

Curriculum Vitae

Ralf J. Spatzier

September 3, 2023

PROFESSIONAL EXPERIENCE

Positions:

1995 - present	Full Professor	Mathematics, University of Michigan
1990 - 1995	Associate Professor	Mathematics, University of Michigan
1989 - 1991	Associate Professor	Mathematics, SUNY Stony Brook
1984 - 1989	Assistant Professor	Mathematics, SUNY Stony Brook

Visiting Positions:

Spring 2015	Eisenbud Professor	MSRI, Berkeley, CA
Spring 1992	Research Fellow	MSRI, Berkeley, CA
Spring 1989	NSF Research Fellow	MSRI, Berkeley, CA
Spring 1987	Assistant Professor	Mathematics, University of Maryland
Summer 1984	Researcher	IHES, France
1983 - 1984	NSF Research Fellow	MSRI, Berkeley, CA
Spring 1983	Lecturer	Mathematics, University of North Carolina
1980 - 1982	Research Assistant	Mathematics, University of Maryland

Education:

Ph.D. in Mathematics, 1983, University of Warwick, Coventry, Great Britain
University of Warwick, Great Britain, 1976 - 1980
Freie Universität Berlin, West Germany, 1974 - 1976
Albert-Ludwigs Universität, Freiburg, West Germany, 1973 - 1974

Honors and Awards:

Oberlin Distinguished Visitor, 2018/2019
Eisenbud Professorship, MSRI 2015
Matthews Underclass Teaching Award, 2013
Fellow, American Mathematical Society, Member of Inaugural Class, 2012
NSF Research Awards: 1983 - 2023
NSF Research Training Grant in Geometry, Dynamics and Topology 2006-2011 and 2011- 2018
NSF CCLI I, Inquiry-Based Learning in Mathematics at the University of Michigan 2009
NSF CCLI II, Inquiry-Based Learning in Mathematics at the University of Michigan 2006
LS&A Excellence in Education Award, awarded 1999 and 2002
AMS Invited Address, DePaul University, 1998
LS&A Excellence in Research Award, awarded 1996
AMS Centennial Research Fellowship, 1990 - 1992, awarded 1989
Sloan Foundation Fellow, 1988

Doctoral Students - 21 total

1995	Tracy Payne	Prof Idaho State U	2014	Andrew Zimmer	aP, U Wisconsin
1997	John Szaro	TRW	2015	Russell Ricks	postdoc, Binghamton
1998	Jeff Boland	Athene USA	2015	Brandon Seward	aP, UCSD
1999	Chris Connell	Prof Indiana	2020	Salman Siddiqi	postdoc, U Indiana
2001	Craig Sutton	AP Dartmouth	2020	Samantha Pinella	TBD
2002	Jean-Francois Lafont	Prof Ohio State	2021	Mitul Islam	postdoc Heidelberg
2003	Theron Hitchman	AP U Northern Iowa	2023	Karen Butt	current
2006	Benjamin Schmidt	AP Michigan State	2023	Carsten Peterson	current
2009	Dave Constantine	AP Wesleyan	2023	Yuping Ruan	current
2010	Felipe Ramirez	aP Wesleyan	TBD	Ekaterina Shchetka	current
2013	Jordan Watkins	unknown			

Postdocs Mentored - 23 total

1993-96	Edward Goetze	Manhattan Associates	1999-02	Krishnan Shankar	Prof U Oklahoma
2000-03	Boris Kalinin	Prof PSU	2000-03	Victoria Sadvovskaya	Prof PSU
2002-05	Elizabeth Burslem	Vis P Northwestern	2002-03	Alexander Gorodnik	Prof U Zürich
2006-07	Tamar Ziegler	Prof Hebrew U	2008-11	Christopher Mooney	Epic
2009-12	Hanna Bennett	Lecturer U Michigan	2010-13	Khalid Bou-Rabee	AP CCNY, Grad Center
2012-15	Daniel Visscher	aP Ithaca College	2014-17	Anton Lukyanenko	aP George Mason U
2015-18	Wouter van Limbeek	aP UIC	2015-18	Kevin Schreve	aP LSU
2019-22	Thang Nguyen	aP FSU	2020-21	Linh Truong	aP U Michigan
2020-23	Shreyasi Datta	postdoc, Uppsala U.	2021-24	Asaf Katz	current
2021-24	Nattalie Tamam	current	2022-25	Teddy Weisman	current
2023-26	Reynald Fregoli	current	2023-26	Prasuna Bandi	current
2023-26	Yanlong Hao	current			

Editorial Boards

2006 - present: Journal of Modern Dynamics

2003 - present: Michigan Mathematics Journal

2000 - present: Geometriae Dedicata

Editor of a Special Issue of ETDS (Ergodic theory and Dynamical Systems) in memory of A. Katok

Editor of a Special issue of MMJ (Michigan Mathematics Journal) in honor of Gopal Prasad

Major Service at University of Michigan

2004 - present: Director, IBL Center, Department of Mathematics, Michigan

2017 - 2024, 1999 - 2000 and 1995 - 1997: Chair, Personnel Committee

2001 - 2003: Director of the Undergraduate Program

2006 - 2018: Lead PI of two consecutive NSF-RTG grants (Research Training Grants).

External Service

Many NSF panels

Reviewed grants for various international competitions (Austria, Chile, Israel, 2x Poland)

Refereed and gave quick opinions for many journals, including top journals like Annals, JAMS, Inventiones, Publications IHES, Acta, Duke, GAFA, JEMS.

Workshops and Conferences

2025: Discrete Subgroups of Lie Groups: Dynamics, Actions, and Rigidity, Summer School, IHES, with David Fisher, Fanny Kassel and Matthew Stover

2024: Group Actions, Geometric Structures, Zimmer Program and Rigidity, Trimester at IHP, with A. Brown, D. Fisher, K. Mann and V. Pestov

2022: Flexibility and Rigidity in Dynamical Systems, Simons Center Geometry and Physics, Stony Brook, with T. Barthelmé, A. Brown and A. Erchenko

2022: Global Rigidity and Classification of Actions by Higher-Rank Groups, AIMS, with A. Brown, D. Fisher, and Z. Wang

2018: New Methods for Zimmer's Conjecture, IPAM, with A. Brown, M. De La Salle, A. Eskin, D. Fisher, S. Hurtado Salazar, F. Rodriguez Hertz and A. Wilkinson

2015: Advances in Homogeneous Dynamics, MSRI, with D. Kleinbock, H. Oh and A. Salehi Golsefidy

2014: RTG Workshop on Thin Groups University of Michigan, with R. Canary, L. Ji and G. Prasad

2014: Group Actions in Riemannian Geometry in May 2014 at UNC at Chapel Hill, jointly with R. Decoste, K. Grove, M. Jablonski, M. Mast, J. Metcalfe, T. Payne and M. Williams. Jablonski, Mast and Spatzier received an NSF grant to support the conference.

2014: Workshop on Inquiry Based Learning, MathFest Portland, Portland, with C. Schumacher, M. Jones, M. Starbird and S. Yoshinobu

2013: Fields Medal Symposium In honor of Elon Lindenstrauss Fields Institute, with A. Eskin, D. Jakobson, M. Ratner, and P. Sarnak

2013: RTG Workshop: Random Walks on Groups University of Michigan, with R. Canary and L. Ji

2012: RTG Workshop: Recent Progress on Hyperbolic 3-Manifolds University of Michigan, with R. Canary and L. Ji

2011: RTG Workshop: Higher Dimensional Teichmüller Theory University of Michigan, with R. Canary, L. Ji and J. Souto
Workshop on Inquiry Based Learning, University of Michigan, with W. Breslin, R. Canary and A. Uribe

2010: AMS Meeting: Special Session on Rigidity University of Notre Dame, with D. Fisher

2009: RTG Workshop: Geometric Group Theory University of Michigan, with R. Canary, L. Ji and J. Souto

2008: RTG Workshop: Dynamics on Teichmüller theory University of Michigan, with R. Canary and L. Ji

2007: Geometry, Rigidity, and Group Actions: In honor of Robert J. Zimmer's 60th birthday University of Chicago, with B. Farb, D. Fisher and D. Witte Morris

2007: RTG Workshop: Aspects of Teichmüller theory. University of Michigan, with R. Canary, L. Ji, Z. Huang, at University of Michigan

2005: Rigidity, Dynamics, and Group Actions BIRS, with D. Witte Morris, D. Fisher

2004: MSRI Conference on Recent Progress in Dynamics, with M. Brin, B. Hasselblatt (chair), G. Margulis, Y. Pesin, P. Sarnak, K. Schmidt and R. Zimmer

2004: Emerging applications of measure rigidity AIM, with A. Katok and E. Lindenstrauss Clay Mathematics Institute

2002: AMS Meeting: Special Session on Differential Geometry University of Michigan, with K.

Shankar

1998: AMS Meeting: Special Session on Rigidity in Geometry and Dynamics, DePaul University, with S. Hurder

Publications

- [1] Chris Connell, Mitul Islam, Thang Nguyen, and Ralf Spatzier. Boundary actions of lattices and C^0 local semi-rigidity. *arXiv:2303.00543v1*, pages 1–60, 2023.
- [2] Danijela Damjanovic, Ralf Spatzier, Kurt Vinhage, and Disheng Xu. Anosov actions: Classification and the Zimmer program. *arXiv:2211.08195*, pages 1–59, 2023.
- [3] R. Spatzier and K. Vinhage. Cartan actions of higher rank abelian groups and their classification. *JAMS*, pages 1–129, 2023.
- [4] R. J. Spatzier. Anatole Katok’s work on cohomology and geometric rigidity. In *The Collected Works of Anatole Katok*, volume II. World Sci. Publ., Hackensack, NJ, 2021.
- [5] Chris Connell, Thang Nguyen, and Ralf Spatzier. Carnot metrics, dynamics and local rigidity. *Ergodic Theory Dynam. Systems*, 42(2):614–664, 2022.
- [6] Benjamin Schmidt, Krishnan Shankar, and Ralf Spatzier. Almost isotropic Kähler manifolds. *J. Reine Angew. Math.*, 767:1–16, 2020.
- [7] David Fisher, Michael Larsen, Ralf Spatzier, and Matthew Stover. Character varieties and actions on products of trees. *Israel J. Math.*, 225(2):889–907, 2018.
- [8] Ralf Spatzier and Daniel Visscher. Equilibrium measures for certain isometric extensions of Anosov systems. *Ergodic Theory Dynam. Systems*, 38(3):1154–1167, 2018.
- [9] Alexander Gorodnik and Ralf Spatzier. Smooth factors of projective actions of higher-rank lattices and rigidity. *Geom. Topol.*, 22(2):1227–1266, 2018.
- [10] Chris Connell, Thang Nguyen, and Ralf Spatzier. Hyperbolic rank rigidity for manifolds of $\frac{1}{4}$ -pinched negative curvature. *Ergodic Theory and Dynamical Systems*, 2018.
- [11] Ralf Spatzier and Lei Yang. Exponential mixing and smooth classification of commuting expanding maps. *J. Mod. Dyn.*, 11:263–312, 2017.
- [12] Benjamin Schmidt, Krishnan Shankar, and Ralf Spatzier. Positively curved manifolds with large spherical rank. *Comment. Math. Helv.*, 91(2):219–251, 2016.
- [13] Hanna Bennett, Christopher Mooney, and Ralf Spatzier. Affine maps between $\text{CAT}(0)$ spaces. *Geom. Dedicata*, 180:1–16, 2016.
- [14] Ralf Spatzier. On the work of Rodriguez Hertz on rigidity in dynamics. *J. Mod. Dyn.*, 10:191–207, 2016.
- [15] Alexander Gorodnik and Ralf Spatzier. Mixing properties of commuting nilmanifold automorphisms. *Acta Math.*, 215(1):127–159, 2015.
- [16] Alexander Gorodnik and Ralf Spatzier. Exponential mixing of nilmanifold automorphisms. *J. Anal. Math.*, 123:355–396, 2014.

- [17] David Fisher, Boris Kalinin, and Ralf Spatzier. Global rigidity of higher rank Anosov actions on tori and nilmanifolds. *J. Amer. Math. Soc.*, 26(1):167–198, 2013. With an appendix by James F. Davis.
- [18] David Fisher, Boris Kalinin, and Ralf Spatzier. Totally nonsymplectic Anosov actions on tori and nilmanifolds. *Geom. Topol.*, 15(1):191–216, 2011.
- [19] Alexander Gorodnik, Theron Hitchman, and Ralf Spatzier. Regularity of conjugacies of algebraic actions of Zariski-dense groups. *J. Mod. Dyn.*, 2(3):509–540, 2008.
- [20] Boris Kalinin and Ralf Spatzier. On the classification of Cartan actions. *Geom. Funct. Anal.*, 17(2):468–490, 2007.
- [21] K. Shankar, R. Spatzier, and B. Wilking. Spherical rank rigidity and Blaschke manifolds. *Duke Math. J.*, 128(1):65–81, 2005.
- [22] Boris Kalinin and Ralf Spatzier. Rigidity of the measurable structure for algebraic actions of higher-rank Abelian groups. *Ergodic Theory Dynam. Systems*, 25(1):175–200, 2005.
- [23] R. J. Spatzier. An invitation to rigidity theory. In *Modern dynamical systems and applications*, pages 211–231. Cambridge Univ. Press, Cambridge, 2004.
- [24] Edward R. Goetze and Ralf J. Spatzier. Smooth classification of Cartan actions of higher rank semisimple Lie groups and their lattices. *Ann. of Math. (2)*, 150(3):743–773, 1999.
- [25] A. Katok and R. J. Spatzier. Corrections to: “Invariant measures for higher-rank hyperbolic abelian actions” [*Ergodic Theory Dynam. Systems* **16** (1996), no. 4, 751–778; MR1406432 (97d:58116)]. *Ergodic Theory Dynam. Systems*, 18(2):503–507, 1998.
- [26] Edward R. Goetze and Ralf J. Spatzier. On Livšic’s theorem, superrigidity, and Anosov actions of semisimple Lie groups. *Duke Math. J.*, 88(1):1–27, 1997.
- [27] A. Katok and R. J. Spatzier. Differential rigidity of Anosov actions of higher rank abelian groups and algebraic lattice actions. *Tr. Mat. Inst. Steklova*, 216(Din. Sist. i Smezhnye Vopr.):292–319, 1997.
- [28] Edward R. Goetze and Ralf J. Spatzier. On Livšic’s theorem, superrigidity, and Anosov actions of semisimple Lie groups. *Duke Math. J.*, 88(1):1–27, 1997.
- [29] A. Katok and R. J. Spatzier. Nonstationary normal forms and rigidity of group actions. *Electron. Res. Announc. Amer. Math. Soc.*, 2(3):124–133, 1996.
- [30] Anatole Katok and Ralf J Spatzier. Invariant measures for higher-rank hyperbolic abelian actions. *Ergodic Theory and Dynamical Systems*, 16(04):751–778, 1996.
- [31] R. J. Spatzier. Harmonic analysis in rigidity theory. In *Ergodic theory and its connections with harmonic analysis (Alexandria, 1993)*, volume 205 of *London Math. Soc. Lecture Note Ser.*, pages 153–205. Cambridge Univ. Press, Cambridge, 1995.
- [32] Anatole Katok and Ralf J. Spatzier. First cohomology of Anosov actions of higher rank abelian groups and applications to rigidity. *Inst. Hautes Études Sci. Publ. Math.*, (79):131–156, 1994.
- [33] G. P. Paternain and R. J. Spatzier. New examples of manifolds with completely integrable geodesic flows. *Adv. Math.*, 108(2):346–366, 1994.
- [34] A. Katok and R. J. Spatzier. Subelliptic estimates of polynomial differential operators and applications to rigidity of abelian actions. *Math. Res. Lett.*, 1(2):193–202, 1994.

- [35] Anatole Katok and Ralf J. Spatzier. First cohomology of Anosov actions of higher rank abelian groups and applications to rigidity. *Inst. Hautes Études Sci. Publ. Math.*, (79):131–156, 1994.
- [36] S. Adams. Boundary amenability for word hyperbolic groups and an application to smooth dynamics of simple groups. *Topology*, 33(4):765–783, 1994.
- [37] R. J. Spatzier. Riemannian manifolds with completely integrable geodesic flows. In *Differential geometry: Riemannian geometry (Los Angeles, CA, 1990)*, volume 54 of *Proc. Sympos. Pure Math.*, pages 599–608. Amer. Math. Soc., Providence, RI, 1993.
- [38] Ralf J. Spatzier and Robert J. Zimmer. Fundamental groups of negatively curved manifolds and actions of semisimple groups. *Topology*, 30(4):591–601, 1991.
- [39] R. J. Spatzier and M. Strake. Some examples of higher rank manifolds of nonnegative curvature. *Comment. Math. Helv.*, 65(2):299–317, 1990.
- [40] R. J. Spatzier. Correction to: “On isospectral locally symmetric spaces and a theorem of von Neumann” [Duke Math. J. **59** (1989), no. 1, 289–294; MR1016888 (90h:22027)]. *Duke Math. J.*, 60(2):561, 1990.
- [41] S. R. Adams and R. J. Spatzier. Kazhdan groups, cocycles and trees. *Amer. J. Math.*, 112(2):271–287, 1990.
- [42] L. Flaminio and R. J. Spatzier. Geometrically finite groups, Patterson-Sullivan measures and Ratner’s rigidity theorem. *Invent. Math.*, 99(3):601–626, 1990.
- [43] R. J. Spatzier. On isospectral locally symmetric spaces and a theorem of von Neumann. *Duke Math. J.*, 59(1):289–294, 1989.
- [44] L. Flaminio and R. J. Spatzier. Ratner’s rigidity theorem for geometrically finite Fuchsian groups. In *Dynamical systems (College Park, MD, 1986–87)*, volume 1342 of *Lecture Notes in Math.*, pages 180–195. Springer, Berlin, 1988.
- [45] M. Bożejko, T. Januszkiewicz, and R. J. Spatzier. Infinite Coxeter groups do not have Kazhdan’s property. *J. Operator Theory*, 19(1):63–67, 1988.
- [46] R. J. Spatzier. An example of an amenable action from geometry. *Ergodic Theory Dynam. Systems*, 7(2):289–293, 1987.
- [47] Keith Burns and Ralf Spatzier. On topological Tits buildings and their classification. *Inst. Hautes Études Sci. Publ. Math.*, (65):5–34, 1987.
- [48] Keith Burns and Ralf Spatzier. Manifolds of nonpositive curvature and their buildings. *Inst. Hautes Études Sci. Publ. Math.*, (65):35–59, 1987.
- [49] Werner Ballmann, Misha Brin, and Ralf Spatzier. Structure of manifolds of nonpositive curvature. II. *Ann. of Math. (2)*, 122(2):205–235, 1985.
- [50] R. J. Spatzier. On lattices acting on boundaries of semisimple groups. *Ergodic Theory Dynamical Systems*, 1(4):489–494 (1982), 1981.