

January 2018

VITAE

Michael L. Mihalik

PERSONAL

Born

April 20, 1951 Brownsville, Pennsylvania

Citizenship

USA

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Department of Mathematics
1326 Stevenson Center
Vanderbilt University
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ACADEMIC

Professional Experience

Professor of Mathematics, Vanderbilt University, 1998-present

Chair, Department of Mathematics, Vanderbilt, 2000-2005

Associate Professor of Mathematics, Vanderbilt University, 1988 - 1998

Assistant Professor, Vanderbilt University, 1982 - 1988

Postdoctoral Instructor, University of Utah, 1979 - 1982

Teaching Assistant, SUNY Center at Binghamton, New York - 1975 - 1979

Teaching Assistant, University of Georgia 1973 - 1975

Academic Degrees

Doctor of Philosophy in Mathematics, SUNY Center at Binghamton New York, 1979

Masters SUNY Center at Binghamton New York, 1977

Bachelor of Science in Mathematics, California State College, California, Pennsylvania, 1973

Specialization

Geometric Group Theory

Algebraic Topology

Low Dimensional Topology

Non-Positively Curved Geometry

Coxeter Groups

Bibliography

1. 'Ends of fundamental groups in shape and proper homotopy', *Pac. J. Math.(2)* **90** (1980), 431-458.
2. 'Semi-stability at the end of a group extension', *Trans. Amer. Math. Soc.* **277** (1983), 307-321.
3. 'Free Abelian Cohomology of groups and ends of universal covers' (with R. Geoghegan), *J. Pure Appl. Algebra* **36**(1985), 123-137.
4. 'Ends of groups with integers as a quotient', *J. Pure Appl. Algebra* **35** (1985), 305-320.
5. 'Ends of double extension groups', *Topology* **25** (1986), 45-53.
6. 'Semistability of finitely generate groups and solvable groups', *Topology Appl.* **24** (1986), 259-269.
7. 'A note on the vanishing of $H^n(G; ZG)$ ' (with R. Geoghegan), *J. Pure Appl. Algebra* **39** (1986), 301-304.
8. 'Solvable groups that are simply connected at ∞ ', *Math. Zeit.* **195** (1987) 79-87.
9. 'Semistability at ∞ , ∞ -ended groups and group cohomology', *Trans. Amer. Math. Soc.(2)* **303** (1987), 479-485.
10. 'Notes on negatively curved groups' (with J.M. Alonso, T. Brady, D. Cooper, V. Ferlini, M. Lustig, M. Shapiro, H. Short (editor)), In proceedings of the workshop of *Group Theory from a Geometrical Viewpoint- ICIP*, Trieste, Italy (1991), *World Scientific*, edited by A. Haefliger, E. Ghys and A. Verjovsky, 3-63.
11. 'Ends of amalgamated products and HNN extensions' (with S. Tschantz), *Mem. Amer. Math. Soc. (# 471)* **98** (1992).
12. 'One relator groups are semistable at ∞ ' (with S. Tschantz), *Topology (4)* **31** (1992), 801-804.
13. 'Semistability of amalgamated products, HNN-extensions and all one relator groups' (with S. Tschantz), *Bull. Amer. Math. Soc.(1)* **26** (1992), 131-136.
14. 'Quasiconvex subgroups of hyperbolic groups' (with W. Towle), *J. Pure Appl. Algebra* **95** (1994), 297-301.
15. 'Group extensions are QSF' (with S. Brick), *Bull. Austral. Math. Soc.(1)* **50** (1994), 21-28.
16. 'The QSF property for groups and spaces' (with S. Brick), *Math. Zeit.(2)* **220** (1995), 207-218.
17. 'Semistability of Artin and Coxeter groups', *J. Pure Appl. Algebra* **111** (1996), 205-211.
18. 'The fundamental group at infinity' (with R. Geoghegan), *Topology(3)* **35** (1996), 665-669.

19. ‘Semistability at infinity, simple connectivity at infinity and normal subgroups’, *Topology Appl.*(3) **72** (1996), 273-281.
20. ‘Compactifying covers of 3-manifolds’. *Comment. Math. Helv.* **71** (1996), 362-372.
21. ‘Tame combings for groups’ (with S. Tschantz). *Trans. Amer. Math. Soc.* **349** No. 10 (1997) 4251-4264.
22. ‘Group extensions, HNN-extensions and tame pairs’, *Trans. Amer. Math. Soc.* **381**, No. 2 (1999) 1095-1107.
23. ‘CAT(0) groups with non-locally connected boundary’ (with K. Ruane) *J. London Math. Soc. (2)* **60** (1999) 757-770.
24. ‘CAT(0) HNN-extensions with non-locally connected boundary’ (with K. Ruane) *Topology Appl.* **100** (2001) 83-98.
25. ‘Ascending HNN extensions of finitely generated free groups are Hopfian’ (with R. Geoghegan, M. Sapir and D. Wise), *Proc. London Math. Soc.* **33** (2001) 292-298.
26. ‘Reflection independence in even Coxeter groups’ (with P. Bahls) *Geom. Dedicata* **110** (2005) 63-80.
27. ‘Homotopy of ends and boundaries of CAT(0)-groups’ (with G. Conner and S. Tschantz), *Geom. Dedicata* **120** (2006) 1-17.
28. ‘The even isomorphism theorem for Coxeter groups’ *Trans. Amer. Math. Soc.* **359**, No. 9 (2007) 4297-4324.
29. ‘Locally connected of right-angled Coxeter groups boundaries’ (joint with K. Ruane and S. Tschantz), *J. Group Theory* **10**, No. 4 (2007) 531-560.
30. ‘Matching theorems for systems of a finitely generated Coxeter group’ (with J. Ratcliffe and S. Tschantz), *Algebr. Geom. Topol.* **7** (2007) 919-956.
31. ‘Quotient isomorphism invariants of a finitely generate Coxeter group’ (with J. Ratcliffe and S. Tschantz), In - *Aspects of Infinite Groups*, Ed. B. Fine, G. Rosenberger, and D. Spellman, *Algebra Discrete Math.* **1** (2008), 16pp. World Sci. Publ., Hackensack NJ.
32. ‘On the rank of a Coxeter group’ (with J. Ratcliffe), *J. Group Theory* **12**, No. 3 (2009) 449-464.
33. ‘Visual decompositions of Coxeter groups’ (with S. Tschantz), *Groups, Geom., and Dyn.* **3** (2009) 173-198.
34. ‘Strong accessibility of Coxeter groups over minimal splittings’ (with S. Tschantz), *J. Pure Appl. Algebra*, **216** (2012), No. 5, 1102-1117.
35. ‘Commensurated subgroups and ends of groups’ (with G. Conner) *J. Group Theory*, **16** (2013), No. 1, 107-139.
36. ‘Geodesically tracking quasi-geodesic paths for Coxeter groups’ (with S. Tschantz) *Bulletin of the London Mathematical Society*, **45** (2013), no 4, 700-714; doi: 10.1112 /blms/ bds125).

Pdf url- <http://blms.oxfordjournals.org/cgi/reprint/bds125>

37. ‘A classification of right angled Coxeter groups with no 3-flats and locally connected boundary’ (with W. Camp) *J. Group Theory*, **17** (2014), no. 5, 717-755.
38. ‘Commensurated Subgroups, Semistability and Simple Connectivity at Infinity’ (with G. Conner) *Algebraic and Geometric Topology*, **14-6** (2014), 3509–3532. DOI 10.2140/agt.2014.14.3509.
39. ‘JSJ decompositions of Coxeter groups over virtually abelian splittings’ arXiv:0804.3963.
40. ‘Semistability and Simple Connectivity at Infinity of Finitely Generated Groups with a Finite Series of Commensurated Subgroups’ *Algebraic and Geometric Topology* **16-6** (2016), 3615-3640. arXiv:1411.0651.
41. ‘Relatively hyperbolic groups with semistable fundamental group at infinity.’ (with E. Swenson) (Submitted) arXiv:1709.02420.
42. ‘Topological properties of spaces admitting a coaxial homeomorphism’ (with R. Geoghegan and C. Guilbault) (Submitted) arXiv 1611.01807.
43. ‘Bounded depth ascending HNN extensions and π_1 semistability at infinity’ (Submitted). arXiv 1709.09140.
44. ‘Non-cocompact Group Actions and π_1 -Semistability at Infinity’ (with R. Geoghegan and C. Guilbault) (Submitted) arXiv1709.09129.
45. ‘Relatively hyperbolic groups with free abelian second cohomology.’ (with E. Swenson) (Preprint) arXiv 1812.08893

Work in Progress

1. ‘Centralizers of elements in right-angled Coxeter groups’ (with S. Tschantz) (Preprint)
2. ‘Relatively hyperbolic group boundaries with linearly connected and doubling metrics.’ (with J. Han, M. Haulmark, L. Sledd, B. Strickland, F. Wagner and W. Wang) (Preprint) - The results of this paper were discovered in a series of independent study courses directed at Vanderbilt University by M. Mihalik from Fall 2017 to Fall 2018.

Talks

- Math. Inst. Oberwolfach Federal Republic of Germany, Topological methods in group theory, June 1986.
- San Antonio, Texas, Special session on geometric methods in group theory. Jan. 1987.
- Brigham Young Univ. Summer topology conference. Aug. 1987.
- University of Maryland, Special session in geometric methods in group theory, April 1988.
- MSRI, Automatic-hyperbolic groups seminar. March 1989.
- MSRI, Automatic-hyperbolic groups seminar. April 1989.
- UCLA, Topology seminar, April 1989.

MSRI, Automatic-hyperbolic groups seminar, May 1989.

Math. Inst. Oberwolfach, Federal Republic of Germany, Topological methods in group theory, October 1989.

UCLA, Special session on geometric methods in group theory, Nov. 1989.

Tennessee Tech., Tennessee Topology Conference, Dec. 1990.

SUNY, Albany, Conference on topology and group theory, Oct. 1991.

SUNY, Binghamton, Colloquium, Jan. 1992.

Cornell Univ., Group theory seminar, Jan. 1992.

Math. Inst. Oberwolfach, Germany, Geometric methods in group theory, Apr. 1992.

U. Tenn., Cohomological dimension, May 1992.

U. Tenn., Conference on low-dimensional topology, May 1992.

Center de Recerca Matematica, Barcelona, Spain, Geometric methods in group theory, Nov.-Dec. 1992 (Two talks).

Florida State Univ., Colloquium Talk, Feb. 1993.

Vancouver British Columbia, Joint AMS, Canadian Math. Soc. meeting, special session on geometric group theory, August 1993.

Lexington Kentucky, AMS Conference, special session on negatively curved groups, March 1994.

U. of South Ala., Colloquium, March 1994.

Georgia Tech Univ., Colloquium, Oct. 1994.

SUNY at Albany, Conference on group theory and topology, Oct. 1994.

University of Stockholm, Sweden, Colloquium, Jan. 1995.

Greensboro N.C., AMS regional conference, Topological methods in group theory, Nov. 1995.

Math. Inst. Oberwolfach, Germany, Topological methods in group theory, Dec. 1995.

Baton Rouge La., AMS regional conference, Topological methods in group theory, April 1996.

Chattanooga, Tn., AMS regional conference, Geometric Topology, Oct. 1996.

Milwaukee, Wi. AMS regional conference, Low dimensional topology and geometric group theory, October 1997.

University of South Alabama, Mobile Al., Group theory conference, March 1998.

Vanderbilt University, Nashville Tn. Conference on geometry, topology and group theory, May 1998.

SUNY Albany, Gemetric Group Theory Conference, November, 1998.

University of Nevada Las Vegas, Special Session AMS Meeting, April 1999.

University of South Alabama, Mobile Al., Group theory conference, April 1999.

University of South Alabama, Mobile Al., Group theory conference, March 2000.

University of Nebraska, Lincoln NE., Group theory conference, May 2000.

University of Haifa (Technion), Israel, Group theory conference, June 2000.

Special session AMS Annual meeting, New Orleans, LA January 2001.

Special session AMS meeting, Las Vegas, Nevada, April 2001.

SUNY Albany group theory conference, October 2001.

Special session on low dimensional topology, AMS sectional meeting Atlanta, March 2002.

University of Florida Workshop on geometric topology, March 2002.

G^3 -Conference in Pensacola, Florida, November 2002.

Colloquium SUNY Center at Binghamton, March 2003.

Conference on geometric group theory, Texas Tech University, March 2003.

International group theory conference in Gaeta, Italy, June 2003.

Special session of geometric group theory, AMS sectional meeting SUNY Center at Binghamton, NY, October 2003.

Workshop on Geometric Group Theory, Bedlewo (Poland), Conference Center, April 2004.

Special session of geometric group theory, AMS sectional meeting Bowling Green, Ky, March 2005.

Special session of geometric group theory, AMS sectional meeting, Lincoln Nebraska, October 2005.

SUNY Binghamton, two hour-long seminar addresses, February 23 and 24, 2006.

21st Annual Shanks Conference, Nashville Tennessee, May 2006.

2007 G^3 Conference, New Orleans, La. Jan. 2007.

Spring Topology and Dynamical Systems Conference, Rolla Missouri, March 2007.

42nd Spring Topology & Dynamical Systems Conf., Milwaukee, Wi. March 2008.

Analysis of Groups Conference, San Juan - Puerto Rico, March 2008.

43rd Spring Topology & Dynamical Systems Conf., Gainesville, Fl. March 2009.

2009 Moab Topology Conference, Moab, Utah, May 2009.

BYU seminar (hour address) May 2009.

AMS meeting, Boca Raton, Florida, October 2009.

Colloquium Towson St., Maryland, March 2011.

Conference (hour address) Towson St., Maryland, April 2011.

University Service

Brigham Young University, Seminar, August 2011.
Vanderbilt University, Seminar, August 2011.
Vanderbilt University, Seminar, March 2013.
Brigham Young University, Seminar, May 2013.
The Ohio State University, (Plenary) June 2014.
Vanderbilt Topology/Group Theory Seminar, September 2014.
Vanderbilt Topology/Group Theory Seminar, November 2015.
Vanderbilt Topology/Group Theory Seminar, February 2017.
34rd Annual Geometric Topology Workshop (Provo Utah), June 2017.
Vanderbilt Topology/Group Theory Seminar, August 2017
2018 Arches Topology Conference (Moab Utah), May 2018 (hour address).

Faculty Senate, 1985.
Colloquium Chairman, 1984-86, 1995-96.
Freshman advisor, 1987, 1993-97.
Subcommittee for natural sciences, 1988-93.
Vanderbilt summer research proposal review committee, 1993-95.
Premajor Advisor 1995-.
Committee on Publicity, 1994-95.
Head organizer for April 1994 Shanks lectures and conference.
Committee on graduate student teaching, 1996-.
Graduate Committee, 1997-.
Organized first Vanderbilt topology teleconference. Joint with SUNY-Binghamton and Lafayette College, 1998.
Head organizer for May 1998 Shanks lectures and conference.
Graduate Faculty Council, 1998-2000.
Faculty Senate 1999-2002.
Chair Preliminary Examination Committee in Topology 1999-.
Chair, Mathematics Department 2000-2005.
2000-02 Vanderbilt Community Giving Campaign Allocations Committee
Strategic Academic Planning Committee (SAPCAS) 2001-02
Search committee for chair in Physics department 2002-03.
Advisory Committee to the Chair (Mathematics) 2005-.

Departmental space committee chair 2005-06.

Associate Director of Graduate Studies 2007-08.

Department Search Committees for Both Tenure Track and Non-tenure Track 2007-08.

College of Arts and Sciences Dean Search Committee 2008-09.

Chair Department Faculty Search Committee. 2008-09.

Associate DGS 2009-2010, Graduate Committee, Chair's Advisory Committee.

Chair - Committee for the Samir Aldroubi and Amira Azhari Award (2009-2010).

Graduate Faculty Council 2010-2013.

Chair - Post-doc search committee 2010 - 2011, Chair's Advisory Committee, Faculty Search Committee.

Math. Committees 2011-12: Chair - Post-doc search, Chair's Advisory, Reappointment Basak Gurel, Chair - Promotion Denis Osin, Teaching, Preliminary Exam, Area Rep - Schedule of Classes.

Univ. Committees 2011-16: Health Related Professions,

Graduate Committee 2011-13.

Dean of the College Reappointment Committee, Fall 2012.

Faculty Senate, Spring 2013 - AY 2013-14.

Math. Committees 2013-14: Advisory to Chair, Preliminary Exam (Topology Chair), Schedule of Classes, Reappointment (Hutchison, Pigg), Senior Position Hiring, Postdoc Search.

Math. Committees 2014-15: Advisory to Chair, Colloquium, Preliminary Exam (Topology Chair), Teaching, TT Reappointment (Suvaina)

University Committees 2014-15 Committee on Academic Standards and Procedures.

Math. Committees 2015-16: Advisory to Chair, Colloquium, Preliminary Exam (Topology Chair), Graduate.

University Committees 2016-17 Committee on Academic Standards and Procedures.

Math. Committees 2016-17 Advisory to Chair, Colloquium, Preliminary Exam (Topology Chair), Promotion Committee (Suvaina), Chair Reappointment Committee (Dowdall), Chair Postdoc Search Committee.

Math. Committees 2017-18 Advisory to Chair, Teaching Committee, Preliminary Exam (Topology Chair)

Math. Committees 2018-19 Advisory to Chair, Preliminary Exam (Topology Chair), Chair Reappointment Committee (Spencer Dowdall)

Hires while Chair

Centennial Professor E. DiBenedetto

Professor E. Saff
Professor D. Bisch
Centennial Professor G. Kasparov
Distinguished Professor A. Connes
Assistant Professor D. Manoussaki
Assistant Professor A. Powell

Centers Established

Center for Biomathematics Research
Center for Constructive Approximation
Spring School for Non-commutative Geometry

Renegotiated Contracts

Professor G. Yu
Centennial Professor M. Sapir
Professor A. Aldroubi

Teaching Loads

Negotiated a 2-1 teaching load for research active faculty in the Mathematics department.

Ph.D. Students

Joseph Profio, Dissertation Title: Group extensions that are simply connected at ∞ . Ph.D. awarded Spring 1988. Currently employed at the Naval Research Lab. in Washington, D.C.

Patrick Bahls Dissertation Title: Even rigidity in Coxeter groups. Ph.D. awarded Spring 2002. Employed as a VIGRE post-doc at University of Ill. Urbana-Champaign 2002-05. Currently Associate Professor of Mathematics University of North Carolina (Asheville).

Nikolay Silkin Dissertation Title: On Connectivity at Infinity of Extended Lamplighter Groups. Ph.D. awarded Summer 2003. Currently employed as Assistant Professor at University of Northern Iowa.

Wes Camp Dissertation Title: Graph separators and boundaries of right-angled Artin and Coxeter groups. Ph.D. awarded Spring 2013.

Brandon Strickland (current)