

## Curriculum Vitae

**Benjamin Schmidt**

### Education

- Ph.D., Mathematics, University of Michigan, 2006.
- Joint B.S./M.S., Mathematics, Emory University, 2000.

### Academic Employment History:

- Associate Professor, Michigan State University, 2015-Present.
- Assistant Professor, Michigan State University, 2009-2015.
- L.E. Dickson Instructor, University of Chicago, 2006-2009.

### Acknowledgements:

- College of Natural Science Faculty Teaching Prize, 2018.
- College of Natural Science Undergraduate Teaching Award, 2018.
- Resource Center for Persons with Disabilities Spirit of Ability Award, 2015.
- Michigan State University Teacher-Scholar Award, 2014.
- College of Natural Science Teacher-Scholar Award, 2013.
- Mathematics Department J.S. Frame Teaching Award, 2011.
- Clay Mathematics Institute Liftoff Fellow, 2006.

### External Support:

- NSF, DMS-1207655, "Curvature, geodesics, and rigidity." 08/2012-08/2016.  
\$149,685.
- NSF, DMS-0905906 and DMS-1013334, "Extremality of symmetry in nonpositive curvature, geodesics, and the dynamics of large group actions." 07/2009-07/2012.  
\$132,002.

- NSF, DMS-1133198 and DMS-1104514, "The 2011 Graduate Student Topology and Geometry Conference." 02/2011-02/2012. \$49,999.
- NSF Postdoctoral Fellowship. 2006-2008.

### **Publications:**

- (Joint with R. Shankar and R. Spatzier) Almost isotropic Kahler manifolds. Accepted for publication in *Journal für die reine und angewandte Mathematik (Crelles Journal)* (2019).
- (Joint with M. Mainkar) Metric foliations of homogenous three-spheres. Accepted for publication in *Geometriae Dedicata* (2019).
- (Joint with I. Adelstein) Characterizing round spheres using half-geodesics. *Proceedings of the National Academy of Sciences USA*, **116** (2019), No. 29, 14501-14504.
- (Joint with R. Bettiol) Three-manifolds with many flat planes. *Transactions of the AMS*, **370** (2018), No. 1, 669-693.
- (Joint with S. Lin) Manifolds with many hyperbolic planes. *Differential Geometry and its Applications*, **52** (2017), 121-126.
- (Joint with J. Wolfson) Three-manifolds with constant vector curvature one. *Comptes Rendus Mathématique*, **355** (2017), No 4., 460-463.
- (Joint with S. Lin) Real projective spaces with all geodesics closed. *Geometric and Functional Analysis*, **27** (2017), No. 3, 631-636.
- (Joint with J.-F. Lafont and W. van Limbeek) Quasicircle boundaries and exotic almost isometries. *Annales De L' Institut Fourier (Grenoble)*, **67** (2017), No. 2, 863-877.
- (Joint with R. Shankar and R. Spatzier) Positively curved manifolds with large spherical rank. *Commentarii Mathematici Helvetici*, **91** (2016), 219-251.
- (Joint with J.-F. Lafont and A. Kar) Rigidity of almost-isometric universal covers. *Indiana University Mathematics*, **65** (2016), No. 2, 585-613.
- (Joint with J. Wolfson) Complete curvature homogeneous metrics on  $SL(2, \mathbb{R})$ . *Pacific Journal of Mathematics*, **273** (2015), No. 2, 499-509.
- (Joint with J. Wolfson) Three-manifolds with constant vector curvature. *Indiana*

*University Mathematics Journal*, **63** (2014), 1757-1783.

- Positively curved manifolds with large conjugate radius. *Journal of Topology and Analysis*, **5** (2013), No. 3, 333-344.
- (Joint with C. Sutton) Two remarks on the length spectrum of a Riemannian manifold. *Proceedings of the American Mathematical Society*, **139** (2011), 4113-4119.
- Spherical Points in Riemannian manifolds. *Proceedings of the American Mathematical Society*, **139** (2011), No.1, 305-308.
- (Joint with J. Souto) A characterization of round spheres in terms of blocking light. *Commentarii Mathematici Helvetici*, **85** (2010), 259-271.
- (Joint with I. Biringer) The three gap theorem and Riemannian geometry. *Geometria Dedicata*, **136** (2008), No. 1, 175-190.
- (Joint with A. Pelayo) Maximal ball packings of symplectic-toric manifolds. *International Mathematics Research Notices* (2008), 24p, IDrmn139.
- Blocking light in closed Riemannian manifolds. *Guido's Book of Conjectures, Monographie de L'Enseignement Mathematique*, **40** (2008), 165-167.
- (Joint with J.-F. Lafont) Blocking light in compact Riemannian manifolds. *Geometry & Topology*, **11** (2007), 867-887.
- (Joint with J.-F. Lafont) On submanifolds in locally symmetric spaces of non-compact type. *Algebraic and Geometric Topology*, **6** (2006), 2455-2472.
- (Joint with J.-F. Lafont) Simplicial volume of closed locally symmetric spaces of noncompact type. *Acta Mathematica*, **197** (2006), No.1, 129-143.
- Weakly hyperbolic actions of Kazhdan groups on tori. *Geometric and Functional Analysis*, **16** (2006), No. 5, 1139-1156.

### **Submitted for Publication**

- (Joint with M. Mainkar) Diameters of ball intersections. *Submitted for publication* (2019).
- (Joint with S. Lin and C. Sutton) Geometric structures and the Laplace spectrum. *Submitted for publication* (2019).

### **In Preparation for Publication:**

- (Joint with S. Lin and C. Sutton) Geometric structures and the Laplace spectrum, Part II. *In preparation* (2019).
- (Joint with M.Maikar) Preserve one, preserve all. *In preparation* (2019).

### **Additional (Available by request):**

- (Joint with K. Burns) Closed geodesics without proper chords.
- (Joint with K. Burns) CROSS blocked manifolds are Blaschke.
- (Joint with K. Burns) On the singularities and radial injectivity of Riemannian exponential maps.

### **Invited Visits to Research Institutes:**

- Chern Institute of Mathematics, Tianjin, China. One week visit.
- Banff International Research Station, Banff, Canada (BIRS). Two one week visits.
- American Institute of Mathematics, (AIM) Palo Alto, CA. Four one week visits.
- Institut Des Hautes Etudes Scientifiques (IHES). Bures-sur-Yvette, France. One month visit.
- Instituto de Matematicas de la UNAM. Oaxaca, Mexico. Two one week visits.
- Instituto de Matematicas de la UNAM. Morelia, Mexico. One week visit.
- Swiss Federal Institute of Technology (ETH). Zurich, Switzerland. One month visit.
- Instituto Nacional de Matematica Pura e Aplicada (IMPA). Rio de Janeiro, Brazil. One week visit.

### **Invited Lectures:**

- Geometry Seminar, Purdue University, Scheduled Fall 2019.
- Geometry Seminar, University of Michigan, Scheduled Fall 2019.

- Bloomington Geometry Workshop
- Smith College: Research Seminar for faculty and Lunch Series Seminar for undergraduates.
- Group Actions in Riemannian Geometry Conference, Dartmouth College.
- Evans-Hall Award Ceremony Lecture, Emory University.
- 49<sup>th</sup> Spring Topology and Dynamics Conference, BGSU.
- Bowling Green State University Colloquium
- Central Michigan University Colloquium
- Geometry Seminar, UC Santa Barbara.
- Group Actions in Riemannian Geometry Conference, University of North Carolina, Chapel Hill.
- Undergraduate Mathematics Colloquium, Hope College.
- Mathematics Club, Williamston Michigan High School.
- Metric Geometry, Geometric Topology and Groups Conference, BIRS.
- Geometry Seminar, Notre Dame.
- Geometry Seminar, Indiana University.
- American Institute of Mathematics, Research Square on Gromov's Simplicial Volume.
- Geometry Seminar, Indiana University.
- Research Experience for Undergraduates Colloquium, Grand Valley State University.
- Research Experience for Undergraduates Colloquium, Central Michigan University.
- American Institute of Mathematics, Research Square on Gromov's Simplicial Volume.
- Geometry and Topology in Samos, Karlovassi, Samos.
- Geometric Analysis Seminar, M.I.T.

- Geometry and Topology Seminar, University of Wisconsin, Madison.
- Mathematics Colloquium, Dartmouth University.
- Geometry/Topology Seminar, Dartmouth University.
- American Mathematical Society Special Session on Interactions Between Geometry and Topology, University of Akron.
- Mathematics Colloquium, Grand Valley State University.
- Canada/USA Mathcamp, University of Puget Sound.
- Conference in Geometric Group Theory and Related Topics, Ohio State University.
- American Mathematical Society Special Session on Rigidity, Notre Dame.
- American Mathematical Society Special Session on Applications of Differential Geometry, Notre Dame.
- Mathematics Colloquium, University of Oklahoma.
- Geometry/Topology Seminar, University of Oklahoma.
- Geometric Analysis Seminar, Ohio State University.
- Dynamics Seminar, Northwestern University.
- Geometric Analysis Seminar, Purdue University.
- International Conference on Geodesics at Chern Institute of Mathematics, Tianjing, China.
- Joint American Mathematical Society and Mathematical Association of America annual conference. Special session on Spectral Analysis, San Francisco, CA.
- Mathematics Colloquium, Dartmouth University.
- Geometry/Topology Seminar, Dartmouth University.
- Eighth Annual Midwest Graduate Student Topology and Geometry Conference, One hour lecture on open problems, University of Michigan.
- Geometry Seminar, University of Michigan.

- American Mathematical Society special session, Baylor University.
- Mathematics Colloquium, Ohio State University.
- Mathematics Colloquium, Penn State University.
- Mathematics Colloquium, University of Illinois Urbana-Champaign.
- Mathematics Colloquium, Boston College.
- Mathematics Colloquium, Bowling Green State University.
- Mathematics Colloquium, University of Alabama.
- Geometry Seminar, Notre Dame.
- Geometry Seminar, University of Michigan.
- American Mathematical Society special session, Chicago, IL.
- American Mathematical Society special session, Bloomington, IL.
- Mathematics Colloquium, Rice University.
- Mathematics Colloquium, Michigan State University.
- Mathematics Colloquium, Tulane University.
- Dynamics of Group Actions Seminar, Yale University.
- Geometry Seminar, Stanford University.
- Geometry/Topology/Dynamics Seminar, University of Illinois in Chicago.
- Topology Seminar, Ohio State University.
- Topology Seminar, Binghamton University.
- Geometric Function Theory Seminar, University of Michigan.
- Conference on Geometry, Topology, and their Interactions. Morelia, Mexico (UNAM).
- American Mathematical Society special session, Miami University.
- International Beyond Hyperbolicity Conference, Chicago, IL.

- Blooming Geometry Conference.
- Geometric Groups on the Gulf Conference.
- Wasatch Topology Conference.
- Geometry/Topology Seminar, University of Chicago.
- Geometry/Topology Seminar, University of Illinois Urbana-Champaign.
- Dynamics Seminar, Northwestern University.
- Twenty-Second Annual Geometric Topology Workshop, Colorado College.
- Group Actions, Rigidity, and Dynamics Conference, BIRS.
- American Mathematical Society special session, Texas Tech University.
- Geometry/Topology Seminar, Caltech University.
- Dynamics Seminar, Indiana University.
- Geometry/Topology Seminar, Indiana University.
- Dynamics Seminar, Ohio State University.
- Geometry Seminar, University of Michigan.
- Differential Geometry and Lie Theory Seminar, CUNY Graduate Center.
- Geometry/Topology Seminar, Binghamton University.

**Ph.D Advising:**

- Samuel Lin, Ph.D. Spring 2017. First and Current Position: Dartmouth College.
- Reza Bidar, Ph.D. Summer 2018. First Position: Lyman Briggs College, MSU. Current Position: Albion College.

**Courses Taught at MSU:**

- Fall 2019: None.



- Summer 2019: Matrix Algebra and Applications (314).
- Spring 2019: None.
- Fall 2018: None.
- Spring 2018: None.
- Fall 2017: Applied Calculus (124), Undergraduate Thesis (492H) supervising Eliot Bongiovanni.
- Spring 2017: Reading course with Luke Vaicunas.
- Summer 2016: Reading course with Eliot Bongiovanni.
- Fall 2016: None.
- Spring 2016: None.
- Fall 2015: Applied Calculus (124), Geometry and Topology I (868)
- Spring 2015: Riemannian Geometry II (931), Topics in Geometry (993)
- Fall 2014: Calculus III (234), Honors Linear Algebra (317H)
- Spring 2014: Calculus III (234).
- Fall 2013: AP Calculus II (133AP) and Calculus II (133).
- Summer 2013: Graduate Reading Course on Holonomy (890).
- Spring 2013: Riemannian Geometry II (931).
- Fall 2012: Abstract Algebra and Number Theory I (310), Honors Abstract Algebra I (418H), Undergraduate Reading Course on Geometry and Billiards (490).
- Spring 2012: Honors Calculus II (153H), Capstone in Mathematics for Secondary Education (396).
- Fall 2011: Honors Calculus I (152H).
- Spring 2011: Topics in Geometry: Negatively Curved Manifolds (993).
- Fall 2010: Honors Calculus III (254H), Geometry and Topology I (868).
- Spring 2010: Higher Geometry (330).

- Fall 2009: AP Calculus II (133AP).

**Departmental Service at MSU:**

- Director of Undergraduate Studies, Summer 2018-Present.
- CSAS Hiring Committee, Beginning Fall 2018.
- Mathematics/Statistics/PRIME (Program for Research In Mathematics and Education) Hiring Committee Chair, Beginning Fall 2018.
- Wells Hall Atrium Planning Committee, Beginning Fall 2018.
- Undergraduate Studies Committee, Fall 2017- Spring 2018.
- CSAS Hiring Committee, Spring 2017.
- Mathematics Hiring Committee, Fall 2016-Spring 2017.
- Colloquium Organizer, Fall 2016-Spring 2017.
- Organized Postdoc Lightning Talks and Welcome Reception, Fall 2016.
- GII/PRIME (Global Impact Initiative/Program for Research In Mathematics and Education) Search Committee, 2015-2016.
- Associate Graduate Director, Spring 2016.
- AMS Joint Meetings Graduate School Fair MSU Representative, Spring 2016.
- Graduate Studies Committee, Fall 2015- Spring 2016.
- Undergraduate Studies Committee, Fall 2015- Spring 2016.
- Colloquium Committee, Fall 2015-Spring 2016.
- Organized Postdoc Welcome Reception, Fall 2015
- AMS Joint Meetings Graduate School Fair MSU Representative, Spring 2015.
- Graduate Studies Committee, Fall 2014-Spring 2015.
- Advanced Track Major Advisory Committee, Fall 2014-Spring 2015.

- Alumni Distinguished Scholars Recruitment Sessions, Springs 2010-2015.
- Ongoing organizational contribution and support of Geometry and Geometry/Topology Seminars 2009-Present.

**College/University Level Service at MSU:**

- College of Natural Science Undergraduate Studies Strategic Planning Committee, Summer 2019.
- College of Natural Science Curriculum Committee, Fall 2018-Present.
- College of Natural Science representative on the MSU Teacher-Scholar Award Committee, Fall 2016.
- Math Department representative on PRIME (Program for Research In Mathematics and Education) search committee, Fall 2013-Spring 2014.

**Professional Service:**

Referee:

*Geometry and Topology*  
*Algebraic and Geometric Topology*  
*Journal of Modern Dynamics*  
*Pacific Journal of Mathematics*  
*Proceedings of the American Mathematical Society*  
*Geometriae Dedicata*  
*Journal of Topology and Analysis*  
*Geometric and Functional Analysis*  
*Commentarii Mathematici Helvetici*  
*Indiana University Mathematics Journal*  
*Differential Geometry and Its Applications*  
*Duke Math Journal*  
*Advances in Geometry*  
*Glasgow Mathematical Journal*  
*Ergodic Theory and Dynamical Systems*  
*Transformation Groups*  
*Michigan Math Journal*  
*Geometry and Topology.*

- Special Session Organizer for AMS Sectional Meeting at OSU, Spring 2018.
- Special Session Organizer for AMS Sectional Meeting at MSU, Spring 2015.

- National Science Foundation Differential Geometry grant review panel, Spring 2013.
- Organization of the 9th annual Geometry and Topology Graduate Student Conference held at MSU April 2-3, 2011. Obtained \$49,999 in grant support from the National Science Foundation.

**Outreach:**

- Lunch Series Lecture and Roundtable Discussion at the Center for Women in Mathematics. Smith College, Spring 2017.
- Math Club Lecture. Williamston, MI high school, Spring 2014.
- Undergraduate Mathematics Colloquium -- Paul Monsky's Theorem. Hope College, Spring 2014.
- Beihang University Exchange Program -- One week mini-course on the p-adic numbers for advanced undergraduates visiting MSU from Beihang University, Summer 2013.
- Research Experience for Undergraduates Colloquia -- Hammer's X-Ray Problem. Grand Valley State University and Central Michigan University, Summer 2013.
- Canada/USA MathCamp--One week course on constructible numbers for mathematically talented high school students in addition to a research in pairs program with Craig Sutton from Dartmouth. Summer 2012.
- SpartaNature -- summer short course on Fibonacci sequence and Golden Ratio, Summer 2011, Kellogg Biological Station.