

# SAMUEL A. BALLAS

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## CURRENT EMPLOYMENT

**University of California at Santa Barbara**  
RTG Visiting Assistant Professor

Santa Barbara, California  
July 2013-Present

## EDUCATION

**University of Texas at Austin**

Austin, Texas

- Ph.D., Mathematics May 2013  
Thesis: *Flexibility and Rigidity of Three-Dimensional Convex Projective Structures*.  
Advisor: Alan Reid
- M.A., Mathematics May 2011

**Emory University**

Atlanta, Georgia

- B.S. Mathematics., *Summa cum Laude* May 2007  
Thesis: *Geometrically Finite Fuchsian Groups and the Patterson-Sullivan Measure*.  
Advisor: David Borthwick

## RESEARCH INTERESTS

Low-dimensional topology, hyperbolic geometry, real projective geometry, deformation theory, Teichmüller theory.

## PUBLICATIONS

- *Classifying Generalized Cusps* (with D. Cooper and A. Leitner, 2015, in preparation)
- *Bending Finite Volume Hyperbolic Manifolds* (with L. Marquis, 2015, in preparation)
- *Convex Projective Structure on Non-hyperbolic 3-manifolds* (with J. Danciger and G.S. Lee, 2015, submitted)
- *Constructing Thin Subgroups Commensurable with the Figure-eight Knot Group* (with D.D. Long, 2015),  
to appear *Algebr. Geom. Top.*
- *Finite Volume Properly Convex Deformations of the Figure-eight Knot*, (2014),  
to appear *Geom. Dedicata*
- *Deformations of Non-compact, Projective Manifolds*,  
*Algebr. Geom. Topol.* 14 (2014), no. 5, 2595-2625.

## SELECTED TALKS

- “Gluing Convex Projective Manifolds”  
Higher Teichmüller theory and Higgs bundles: interactions and new trends  
Heidelberg November 2015
- “Convex Projective Structures on Manifolds”  
A Mini Course at Workshop on Geometric Structures  
KIAS, Seoul, South Korea November 2014

- “Geometry of Cusps in Convex Projective Manifolds”  
Workshop on Geometry and Physics, Univeristy of Pittsburgh May 2014
- “Geometry of Cusps in Convex Projective Manifolds”  
RTG Workshop on Geometric Structures and Discrete Groups, UT Austin May 2014
- “A Geometric Description of  $(P)SL_4(\mathbb{R})$  Hitchin Representations”  
Workshop on Higher Teichmüller-Thurston Theory, Northport, Maine June 2013
- “Convex Projective Structures on Non-compact 3-manifolds”  
California Institute of Technology, Geometry and Topology Seminar May 2013
- “Convex Projective Deformations of the Figure-8 Knot Complement”  
AMS Special Session on Algebraic and Geometric Structures of 3-manifolds April 2013
- “Convex Projective Deformations of Non-Compact Manifolds”  
Arizona State University Differential Geometry Seminar January 2013
- “Convex Projective Deformations of Non-Compact Manifolds”  
Purdue University Geometric Analysis Seminar January 2013

## TEACHING EXPERIENCE

### UNIVERSITY OF CALIFORNIA, SANTA BARBARA

#### Instructor

- *Math 260P, The Casson Invariant* Spring 2015
- *Math 6A, Vector Calculus* Winter 2015
- *Math 108A, Introduction to Linear Algebra* Fall 2014 & Fall 2015
- *Math 260P, Representations of Surface Groups* Spring 2014
- *Math 8, Transition to Higher Mathematics* Winter 2014 & Fall 2015
- *Math 103, Introduction to Group Theory* Fall 2013

### UNIVERSITY OF TEXAS AT AUSTIN

**Supplemental Instruction<sup>1</sup> Coordinator:** Duties included leading weekly meetings with SI teaching assistant, organizing training for TAs, and serving as a liaison with the Sanger Learning Center.

August 2012-May 2013

**Supplemental Instruction Teaching Assistant:** Duties included designing activities that help to integrate course material and learning skills. Attend weekly meetings and semesterly training with other SI teaching assistants.

Spring 2012, Fall 2011, Spring 2010, & Fall 2009

**Teaching Assistant:** Duties included leading recitation sections, holding reviews for exams, grading quizzes and exams, and holding office hours.

August 2007-May 2013

## PROFESSIONAL ACTIVITIES

- Referee for Proceedings of the American Mathematical Society
- Referee for Pacific Journal of Mathematics
- Organizer of UCSB topology seminar
- Created student run wordpress blog containing course notes for Spring 2014 course on representations of surface groups.

<sup>1</sup>For more information about the SI program visit <http://www.utexas.edu/ugs/slc/support/si>

## HONORS, AWARDS, AND FELLOWSHIPS

- Research Training Grant Fellowship, UT Austin, 2011-2012
- Deborah Jackson Award recipient, Emory University, 2007

## REFERENCES

- Alan Reid, University of Texas at Austin, [areid@math.utexas.edu](mailto:areid@math.utexas.edu) (thesis advisor)
- William Goldman, University of Maryland, [wmg@math.umd.edu](mailto:wmg@math.umd.edu)
- Daryl Cooper, University of California at Santa Barbara, [cooper@math.ucsb.edu](mailto:cooper@math.ucsb.edu)
- Darren Long, University of California at Santa Barbara, [long@math.ucsb.edu](mailto:long@math.ucsb.edu)
- Jeffrey Danciger, University of Texas at Austin, [jdanciger@math.utexas.edu](mailto:jdanciger@math.utexas.edu)
- Marty Scharlemann, University of California Santa Barbara, [mgscharl@math.ucsb.edu](mailto:mgscharl@math.ucsb.edu) (teaching reference)

## MISCELLANEOUS

- U.S. citizen.