

Department of Mathematics
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Research interests.

Riemannian geometry in the presence of symmetry, curvature bounds, and density; topological realization problems; applications in geometry of topological tools, including cohomology operations, rational homotopy theory, and group cohomology.

Current appointment.

RTG Visiting Assistant Professor, July 2012 – June 2015.
Department of Mathematics, University of California, Santa Barbara

Education.

- Ph.D. in Mathematics, May 2012. Advisor: Wolfgang Ziller.
University of Pennsylvania, Philadelphia, Pennsylvania.
- Visiting student, September 2011 – April 2012.
Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil.
- B.A., May 2007, *summa cum laude* with distinction in mathematics.
Kenyon College, Gambier, Ohio.

Grants, Fellowships, and Awards.

- NSF DMS-1404670: Obstructions to positive curvature and symmetry, \$81,264, September 2014 – September 2017.
- AMS–Simons Travel grant, \$4,000, 2014 – 2016 (declined).
- University of Pennsylvania, School of Arts and Sciences
 - Dissertation Completion Fellowship, Fall 2011 – Spring 2012.
 - Dean’s Award for Distinguished Teaching by a Graduate Student, 2011.
 - Benjamin Franklin Fellowship, Fall 2007 – Spring 2011.
 - Presidential Prize Fellowship, Spring 2008.
- University of Pennsylvania, Department of Mathematics
 - Carlitz-Zippin Thesis Prize, Spring 2012.
 - Good Teaching Award for Math 114, Fall 2008.

- Kenyon College: Phi Beta Kappa (inducted May 2007), Franklin Miller Award for excellence in extracurricular research (2007), Solomon Kasper Prize (2007), J.A. Woolam Award (2006), Reginald B. Allen Award for excellence in mathematics (2006), AMS Award for excellence in student exposition and research (2006).

Publications (available upon request).

- (with M. Amann) Positive curvature and rational ellipticity, *Algebr. Geom. Topol.* (to appear), arXiv:1403.1440.
- (with M. Amann) Topological properties of positively curved manifolds with symmetry, *Geom. Funct. Anal.*, 24(5):1377–1405, 2014.
- Positively curved Riemannian metrics with logarithmic symmetry rank bounds, *Comment. Math. Helv.* (to appear), arXiv:1209.4627.
- On the Hopf conjecture with symmetry, *Lecture Notes in Math.*, 2110:111–116, 2014.
- On the Hopf conjecture with symmetry, *Geom. Topol.*, 17(1):563–593, 2013.
- (with J. Holdener and M. Zaremsky) Generalized Thue-Morse sequences and the von Koch curve, *Int. J. Pure Appl. Math.*, 47(3):397–403, 2008.

Preprints (click titles for arXiv links).

- On the Chern problem with symmetry, arXiv:1310.7251.
- (submitted, with M. Amann) On a generalized conjecture of Hopf with symmetry, arXiv:1402.7255.
- (with W. Wylie) Positive weighted sectional curvature, arXiv:1410.1558.

Invited Talks.

- Differential Geometry Seminar, Rutgers University (December 2014)
- Differential Geometry/Topology Seminar, Ohio State University (November 2014)
- Lecture Series in the Mathematical Sciences and the Differential Geometry Seminar, Wichita State University (October 2014)
- Cascade Topology Seminar, Oregon State University (April 2014)
- Differential Geometry Seminar, University of California, Irvine (January 2014)
- AMS Sectional Meeting, University of California, Riverside (November 2013)
- Felix Klein Seminar, University of Notre Dame (October 2013)
- Geometry Seminar, Indiana University (October 2013)
- Geometry and Topology Seminar, Karlsruhe Institut für Technologie, Germany (July 2013)
- Topology Seminar, Université de Fribourg, Switzerland (July 2013)
- AMS Sectional meeting, University of Arizona (October 2012)

- Karcher Colloquium and the Geometry and Topology Seminar, University of Oklahoma (September 2012)
- Differential Geometry Seminar, University of California, Santa Barbara (June 2012)
- Mini-Workshop on Manifolds with Lower Curvature Bounds, Mathematisches Forschungsinstitut Oberwolfach, Germany (January 2012)
- Differential Geometry Seminar, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro, Brazil (November 2011)
- Workshop on Curvature and Global Shape, Westfälische Wilhelms-Universität Münster, Germany (July 2011)
- Mini-encuentro de geometría diferencial, Centro de Investigación en Matemáticas, Guanajuato, Mexico (December 2010)

Teaching Experience.

- University of California, Santa Barbara (instructor of record)
 - Math 260P: Topics in geometry and topology: Bundles, curvature, and anomalies, Fall 2014 (with David Morrison).
 - Math 147B: Elementary differential geometry, II, Spring 2014.
 - Math 147A: Elementary differential geometry, I, Winter 2014.
 - Math 260P: Topics in geometry and topology: Fundamental groups and curvature bounds, Fall 2013 (with Guofang Wei).
 - Math 260P: Topics in geometry and topology: Group actions in Riemannian geometry, Spring 2013 (with Xianzhe Dai).
 - Math 5A: Differential equations and linear algebra 2, Winter 2013.
 - Math 113: Noneuclidean geometry, Fall 2012.
- University of Pennsylvania
 - Instructor of record, Math 170: Ideas in Mathematics, Summer 2011.
 - Teaching assistant, Math 260: Honors Calculus II, Spring 2010.
 - Grader, Math 608: Graduate Analysis, Fall 2009.
 - Instructor of record, Math 170: Ideas in Mathematics, Summer 2009.
 - Teaching Assistant, Math 509: Advanced Analysis II, Spring 2009.
 - Teaching Assistant, Math 114: Calculus II, Fall 2008.

Undergraduate advising.

- Advisor for Adam Rose's honors senior thesis, Winter 2015 – Spring 2015.
- Advisor for Yevgeniya Tarasova
 - Honors senior thesis, Fall 2014 – Winter 2015.
 - Undergraduate RTG summer research fellowship, 2014.
- Advisor for Harrison Algra's Honors Contract for Math 147B, Spring 2014.
- Advisor for Jordan Rainone

- College of Creative Studies senior thesis, Fall 2013 – Spring 2014. Available online at <http://ccs.math.ucsb.edu/Senior-thesis.html>
- CCS Summer Undergraduate Research Fellowship, 2013.
- Advisor for Monte Mishkin’s Honors Contract for Math 147A, Winter 2014.
- Co-advisor for Eric Ling’s undergraduate RTG summer research fellowship, 2013.

Other professional activities.

- Referee for *Geometry & Topology*, *Journal of the London Mathematical Society*, and *Proceedings of the American Mathematical Society*.
- Organizer, UCSB Differential Geometry Seminar, Fall 2014 – present.
- Panel participant, Hypatian seminar, UCSB
 - “How to do research?” February 10, 2014.
 - “Academic job panel.” April 29, 2013.
- Master Teaching Assistant for the Department of Mathematics Teaching Assistant Training Program, University of Pennsylvania, Fall 2009 – Spring 2011.
- Book reviews:
 - *Blind Spot* by William Byers (graduate student pre-publication review for Princeton University Press, 2009)
 - *How Mathematicians Think* by William Byers (published in *Math Horizons*, April 2008).
 - *Letters to a Young Mathematician* by Ian Stewart (published in *Math Horizons*, September 2007).

References.

- Anand Dessai, Professor of Mathematics
University of Fribourg
anand.dessai@unifr.ch
- Karsten Grove, Rev. Howard J. Kenna, C.S.C., Professor of Mathematics
University of Notre Dame
kgrove2@nd.edu
- Thomas Sideris, Professor of Mathematics (letter concerns teaching)
University of California, Santa Barbara
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- Guofang Wei, Professor of Mathematics
University of California, Santa Barbara
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- Wolfgang Ziller, Professor of Mathematics
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