

Ruth Charney
Theodore and Evelyn G. Berenson
Professor of Mathematics, Brandeis University

Education:

Brandeis University, BA, MA, 1972
Princeton University, PhD, 1977

Appointments and Fellowships:

Brandeis University,	
Professor	2003–present
Chair	2006–2009
Ohio State University,	
Professor	1990–2003
Associate Professor	1984–90
Interim Chair	1997–98
Yale University,	
Assistant Professor	1980–84
Junior Faculty Fellowship	1982–83
NSF Postdoctoral Fellowship	1979–80
University of California, Berkeley,	
Instructor	1977–79

Visiting Positions:

Isaac Newton Institute for Mathematical Sciences, Cambridge, UK	Spring 2017
Mathematical Sciences Research Institute, Berkeley	Fall 2016
Forschungsinstitut für Mathematik, Zurich	2009–2010, Spring 2011, 2012
Mittag-Leffler Institute, Stockholm	Spring 2012
Université de Bourgogne, Dijon	May 2004, March 2010
Mathematical Institute, Oxford University	fall 2001
Boston College	1994–95
Institute for Advanced Study, Princeton	1986–87, 1992–93
Institute des Hautes Etudes Scientifiques, Paris	1982–83

Honors:

Theodore and Evelyn G. Berenson Chair in Mathematics	2016–present
Fellow, American Mathematical Society	2012–present
President, Association for Women in Mathematics	2013–2015
Vice President, American Mathematical Society	2006–2009
Board of Trustees, American Mathematical Society	2012–2016
Board of Trustees, Mathematical Sciences Research Institute	2007–2015
Polya Lecturer, Mathematical Association of America	2013–2015
Harry S. Levitan Reading and Education Prize	2007

Fields of Interest: Geometric Group Theory, Topology

Recent Grant Support:

NSF DMA-1607616, Automorphism Groups and Morse Boundaries, 08/16–07/19
NSF DMS-1106726, Artin groups and $CAT(0)$ spaces, 08/11–06/15
NSF ADVANCE-1500481, Career Advancement for Women Through
Research-Focused Networks, 09/15–08/20
NSF DMS-1440016, AWM Workshops and Noether Lecture 2015, 8/14–7/15
NSF DMS-1462470, AWM Research Symposium 2015, 2/15–1/16
NSA H98230-14-1-0319, AWM Research Symposium 2015, 10/14–9/15

PhD Students:

Barry Spieler, *Nonpositively curved orbihedra* (1992)
Joseph Altobelli, *The word problem for some Artin groups of infinite type* (1996)
Chi-Kun Wong, *Spherical projections and $CAT(1)$ spaces* (1996)
Robert Bell, *Three-dimensional FC Artin groups are $CAT(0)$* (2003)
Ophir Feldman, *Actions of finite type Artin groups on R -trees* (2005)
Max Margolis, *Length functions of right-angled Artin groups* (2010)
Nate Stambaugh, *Toward an outer space for right-angled Artin groups* (2011)
Anna Vijayan, *Compactifying the space of length functions of a right-angled Artin group* (2013)
Michael Carr, *Two-generator subgroups of RAAGs are quasi-isometrically embedded* (2015)
Matthew Cordes, *Morse boundaries of proper geodesic metric spaces* (2016)
Devin Murray, *Topology and dynamics of the contracting boundary of cocompact $CAT(0)$ spaces*
(expected graduation, 2018)
Angelica Deibel *Cohomology of random Coxeter groups* (expected graduation, 2018)
Josh Eike (current)
Rose Morris-Wright (current)

Professional Service:

American Mathematical Society	
Board of Trustees	2012-2017
Vice President	2006-2009
Executive Committee	2007-2011
Math Research Communities, steering committee	2006-2010
Task Force on first year experience	2007-2008
Committee on the Profession	2004-2005
Central Section Program Committee	2002-2004
Nominating Committee	2000-2003
Centennial Fellowship Committee	1995-97
Committee on the Profession	1993-95
Member-at-Large of Council	1992-95
Centre de Recherches Mathematiques (CRM)	
Scientific Advisory Board	2016-present
Mathematical Sciences Research Institute	
Board of Trustees	1993-95, 2007-2015
Board Committee on Women, Chair	2007-2015
Association for Women in Mathematics	
President	2013-2015
Past-President	2015-2016
Nominating Committee, Chair	2017
Scientific Advisory Committee, Chair	2015-2016
Noether Lecture Selection Committee	2010-2013
Schafer Prize Committee	1994-95
Tavel Grants Committee	1989-90
Member-at-Large of Executive Committee	1990-93
Mathematical Association of America	
Gung and Hu Prize Committee	2016-present
Polya Lecturer	2013-2015
MAA Program Committee	2010-2011
External Review Committees	
Banff International Research Station	2015
University of California, Santa Barbara	2009
Williams College	2008
Dartmouth College	2007
Stony Brook University	2006
Wesleyan University	2005
Trinity College	1997
Wayne State University	1996
Wellesley College	1995

Conferences Organized

21st Brazilian Topology Meeting, Niteroi, Brazil,	2018
Topologie Workshop, Oberwolfach, Germany	2018
Geometry of Outer Spaces and Automorphism Groups, Warwick, UK	2018
Connections for Women Conference, MSRI	2016
AWM Research Symposium, University of MD	2015
Spring Opportunities Workshop, Knoxville, TN	2014
Mathematics Research Community on Geometric Group Theory, Snowbird, UT	2013
AWM Research Symposium, Santa Clara, CA	2013
Vogtmann Fest, CIRM, Luminy	2010
Examples of Groups Conference, Ohio State University	2008
Connections for Women Conference, MSRI	2007
Institute for Advanced Study Program for Women	2005
AWM Workshops at Joint Mathematics Meetings	1993–97
Geometric Group Theory Conference, Ohio State University	1992

Other Professional Service

Panelist, Women's Intellectual Network Research Symposium, Brown Univ	2017
Panelist, SACNAS conference	2016
Faculty Liason, Brandeis Program for Women,	2009–2014
Speaker and Panelist, Spring Opportunities Workshop, NIMBios	2014
Mentor and Panelist, Topology Students Workshop, Georgia Tech	2014
AWM Career Panel, Joint Mathematics Meetings	2014
Springer Undergraduate & Graduate Texts in Math, Advisory Board	2012–2014
US National Committee for Mathematics, member	2005–2008
Young Mathematicians Conference, Ohio State Univ, Advisory Board	2008–present
Institute for Advanced Study Program for Women, Advisory Board	2007–2010
Algebraic and Geometric Topology Journal, Editorial Board	2000–2007
Panelist on numerous NSF review panels	

Publications

1. *Homology stability of GL_n of a Dedekind domain*, Bulletin of the AMS, Vol. 1, No. 2 (1979), 428–431.
2. *Homology stability for GL_n of a Dedekind domain*, Inventiones Math. 56 (1980), 1–17.
3. *K-theory of ideals*, Current Trends in Algebraic Topology, CMS-AMS, Vol. 2, Pt. 1 (1982), 3–18.
4. (with R. Lee) *Cohomology of Satake compactifications*, Topology 69 Vol. 22, No. 4 (1983), 389–423.
5. (with R. Lee) *Moduli space of stable curves from a homotopy viewpoint*, Journal of Differential Geometry 20 (1984), 185–235.
6. *A note on excision in K-theory*, Algebraic K-theory, Number Theory, Geometry and Analysis, LNM 1046, Springer-Verlag (1984), 47–54.
7. *On the problem of homology stability for congruence subgroups*, Communications in Algebra 12 (17) (1984), 2081–2123.
8. (with R. Lee) *On a theorem of Giffin*, Michigan Math. Journal 33 (1986), 169–185.
9. (with R. Lee) *An application of homotopy theory to mapping class groups*, Journal of Pure and Applied Algebra 44 (1987), 127–135.
10. *A generalization of a theorem of Vogtmann*, Journal of Pure and Applied Algebra 44 (1987), 107–125.
11. (with R. Lee) *Characteristic classes for the classifying spaces of Hodge structures*, K-Theory 1 (1987), 237–270.
12. (with F. Cohen) *A stable splitting for the mapping class group*, Michigan Math. Journal 35 (1988), 269–283.
13. (with M. Davis) *Reciprocity of growth functions of Coxeter groups*, Geometriae Dedicata 39 (1991), 373–378.
14. *Artin groups of finite type are biautomatic*, Mathematische Annalen 292 (1992), 671–683.
15. (with M. Davis) *Singular metrics of nonpositive curvature on branched covers of Riemannian manifolds*, American Journal of Math. 115 (1993), 929–1009.
16. (with M. Davis) *Strict hyperbolization*, Topology 34 (1995), 329–350.
17. (with M. Davis) *On the Euler characteristic of a nonpositively curved, piecewise Euclidean manifold*, Pacific Journal of Math. 171 (1995), 117–137.
18. *Geodesic automation and growth functions for Artin groups of finite type*, Mathematische Annalen 301 (1995), 307–324.

19. (with M. Davis) *The polar dual of a convex polyhedral set in hyperbolic space*, Michigan Math. Journal 42 (1995), 479–509.
20. (with M. Davis) *The $K(\pi, 1)$ -problem for hyperplane complements associated to infinite reflection groups*, Journal of the AMS 8 (1995), 597–627.
21. (with M. Davis) *Finite $K(\pi, 1)$'s for Artin Groups*, in Prospects in Topology, ed. by F. Quinn, Annals of Math Study 138, Princeton University Press (1995), 110–124.
22. *Metric geometry: connections with combinatorics*, Proceedings of FPSAC Conference, DIMACS Series in Discrete Mathematics and Theoretical Computer Science 24 (1996), 55–69.
23. (with M. Davis and G. Moussong) *Nonpositively curved, piecewise Euclidean structures on hyperbolic manifolds*, Michigan Math. Journal 44 (1997), 201–208.
24. *Injectivity of the positive monoid for some infinite type Artin groups*, in Geometric Group Theory Down Under, Proceedings of a Special Year in Geometric Group Theory, Canberra, Australia, ed. by J. Cossey, C. Miller, W. Neumann, and M. Shapiro, Walter De Gruyter 1999, 103–118.
25. (with J. Altobelli) *A geometric rational form for Artin groups of FC type*, Geometriae Dedicata 79 (2000), 277–289.
26. (with M. Davis) *When is a Coxeter system determined by its Coxeter group?*, J. London Math. Soc. 61 (2000), 441–461.
27. *The Tits conjecture for locally reducible Artin groups*, Int. J. of Algebra and Computation 10 (2000), 783–797.
28. (with A. Lytchak) *Metric characterizations of spherical and Euclidean buildings*, Geometry and Topology 5 (2001) 521–550.
29. (with D. Peifer) *The $K(\pi, 1)$ conjecture for the affine braid groups*, Commentari Math. Helv. 78 (2003) 584–600.
30. *The Deligne complex of the 4-strand braid group*, Transactions AMS 356 (2004), 3881–3897.
31. (with J. Meier and K. Whittlesey) *Bestvina's normal form complex and the homology of Garside groups*, Geometriae Dedicata 105 (2004) 171–188.
32. (with J. Meier) *The language of geodesics for Garside groups* Math. Zeitschrift 248 (2004) 495–509.
33. (with J. Crisp) *Automorphism groups of some affine and finite type Artin groups*, Math. Res. Letters. 12 (2005) 321–333.
34. *An introduction to right-angled Artin groups*, Geometriae Dedicata 125 (2007) 141–158.
35. (with J. Crisp) *Relative hyperbolicity and Artin groups*, Geometriae Dedicata 129 (2007) 1–13.
36. (with J. Crisp and K. Vogtmann) *Automorphisms of 2-dimensional right-angled Artin groups*, Geometry & Topology 11 (2007) 2227–2264.

37. (with K. Vogtmann) *Automorphism groups of right-angled Artin groups*, in Guido's Book of Conjectures, collected by I. Chatterji, L'Enseignement Mathématique 54 (2008) 71–72.
38. *Problems in Artin Groups*, AIM Workshop on Problems in Geometric Group Theory, AIM wiki.
39. (with K. Vogtmann) *Finiteness properties of automorphism groups of right-angled Artin groups*, Bull. London Math. Soc. 41 (2009) 94–102.
40. (with K.-U. Bux and K. Vogtmann) *Automorphisms of two-dimensional RAAGS and partially symmetric automorphisms of free groups*, Groups, Geometry, and Dynamics 3 (2009) 525–539.
41. (with K. Vogtmann) *Subgroups and quotients of automorphism groups of RAAGS*, in Low-dimensional and Symplectic Topology, ed. by M. Usher, AMS Proceedings of Symposia in Pure Mathematics 82 (2011) 9–27.
42. (with K. Ruane, N. Stambaugh, and A. Vijayan) *Automorphism groups of graph groups with no SIL*, Illinois J. of Math. 54 (2011) 249–262.
43. (with J. Cohen and A. Rizk) *Efficient Synthesis of a Class of Boolean Programs from I-O Data: Application to Genetic Networks*, Discrete Applied Math. 159 (2011) 410–419.
44. (with J. Behrstock) *Divergence and quasimorphisms of right-angled Artin groups*, Mathematische Annalen 352 (2012) 339–356.
45. (with M. Farber) *Random groups arising as graph products*, Algebraic & Geometric Topology 12 (2012) 979–995.
46. (with M. Margolis) *Length functions of 2-dimensional right-angled Artin groups*, Geometriae Dedicata 166 (2013) 31–45.
47. (with L. Paris) *Convexity of parabolic subgroups in Artin groups*, Bull. London Math. Soc. (2014) 46 1248–1255.
48. (with H. Sultan) *Contracting boundaries of $CAT(0)$ spaces*, Journal of Topology 8 (2015) 93–117.
49. (with N. Stambaugh and K. Vogtmann) *Outer Space for untwisted automorphisms of right-angled Artin groups*, Geometry and Topology 21 (2017) 1131–1178.
50. (with D. Murray) *A rank-one $CAT(0)$ group is determined by its Morse boundary*, arXiv:1707.07028
51. *Searching for hyperbolicity*, arXiv:1708.01896
52. (with C. Bregman and K. Vogtmann) *Outer Space for right-angled Artin groups II*, in preparation
53. (with R. Morris-Wright) *Artin groups of diameter at least three*, in preparation

Books Edited

1. Geometric Group Theory, Proceedings of a Special Research Quarter at The Ohio State University, Spring 1992, edited by R. Charney, M. Davis, and M. Shapiro, Walter de Gruyter 1995.