

## Andrew M. Sanders

---

|                     |  |  |
|---------------------|--|--|
| CONTACT INFORMATION | Mathematisches Institut<br>Heidelberg University<br>Universitt Heidelberg<br>Im Neuenheimer Feld 205<br>69120 Heidelberg<br>Germany  | asanders@math.uni-heidelberg.de<br><a href="https://www.mathi.uni-heidelberg.de/~asanders/">https://www.mathi.uni-heidelberg.de/~asanders/</a> |
| RESEARCH INTERESTS  | Geometry, topology, dynamics and geometric analysis. Particularly, surface group representations, dynamics of discrete group actions, complex geometry of locally homogeneous spaces, harmonic maps and Higgs bundles.   |  |
| CURRENT EMPLOYMENT  | <ul style="list-style-type: none"><li>• Post-doctoral research fellow in the differential geometry research group at Heidelberg University. October 2016-present</li></ul>   |  |
| PAST EMPLOYMENT     | <ul style="list-style-type: none"><li>• Research Assistant Professor and N.S.F. Postdoctoral fellow at the University of Illinois at Chicago. August 2013 - July 2016</li><li>• Ph.D. student and Graduate Assistant at the University of Maryland, College Park. August 2006- July 2013.</li></ul>  |  |
| EDUCATION           | University of Maryland, College Park. <ul style="list-style-type: none"><li>• Ph.D. in Mathematics, 2013.</li></ul> University of California, Los Angeles. <ul style="list-style-type: none"><li>• B.S. in Mathematics, 2006.</li><li>• B.A. in English Literature (Creative writing concentration: Poetry), 2006.</li></ul>   |  |
| INVITED TALKS       | <ul style="list-style-type: none"><li>• Conference on recent advances in surface group representations. Strausbourg, France. October 2017. <i>G-opers and the holonomy map</i></li><li>• University of Chicago at Illinois, Geometry Seminar. September 2017. <i>G-opers and the holonomy map</i></li><li>• University of Maryland, College Park. Geometry Seminar. September 2017. <i>G-opers and the holonomy map</i></li><li>• Workshop on asymptotics of surface group representations. Conference in Montana. June 2017. <i>An introduction to G-opers</i></li><li>• JMM special session. January 2017. Atlanta, Georgia. <i>Cohomology of manifolds associated to higher Fuchsian representations</i></li><li>• JMM special session. January 2017. Atlanta, Georgia. <i>Hodge theory and Riemannian metrics on character varieties</i></li><li>• Pavia University, Geometry seminar. November 2016. <i>Hodge theory and Riemannian metrics on character varieties</i></li><li>• University of Strausbourg, Geometry Day. November 2016. <i>Complex geometry of manifolds associated to quasi-Fuchsian representations</i></li><li>• University of Maryland, College Park. Geometry Seminar. September 2016 <i>Deformation theory of equivariant holomorphic immersions and rigidity of G-opers</i></li><li>• Workshop on analytic aspects of higher Teichmuller theory. Conference at University of Rutgers, Newark. September 2016. <i>Entropy degeneration and asymptotic flatness of minimal surfaces</i></li><li>• Brown University. Geometry Seminar. April 2016. <i>Hodge theory and Riemannian metrics on character varieties</i></li></ul> |  |

- Workshop on surface group representations. Conference at California Institute of Technology in Pasadena, CA. March 2016.  
*Hodge theory and Riemannian metrics on character varieties*
- Workshop on  $\mathrm{Sp}(4, \mathbb{R})$ . Workshop in Granby, Colorado. January 2016.  
*Labourie's conjecture on equivariant minimal surfaces*
- University of Rutgers, Newark. Mathematics Colloquium. February 2016.  
*Hodge theory and Riemannian metrics on character varieties.*
- University of Rutgers, Newark. Teichmuller theory seminar. February 2016.  
*Complex deformations of Anosov representations*
- Higher Teichmuller theory and Higgs bundles. Conference in Heidelberg, Germany. November 2015.  
*Complex deformations of Anosov representations*
- Geometric structures and related topics, Conference in Seoul, Korea. August 2015.  
Lecture series.  
*Complex deformations of Anosov representations*
- Dynamics on Moduli spaces of geometric structures, Semester at MSRI in Berkeley, January-May, 2015. 3 talks.  
*Complexification of real analytic Kahler manifolds and hyper-Kahler geometry*  
*An overview of Labourie's conjecture on minimal surfaces*  
*Minimal surfaces and entropy of Hitchin representations*
- Workshop on Higgs bundles and Harmonic maps, Conference in North Carolina, January 2015.  
*An overview of Labourie's conjecture on minimal surfaces*
- Rice University, Geometry seminar. November 2014.  
*Minimal surfaces and entropy of Hitchin representations*
- Geometric structures and representation varieties, Conference in Seoul, Korea. November 2014.  
*Minimal surfaces and entropy of Hitchin representations*
- Teichmuller Theory and immersed surfaces in 3-manifolds, Conference in Pisa, Italy. June 2014.  
*A new proof of Bowen's theorem on Hausdorff dimension of quasi-circles*
- University of Maryland, College Park, Geometry seminar, April 2014.  
*Hitchin harmonic maps are immersions*
- University of Illinois at Urbana-Champaign, Geometry seminar, March 2014.  
*A new proof of Bowen's theorem on the Hausdorff dimension of quasi-circles*
- CUNY Graduate Center, Complex analysis and dynamics seminar, March 2014.  
*A new proof of Bowen's theorem on the Hausdorff dimension of quasi-circles*
- California Institute of Technology, February 2014.  
*A new proof of Bowen's theorem on the Hausdorff dimension of quasi-circles*
- University of Utah, Geometry Seminar, February 2014.  
*A new proof of Bowen's theorem on the Hausdorff dimension of quasi-circles*
- University of Illinois at Chicago, Geometry Seminar, September 2013.  
*A new proof of Bowen's theorem on the Hausdorff dimension of quasi-circles*
- Workshop on Higher Teichmüller-Thurston theory, Maine, June 2013.  
3 Hour minicourse entitled *Harmonic maps and Higgs bundles*
- University of Maryland, College Park, Geometry Seminar. April 2013.  
*A new proof of Bowen's theorem on the Hausdorff dimension of quasi-circles*
- AMS Special session on geometric and analytic methods in Teichmüller and hyperbolic geometry, January 2013. *Domains of Discontinuity of almost-Fuchsian groups*
- University of Illinois at Urbana-Champaign, Geometry Seminar, November 2012.  
*Domains of Discontinuity for almost-Fuchsian manifolds*
- University of Illinois at Chicago, Geometry Seminar. November 2012.  
*Domains of Discontinuity for almost-Fuchsian manifolds*
- CUNY Graduate Center, Teichmuller Theory Seminar, October 2012.

*Domains of Discontinuity for almost-Fuchsian manifolds*

- 1st annual GEAR retreat, UIUC, Urbana-Champaign, Illinois, July 2012.  
*Minimal surfaces in quasi-Fuchsian manifolds and Hausdorff dimension.*
- Geometry and Analysis of Surface Groups: special seminar, IHP, Paris, France, February 2012.  
*Hyperbolization of three manifolds and an introduction to Ricci flow.*
- Geometry and Analysis of Surface Groups: special seminar, IHP, Paris, France, February 2012.  
*An introduction to the eight Thurston geometries.*
- Geometry and Analysis of Surface Groups: research seminar, IHP, Paris, France, February 2012.  
*Closed minimal surfaces in hyperbolic three manifolds.*
- MRC - Real Projective Structures, Snowbird, Colorado, June 2011.  
*Parameterizing real projective structures on closed surfaces.*
- Graduate Student and Post-Doc Workshop on Low Dimensional Topology and Geometry, Princeton, March 2011.  
*Minimal surfaces in quasi-Fuchsian three manifolds.*
- U. Maryland Geometry and Topology Seminar, College Park, September 2009.  
*Geometrization of three manifolds and long time behavior of the Ricci flow.*

PAPERS  
(ACCEPTED,  
SUBMITTED, OR IN  
PREPARATION)

- *Surface groups acting on CAT(-1) spaces.* Joint with Georgios Daskalopoulos, Chikako Mese, and Alina Vdovina. Accepted at *Ergodic Theory and Dynamical Systems*.
- *Geometry of compact complex manifolds associated to generalized quasi-Fuchsian representations.* Joint with David Dumas. Submitted March 2017.
- *Bi-lagrangian structures and Teichmüller theory.* Joint with Brice Loustau. Submitted August 2017.
- *Hodge theory and Riemannian metrics on character varieties.* In preparation.
- *G-operators and the holonomy map* In preparation.
- *Deformations of holomorphic submanifolds of  $(G,X)$ -manifolds.* Joint with David Dumas. In preparation.
- *Anosov representations, locally homogeneous complex manifolds and deformation theory.* Joint with David Dumas. In preparation.

PUBLICATIONS

- Andrew Sanders, ‘Domains of discontinuity for almost-Fuchsian groups’, *Trans. Amer. Math. Soc.*, electronically published on August 18, 2016, DOI: <https://doi.org/10.1090/tran/6789>. (to appear in print).
- Andrew Sanders, *Entropy, minimal surfaces and negatively curved manifolds.* *Ergodic Theory and Dynamical Systems*, available on CJO2016. doi:10.1017/etds.2016.23.

TEACHING  
EXPERIENCE

Professor, U. Illinois at Chicago

- Math 551 - Riemannian Geometry, Fall 2015.
- Topics seminar - Higgs bundles, Fall 2014.
- Math 320 - Linear Algebra, Fall 2013.

Grader, U. Maryland:

- Math 437 - Differential Forms and Calculus on Manifolds: Spring 2011.
- Math 734 - Second semester of Graduate Algebraic Topology: Spring 2011.

Teaching Assistant (Two biweekly discussion sections, grading), U. Maryland:

- Math 140 - Calculus I: Spring 2008, Fall 2008.
- Math 141 - Calculus II: Fall 2006, Spring 2007, Fall 2007, Spring 2009.
- Math 241 - Calculus III: Fall 2009, Fall 2011.

Instructor (Sole instructor and grader), U. Maryland:

- Math 113 - College Algebra: Summer 2008.
- Math 115 - Precalculus: Summer 2011.

EDITORIAL  
EXPERIENCE

- *Proceedings of the London mathematical society* Referee
- *Journal of Geometry and Topology*. Referee.
- *Journal of Conformal Geometry and Dynamics*. Referee.
- *Geometriae Dedicata*. Referee.

ORGANIZATIONAL  
EXPERIENCE

- Workshop on Harmonic maps and Higgs Bundles, North Carolina, January 2015.
- Co-organizer with Brian Collier and Qionglin Li.
- Geometry and analysis of surface groups representations, Seminar at MSRI in Berkeley, CA. January-May 2015.
- Co-organizer with Qionglin Li.
- 2nd Gear Junior Network Retreat, University of Michigan, Ann Arbor, May 2014.
- Co-organizer with Michelle Lee, Sara Maloni and Laura Schaposnik.
- Special Session: Deformation Spaces of Geometric Structures on Low-Dimensional Manifolds. Joint Mathematics Meetings. Baltimore, MD, January 2014.
- Co-organizer.
- 1st Annual GEAR retreat, UIUC, Urbana-Champaign, July 2012. Teaching assistant.
- Acted as teaching assistant for a short lecture series titled: "Higgs bundles and surface group representations." Duties included assisting participants during problem sessions and posting selected solutions to assigned problems.
- EGL: Experimental Geometry Lab, U. Maryland. Asst. lab manager. Summer 2010.
- Guided undergraduate students in research projects related to hyperbolic geometry and Teichmuller theory. Gave a biweekly lecture series on topology and geometry of surfaces. Supervised writing of computer programs to visualize deformation spaces of hyperbolic structures.
- Organizer: U. Maryland graduate student Geometry and Topology Seminar.
- Fall & Spring 2009: Focus on Mapping Class group, measured foliations and Teichmuller theory. Gave 4 talks.
  - Fall 2011: Assorted topics. Gave 4 talks.
- Assistant Organizer: Geometry and Analysis of Riemann Surfaces and Their Moduli: Conference celebrating 60th birthday of Scott Wolpert, U. Maryland. September 2010.

AWARDS

- National Science Foundation Postdoctoral Research Fellowship. 2013-2016.
- Ann G. Wylie dissertation fellowship. University of Maryland, College Park. Fall 2012.

OTHER

- Familiar with Mathematica and Latex.