

# JASON DEBLOIS

## Curriculum Vitae

University of Illinois at Chicago · Mathematics, Statistics, and Computer Science  
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### PERSONAL INFORMATION

*Birth date* April 26, 1978  
*Citizenship* United States of America  
*Webpage* [www.math.uic.edu/~jdeblois](http://www.math.uic.edu/~jdeblois)

### EDUCATION

B.S. (Mathematics) University of Chicago · June 2000  
Ph.D. (Mathematics) University of Texas at Austin · May 2007.  
ADVISOR: Alan W. Reid

### POSITIONS AND AWARDS

*Research Assistant Professor* · University of Illinois–Chicago · August 2007–present  
*Mathematical Sciences Research Postdoctoral Fellow* · National Science Foundation · August 2007–present  
*MSRI Postdoctoral Fellow* · Mathematical Sciences Research Institute · Fall 2007  
*Visiting Scholar* · University of Illinois–Chicago · Fall 2006  
*Visiting Professor* · Centre Bernoulli, École Polytechnique Fédérale de Lausanne · September 2005  
*VIGRE Fellow* · U.T. Austin · 2005–2006  
*Frank Gerth III Teaching Excellence Award Recipient* · U.T. Austin · For the 2002–2003 school year.  
*Graduate Research Assistant* (A. W. Reid) · U.T. Austin · Fall 2006, Summer 2005, Summer 2004, Summer 2003, Summer 2002  
*Assistant Instructor* · U.T. Austin · Fall 2002–present  
*Teaching Assistant* · U.T. Austin · Fall 2001–Spring 2002  
*University Preemptive Fellowship* · U.T. Austin · Summer 2001  
*Graduate Research Assistant* (C. McA. Gordon) · U.T. Austin · Spring 2001  
*Departmental Fellowship* · U.T. Austin · Fall 2000 · Summer 2001

## MATHEMATICAL WRITING

**1** *The cross curvature flow on a negatively curved solid torus* (with D. Knopf and A. Young). (In preparation.)

We examine the cross curvature flow acting on rotationally symmetric negatively curved diagonal metrics on the solid torus with certain boundary conditions. We prove short-time existence and give bounds on curvatures depending only on the initial data.

**2** *Trace fields and commensurability of link complements* (with E. Chesebro). (Submitted.)

We construct an infinite family of incommensurable hyperbolic 2-component link complements all of which have trace field  $\mathbb{Q}(i, \sqrt{2})$ . We also give infinitely many examples of 2-component links with nonintegral traces and incommensurable one-cusped manifolds with trace field  $\mathbb{Q}(i, \sqrt{2})$ .

**3** *Totally geodesic surfaces and homology*. Algebraic and Geometric Topology Vol. 6, 1413–1428.

I give examples of hyperbolic rational homology spheres and hyperbolic knot complements in rational homology spheres containing closed embedded totally geodesic surfaces

**4** *Surface groups are frequently faithful* (with R. Kent). Duke Mathematical Journal Vol 131, No. 2, 351–362.

Let  $\pi$  be the fundamental group of a closed hyperbolic surface,  $\mathbb{K} \in \{\mathbb{R}, \mathbb{C}\}$ . We show that the set of faithful representations is dense in  $\text{Hom}(\pi, \text{PSL}_2(\mathbb{K}))$  equipped with its Euclidean topology, answering a question of W. Goldman. We also prove the existence of faithful representations in  $\text{Hom}(\pi, \text{PU}(2, 1))$  with certain nonintegral Toledo invariants.

**5** *Separability of Tilings* (with N. Baeth, L. Powell). Rose-Hulman NSF-REU report MSTR 00-10 (2000).

For a hyperbolic surface which is a cyclic cover of an OP triangle group, we classify the reflections in the triangle group whose fixed-point sets separate the surface.

## TALKS

**1** *Rank gradient of covers with property  $\tau$* —Joint Postdoctoral Seminar · Mathematical Sciences Research Institute · September 21, 2007

**2** *Virtually fibering the doubled tetras*—Topology Seminar · Rice University · October 22, 2007

**3** *Commensurability of link complements*—AMS Sectional Meeting · Salt Lake City, UT · October 8, 2006

**4** *Totally geodesic surfaces in rational homology knot manifolds*—Topology Seminar · University of Illinois at Chicago · September 18, 2006

**5** *Commensurability vs. trace field of link complements*—Topology Seminar · University of Texas–Austin · September 11, 2006

**6** *Surface groups are frequently faithful*—Research Seminar · Centre Bernoulli, École Polytechnique Fédérale de Lausanne · Fall 2005

7 *Totally geodesic surfaces and homology*—Research Seminar · Centre Bernoulli, École Polytechnique Fédérale de Lausanne · Fall 2005

8 *Surface groups are frequently faithful*—Topology Seminar · U.T. Austin · Fall 2004

9 *The hyperbolic Dehn surgery theorem*—Qualifying examination · Topology Seminar · U.T. Austin · Summer 2003

10 *Automorphisms of surfaces*—Preliminary Examination · Topology Seminar · U.T. Austin · Spring 2002

11 *Songs of splitting and systoles: an odyssey of triangular tiling groups* (with N. Baeth, L. Powell, and K. Woods)—Joint Meetings · Washington, D.C. · January 2000

#### TEACHING

*Spring 2005*—M305G: Elementary Functions and Coordinate Geometry · Instructor of Record · U.T.—Austin

*Fall 2004*—M305G: Elementary Functions and Coordinate Geometry · Instructor of Record · U.T.—Austin

*Spring 2004*—M382D: Differential Topology · Grader · U.T.—Austin

*Fall 2003*—M305G: Elementary Functions and Coordinate Geometry · Instructor of Record · U.T.—Austin

*Spring 2003*—M210E: Emerging Scholars Program · Instructor of Record · U.T.—Austin

*Fall 2002*—M210E: Emerging Scholars Program · Instructor of Record · U.T.—Austin

*Spring 2002*—M382D: Differential Topology · Grader · U.T.—Austin

*Fall 2001*—M427K: Differential Equations · Teaching Assistant · U.T.—Austin

#### CONFERENCES ATTENDED

AMS Western Section Meeting · Meeting #1019 · University of Utah · 2006

Conference on 3-Manifolds and Knot Theory · A conference in honor of the 60<sup>th</sup> birthday of Cameron Gordon · University of Texas at Austin · 2005

Ahlfors Bers Colloquium · University of Michigan · 2005

AMS Central Section Meeting · Meeting #1001 · Northwestern University · 2004

The Synthetic Geometry of the Weil-Petersson Metric · University of Utah · 2004

Conference on the Topology of Manifolds of Dimensions 3 and 4 · A conference in honor of the 60<sup>th</sup> birthday of Andrew Casson · 2003

The Andrews-Curtis and the Poincaré Conjectures · University of Arkansas · 2003

Spring Topology and Dynamics Conference · University of Texas at Austin · 2002

Joint Meetings · AMS Meeting #950 · Washington D.C. · 2000