 (cancelled)
25. Oberwolfach workshop, Algebraic K -theory, May 2011
26. AMS Sectional meeting, Special session on algebraic K -theory, University of Iowa, March 2011
27. Conference on homotopy theory and derived algebraic geometry, Fields Institute, August 2010
28. Computers, Freedom, and Privacy, San Jose State University, June 2010
29. Georgia Topology Conference, University of Georgia, May 2010

30. AMS Sectional meeting, Special session on topological quantum field theory, Western Michigan University, October 2008
31. Midwest Topology Seminar, Wayne State, Detroit, May 2007
32. Conference on the arithmetic of structured ring spectra, Rosendal, Norway, August 2005
33. Norwegian Topology Symposium, Trondheim, Norway, November 2004
34. AMS Sectional meeting, Special session on homotopy theory, Northwestern, October 2004

Seminar talks :

- 2019 : Columbia, UPenn, Broad Institute
- 2018 : Columbia, Brown, NYU, UCLA
- 2017 : Brown, Rice
- 2016 : Northwestern, Northeastern, Samsung National Hospital
- 2015 : Columbia, University of Chicago, UIC, Hausdorff Institute for Mathematics
- 2014 : UCSD, Johns Hopkins
- 2013 : University of Minnesota
- 2011 : University of Chicago, UIUC, Stanford, Indiana University, Nagoya University, MIT
- 2010 : University of Copenhagen, Notre Dame, University of Minnesota
- 2009 : University of Chicago, MIT, Stanford
- 2008 : University of Chicago, Berkeley, MIT, Stanford, Rutgers, University of Texas at Austin
- 2007 : Johns Hopkins, Purdue, University of Chicago, Northwestern, Stanford
- 2006 : Mittag-Leffler Institute, Johns Hopkins, University of Chicago, IAS, MIT
- 2005 : Stanford
- 2004 : Purdue, Northwestern, UIUC, Stanford, Brown