

# ANDREW ZIMMER

---

Department of Mathematics  
College of William and Mary  
P.O. Box 8795  
Williamsburg, VA 231857

amzimmer@wm.edu  
<http://www.math.wm.edu/~amzimmer>

## EDUCATION

---

**University of Michigan** • Ph.D. Mathematics, May 2014

Advisor: Ralf Spatzier

**University of Illinois at Urbana-Champaign** • M.S. Mathematics, May 2010

**University of Puget Sound** • B.S. Mathematics and Computer Science, May 2008

Honors in Mathematics, Summa Cum Laude

**Budapest Semesters in Mathematics** • Fall 2006

## EMPLOYMENT HISTORY

---

**Assistant Professor**, College of William and Mary, 2017-present.

**L.E. Dickson Instructor**, University of Chicago, 2014-2017.

## PUBLICATIONS AND PREPRINTS

---

Preprints can be found on my academic [website](#).

1. Smoothly bounded domains covering finite volume manifolds, preprint.
2. The automorphism group and limit set of a bounded domain II: the convex case, preprint.
3. The automorphism group and limit set of a bounded domain I: the finite type case, preprint.
4. Projective Anosov representations, convex cocompact actions, and rigidity, submitted.
5. Characterizing strong pseudoconvexity, obstructions to biholomorphisms, and Lyapunov exponents, submitted.
6. A gap theorem for the complex geometry of convex domains, accepted to **Transactions of the AMS**.
7. Generic analytic polyhedron with non-compact automorphism group, accepted to **Indiana University Mathematics Journal**.
8. Gromov Hyperbolicity of Bounded Convex Domains, In: Blanc-Centi, editor, **Metrical and dynamical aspects of complex analysis**, pp. 67-114. *Lecture Notes in Mathematics*, Vol. 2195, New York: Springer, 2017.
9. Goldilocks domains, a weak notion of visibility, and applications (with G. Bharali), **Advances in Mathematics**, 310: 377-425, 2017.
10. Proper quasi-homogeneous domains in flag manifolds and geometric structures, accepted to **Annales de l'Institut Fourier**.
11. Rigidity of convex divisible domains in flag manifolds (with W. Van Limbeek), submitted
12. Entropy rigidity of Hilbert and Riemannian metrics (with T. Barthelmé and L. Marquis), **International Mathematics Research Notices**, 2017 (22): 6841-6866, 2017.

13. Characterizing the unit ball by its projective automorphism group, **Geometry and Topology**, 20: 2397-2432, 2016.
14. The structure of projective maps between real projective manifolds, **Geometriae Dedicata**, 190: 81-102, 2017.
15. Characterizing domains by the limit set of their automorphism group, **Advances in Mathematics**, 308: 438 - 482, 2017.
16. Gromov hyperbolicity, the Kobayashi metric, and  $\mathbb{C}$ -convex sets, **Transactions of the AMS**, 369: 8437-8456, 2017.
17. Gromov hyperbolicity and the Kobayashi metric on convex domains of finite type, **Mathematische Annalen**, 365: 1425-1498, 2016.
18. Rigidity of complex convex divisible sets, accepted to **Journal of Topology and Analysis**.
19. Boundaries of non-compact harmonic manifolds, **Geometriae Dedicata**, 168: 339-357, 2014.
20. Compact asymptotically harmonic manifolds, **Journal of Modern Dynamics**, 6: 377-403, 2012.
21. A symplectic proof of a theorem of Franks (with B. Collier, E. Kerman, B. Reiniger, B. Turmunkh), **Compositio Mathematica**, 148: 1969-1984, 2012.

The papers below come from research I did as an undergraduate (it took a long time to write up and submit everything).

21. A new lower bound for the semidefinite minimum rank, **Linear Algebra and its Applications**, 438: 1095-1112, 2013.
22. Bounds for minimum rank problems from superpositions and cutsets (with J. Beagley, L. Mitchell, S. Narayan, E. Radzwion, S. Rimer, R. Tomasino, J. Wolfe), **Linear Algebra and its Applications**, 438: 4041-4061, 2013.
23. Lower bounds for minimum semidefinite rank from orthogonal removal and chordal supergraphs (with L. Mitchell, S. Narayan), **Linear Algebra and its Applications**, 436: 524-536, 2012.
24. Robustness and surgery of frames (with S. Narayan, E. Radzwion, S. Rimer, R. Tomasino, J. Wolfe), **Linear Algebra and its Applications**, 434: 1893-1901, 2011.
25. Lower bounds in minimum rank problems (with L. Mitchell, S. Narayan), **Linear Algebra and its Applications**, 432: 430-440, 2010.
26. Symmetric functions, Pascal matrices, and Stirling matrices (with M. Spivey), **Linear Algebra and its Applications**, 428: 1127-1134, 2008.

## GRANTS

---

NSF DMS-1760233, 2017-2020 (formerly DMS-1700079)

NSF Postdoctoral Fellowship, 2014-2017

Mentor: Benson Farb

## RECENT TEACHING EXPERIENCE:

---

College of William and Mary:

- *Math 403: Intermediate Analysis*, Spring 2018.
- *Math 416: Real Hyperbolic Geometry*, Spring 2018.
- *Math 211: Linear Algebra*, Fall 2017 (two sections).

**University of Chicago:**

- *Math 15300: Calculus III*, Fall 2016.
- *Math 20400: Analysis II*, Fall 2016.
- *Math 20100: Mathematical Methods for Physical Sciences II*, Winter 2016.
- *Math 16100: Honors Calculus I*, Fall 2015.

**University of Michigan:**

- *Math 116: Calculus II*, Fall 2012, Fall 2013.
- *Math 115: Calculus I*, Winter 2011.
- *Math 105: Precalculus*, Fall 2010.

**Mentoring:**

- Unofficial reading course (Winter 2017): Met weekly with an undergraduate student to discuss topics in topological data analysis.
- Unofficial reading course (Fall 2015): Met weekly with an undergraduate student to discuss topics in differential geometry.
- Graduate student mentor (Summer 2008): Mentored a group of undergraduates conducting mathematical research at Central Michigan University.

**SERVICE**

---

1. **Referee/short opinions for various journals:** Journal of Differential Geometry, Advances in Mathematics, Transactions of the AMS, New York Journal of Mathematics, Proceeding of the AMS, Pacific Journal of Mathematics, Indiana University Mathematics Journal, Geometriae Dedicata, Journal of Geometric Analysis, ...
2. **Seminar co-organizer.** Co-organized the Geometry and Topology seminar at the University of Chicago (2016-2017).
3. **Graduate admissions.** Evaluated candidates for admission into the Ph.D. program in mathematics at the University of Chicago for Fall 2016, 2017.
4. **Summer Orientation Mathematics Advisor.** Advised incoming undergraduate students on the mathematics courses offered at the University of Michigan (Summers 2012, 2013, 2014).

**NON-LOCAL TALKS**

---

- GAIA seminar on complex analytic geometry, POSTECH, Korea (January 2018)
- Geometry-Topology seminar, University of Maryland (November 2017)
- Geometry & Topology seminar, Caltech (October 2017)
- Summer 2017 Wasatch Topology Conference, Midway, Utah (August 2017)
- Complex Analysis and Geometry XXII, Levico Terme, Italy (June 2017)
- AMS Special Session on Several Complex Variables and PDEs, Washington State University (April 2017)

- Topology seminar, University of Michigan (April 2017)
- RTG Working Seminar on Geometry, Dynamics and Topology, University of Michigan (April 2017)
- Colloquium, College of William and Mary (March 2017)
- Workshop on Invariant Metrics, Squeezing Functions, and Mapping Problems, Oslo (March 2017)
- Complex Analysis and Geometry Seminar, Rutgers University (February 2017)
- University of Oklahoma (January 2017)
- AMS Special Session on Group Actions and Geometric Structures, JMM (January 2017)
- AMS Special Session on Character Varieties, JMM (January 2017)
- Special Session on Complex Analysis and Applications, CMS (December 2016)
- Colloquium, University of Wisconsin (December 2016)
- Felix Klein Seminar, University of Notre Dame (November 2016)
- RTG Working Seminar on Geometry, Dynamics and Topology, University of Michigan (Fall 2016)
- Analytic Aspects of Higher Teichmüller Theory, Rutgers University at Newark (Fall 2016)
- Complex Analysis and Complex Geometry, Banff (Spring 2016)
- Analysis seminar, University of Western Ontario (Spring 2016)
- AMS Special Session on Partial Differential Equations in Complex Analysis, JMM (Winter 2016)
- AMS Special Session on Metric Spaces: Geometry, Group Theory, and Dynamics, Loyola University (Fall 2015)
- Department colloquium, Bowling Green State University (Fall 2015)
- Geometry working seminar, Pennsylvania State University (Fall 2015)
- Analysis & Applied Mathematics seminar, Central Michigan University (Fall 2015)
- Spring School in Lille: Metrical and dynamical aspects of complex analysis, Université Lille 1 (Spring 2015)
- Bloomington Geometry Workshop, University of Indiana (Spring 2015)
- AMS Special Session on Geometry of Manifolds, Singular Spaces, and Groups, Michigan State University (Spring 2015)
- Geometry, Groups and Dynamics seminar, University of Illinois at Urbana-Champaign (Winter 2015).
- Ahlfors-Bers Colloquium, Yale University (Fall 2014)
- GEAR junior retreat, University of Michigan (Summer 2014)
- Group actions in Riemannian geometry, University of North Carolina (Summer 2014)
- Geometry/Topology seminar, Temple University (Spring 2014)
- Semi-annual Workshop in Dynamical Systems and Related Topics, Penn State University (Fall 2013)

- Geometry/Topology seminar, University of Chicago (Fall 2013)
- Geometry/Topology seminar, Michigan State University (Fall 2013)
- RTG Workshop on Random Walks on Groups, University of Michigan (Winter 2013)
- AMS Special Session on Interactions between Geometry and Topology, University of Akron (Fall 2012)
- Geometric Analysis Seminar, Michigan State University (Fall 2011)
- Mathematics REU Guest Speaker, Central Michigan University (Summer 2011)