

# Genevieve S. Walsh

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Department of Mathematics  
Tufts University  
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CURRENT AS OF JANUARY 2013

## Education

- Ph. D., University of California at Davis, Mathematics. June 2003.  
Dissertation Advisor: W. P. Thurston.
- M. S., Auburn University, Mathematics. June 1997.  
Thesis Advisor: K. Kuperberg.
- Budapest Semesters in Mathematics. Fall 1994 and Spring 1995.
- B. A., Oberlin College, Mathematics with Honors. June 1994.

## Areas of Specialization

Geometric Topology, Hyperbolic Geometry, Group Actions

## Professional Affiliations

American Mathematical Society, Association for Women in Mathematics

## Awards and Fellowships

- NSF Research Grant (PI) 2012- 2015.
- NSF Research Grant (PI) 2008-2011. No-cost extension 2011- 2012.
- Bernstein Faculty Fellow. Tufts University, 2007-2009.
- VIGRE Postdoctoral Fellowship. University of Texas at Austin, 2003-2006.
- VIGRE Graduate Fellow. University of California at Davis, 2002-2003.

## Academic Positions

- Assistant Professor, Tufts University. Fall 2006-present.
- Visitor, Harvard University. Spring-Fall 2010.
- Postdoctoral Researcher, Université du Québec à Montréal. Fall 2006.
- VIGRE Postdoctoral Instructor, University of Texas at Austin. Fall 2003-Spring 2006.
- Postdoctoral Associate, Cornell University. Summer 2003.

## Dissertation

- *Great circle links in the three-sphere*. June 2003. Advisor: W. P. Thurston.

## Papers

- *The bumping set and the characteristic submanifold*. Submitted.
- *Knot commensurability and the Berge conjecture*. Joint with M. Boileau, S. Boyer, and R. Cebanu. **Geometry and Topology** Vol. 16 (2012) 625–664. arXiv:1008.1034.
- *Orbifolds and commensurability*. “Interactions Between Hyperbolic Geometry, Quantum Topology, and Number Theory”. **Contemporary Mathematics** Vol. 541 (2011) 221–231. arXiv:1003.1335.
- *Incompressible surfaces and spinnormal form*. **Geometriae Dedicata** Vol. 151 (2011) 221–231. arXiv:math/0503027.
- *The automorphism group of the free group of rank two is a  $CAT(0)$  group*. Joint with A. Piggott and K. Ruane. **Michigan Mathematical Journal** Vol. 59 (2010) 297–302. arXiv:0809.2034.
- *Commensurability classes of two-bridge knot complements*. Joint with A. Reid. **Algebraic and Geometric Topology** Vol. 8 (2008) 1031–1057. arXiv:math.GT/0612473.
- *Three-manifolds, virtual homology, and group determinants*. Joint with D. Cooper. **Geometry and Topology** Vol. 10 (2006) 2247–2269. arXiv:math.GT/0603152.
- *Virtually Haken fillings and semi-bundles*. Joint with D. Cooper. **Geometry and Topology** Vol. 10 (2006) 2237–2245. arXiv:math.GT/0407328.
- *Surfaces in finite covers and the group determinant*. Part of the conference proceedings for *Low Dimensional Manifolds*. **Oberwolfach Reports** Vol. 2 (2005) 2 pages.
- *Great circle links and virtually fibered knots*. **Topology** Vol. 44 No. 5 (2005) 947–958. arXiv:math.GT/0407361.
- *Double bubbles in the three-torus*. Joint with M. Carrión Álvarez, J. Corneli and S. Beheshti. **Experiment. Math.** Vol. 12 (2003), No. 1, 79–89. arXiv:math.DG/0208120.

## Work in progress

- *Right-angled Coxeter groups, hyperbolic cubes, and acute triangulations*, Joint with S. Kim, in progress.
- *Big Dehn surgery space and the link of  $S^3$* , Joint with N. Hoffman, in progress.
- *Orbi-graphs and automorphism groups*, Joint with A. Piggott and K. Ruane, in progress.
- *On knots with hidden symmetries*, Joint with M. Boileau, S. Boyer, and R. Cebanu, in progress.

## Invited Research Talks and Research Visits

Talks are in research seminars unless otherwise noted.

- (2013- 2014)
  - Invited Speaker: “Low-dimensional Topology and Geometry in Toulouse”, on the occasion of Michel Boileau’s 60th birthday, Toulouse, France (June 2013, planned).
  - Invited Speaker: “Geometry and Groups after Thurston”, Dublin, Ireland (August 2013, planned).
- (2012- 2013)
  - Invited Speaker: “The Topology of 3-dimensional Manifolds” Workshop, Montréal, CA. (May 2013, planned).
  - Invited Speaker: “Cannon” meeting at the Fourier Institute (Grenoble), Wellesley College, Dartmouth College, Boston College (February 2013, planned), AWM symposium in Santa Clara (March 2013, planned), AMS special session in Boston (April 2013, planned).
  - Invited Speaker: Korea Advanced Institute of Science and Technology (4 talks).
  - Research Program Participant: Institute for Advanced Study/Park City Mathematics Institute Workshop “Geometric Group Theory”.
  - Researcher: 2-week “Research in Pairs” stay, Oberwolfach, Germany.
- (2011 - 2012)
  - Invited Speaker: “Workshop on Dehn Surgery”, Austin, TX.
  - Invited Speaker: Cornell University, Temple University
  - Invited Speaker: Association of Women in Mathematics 40th Anniversary Conference (Special Session in Geometric Group Theory).
  - Invited Speaker and Conference Participant: “Geometry and Topology Down Under: A Conference in Honor of Hyam Rubinstein”, Melbourne, Australia.
- (2010-2011)
  - Invited Speaker, American Mathematical Society (AMS) Meetings: Worcester MA (2 special sessions),
  - Invited Speaker: City University of New York, University of Oklahoma, Oklahoma State (Colloquium), Harvard University, Boston College.
  - Invited Speaker: CIRGET Reunion Conference, Montréal Canada.
  - Invited Speaker, American Mathematical Society (AMS) Meetings: Newark, NJ (special session).
- (2009-2010)
  - Invited Speaker: American Mathematical Society (AMS) special session, Albuquerque, NM.

- Invited Speaker and Conference Participant: “Quasi-isometric rigidity in low-dimensional topology” 5-day workshop. Banff International Research Station.
- Invited Speaker: Harvard University (twice).
- (2008-2009)
  - Invited Speaker: Yale University, Wesleyan University, Colby College (Colloquium).
  - Invited Speaker: Canada / France Congress. Special Session: “Low-dimensional topology”. Montréal, Canada.
  - Invited Speaker and Workshop Participant: Moab Topology Conference. Moab, Utah.
  - Invited Speaker and Workshop Participant: “Interactions between Hyperbolic Geometry, Quantum Topology and Number Theory” Workshop and Conference, Columbia University, New York, NY (4 lectures).
- (2007-2008)
  - Invited Speaker: University of Texas at Austin, Williams College (Colloquium).
  - Invited Speaker: Teichmüller Theory and Kleinian Groups: “Connections for Women” Conference. MSRI, Berkeley, CA (August 17 2007).
  - Invited Speaker: Geometric Group Theory: “Connections for Women” Conference. MSRI, Berkeley, CA (2 lectures) (August 23 2007).
  - Invited Speaker and Conference Participant: “Three-manifold Geometry and Topology” Conference. Warwick, England.
  - Invited Speaker: Special Session on Low-dimensional Topology, Joint meeting of the American Mathematical Society and the Sociedad Matemática Mexicana (SMM) Zacatecas, Mexico.
- (2006-2007)
  - Invited Speaker: SUNY Buffalo, Columbia University, Cornell University, Brown University, Brandeis University, Michigan State University (2 Lectures), McGill University, Université du Québec à Montréal.
  - Invited Speaker: Cascade Topology Seminar, Portland State University.
  - Invited Speaker: Special Session on Low-dimensional Topology, Joint Meeting of the Canadian Math Society and the Sociedad Matemática Mexicana (SMM) Guanajuato, Mexico.
  - Invited Speaker and Workshop Participant: “The Second William Rowan Hamilton Geometry and Topology Workshop” Dublin, Ireland.
  - Invited Speaker: Institute for Advanced Study/Park City Math Institute Workshop, “Low-dimensional Topology” Park City, Utah.
- (2005-2006)
  - Invited Speaker: University of California at Santa Barbara, Rice University, University of British Columbia.
  - Invited Speaker: Special Session on Low-dimensional Topology. Canadian Math Society Meeting, Victoria, B. C.

- Invited Conference Participant and Speaker: “Conference on Low-dimensional Manifolds”. Oberwolfach, Germany.
- Invited Speaker and Conference Participant: “On Heegaard splittings of 3-manifolds” Conference. Technion, Haifa, Israel.
- (2004-2005)
  - Invited Speaker: American Mathematical Society (AMS) special sessions: University of California at Santa Barbara, Vanderbilt University.
  - Invited Speaker: Spring Topology and Dynamical Systems Conference (Semi-Plenary Talk) Berry College.
  - Invited Speaker: Washington University in St. Louis, University of California at Davis.
  - Invited Speaker: “Trends in three-manifolds” Conference Montréal, Canada.
- (2003-2004)
  - Invited Speaker: Tulane University, Princeton University.
  - Invited Speaker: Special Session on Low-Dimensional Topology. Joint Meeting of the American Mathematical Society and the Sociedad Matemática Mexicana (SMM) Houston.
  - Invited Speaker: American Mathematical Society (AMS) special sessions: University of North Carolina at Chapel Hill, Phoenix, Arizona.
  - Invited Speaker: Spring Topology and Dynamical Systems Conference. Birmingham, AL.
  - Invited Speaker: Texas Geometry and Topology Conference Rice University .
  - Invited Conference Participant and Speaker: “Topology in and around dimension three” Conference, Banff, Canada.
  - Invited Speaker: Georgia Topology Conference, University of Georgia.

## Teaching at Tufts University

Academic Year	Course Title	# Students Enrolled
Spring 2013	Graduate Special Topics Course: Hyperbolic Geometry II	10
Spring 2013	Point-Set Topology	10
Fall 2012	Abstract Linear Algebra	15
Fall 2012	Graduate Special Topics Course: Hyperbolic Geometry	13
Fall 2012	Special Topics: Morse Theory	1
Fall 2012	Special Topics: Cubed Structures and Commensurability	1
Spring 2012	Calculus II	28
Spring 2012	Abstract Linear Algebra	10
Spring 2012	Special Topics: Hyperbolic Groups and Cube Complexes	1
Spring 2012	Special Topics: Knots and Polynomials	1
Fall 2011	Linear Algebra	22
Fall 2011	Geometry and Topology	13
Fall 2011	Graduate Seminar: Knot Theory	2
Fall 2011	Special Topics: CAT(0) Cube Complexes	
Spring 2011	Linear Algebra	30
Spring 2011	Algebraic Topology	10
Spring 2011	Special Topics: Discrete Groups	1
Fall 2010	Special Topics: Geometric Structures, LERF and Knot Theory	1
Spring 2010	Special Topics: Hyperbolic 3-manifolds	1
Spring 2010	Special Topics: Surface Diffeomorphisms	1
Fall 2009	Calculus II	32
Fall 2009	Abstract Algebra I	12
Fall 2009	Special Topics: Hyperbolic Geometry	1
Spring 2009	Calculus II	18
Spring 2009	Special Topics: Hyperbolic 3-manifolds	1
Fall 2008	Special Topics: Knots and 3-manifolds	1
Spring 2008	Topics in Geometry and Topology	8
Spring 2008	Special Topics	1
Fall 2007	Calculus II	25
Fall 2007	Geometry and Topology	9
Spring 2007	Linear Algebra	27

- Graduate Students Supervised: Jeffrey Carlson, Emily Stark, Heather Peirce.
- Summer Scholars Student: Samir Chowdhury.

## Other teaching

- Mini-course Lecturer and member of Scientific Committee, 2008 Women in Mathematics Program. (Hyperbolic Geometry) Institute for Advanced Studies, Princeton N.J.
- Instructor at the University of Texas at Austin: Single and Multi-variable Calculus, Number Theory (Discovery Learning Style), Point-set topology (Discovery learning style), Individual reading course on “Knots, links and three-manifolds”, Graduate Topics Course: “Surfaces in three-manifolds”.
- Associate Instructor and Teaching Assistant at the University of California at Davis: Single and Multi-variable Calculus, Linear Algebra (TA), Topology (TA), Real Analysis (TA).

## Service

- Organizing Committee, ICERM Semester Program: “Computation, Experiment, and Algorithms in Topology and Geometry” (and on the organizing committee for two conferences), planned for Fall 2013.
- Co-organizer of AMS Special Session: “Hyperbolicity in Manifolds and Groups”, Joint Meetings, Boston MA. 2012.
- Co-organizer of Geometric Group Theory and Topology Seminar, Tufts University: Spring 2007, Fall 2007. Organizer: Spring 2008, Fall 2009, Spring 2010, Fall 2010, Spring 2011, Fall 2011, Spring 2012.
- Served on NSF grant-review panel.
- Administered Oral Exams in Geometry and Topology: Spring 2008, Fall 2008, Spring 2009, Spring 2011, Fall 2011, Spring 2012.
- Organizer for the Wiener lectures, Tufts University Fall 2008. Speaker: Jeff Weeks.
- Co-organizer of special AMS conference “Teichmüller Theory and Low-dimensional Topology”, Snowbird Utah June 2008.
- Co-organizer of Special Session “Geometric Topology/Geometric Group theory” at the 2007 Spring Topology and Dynamical Systems Conference, University of Missouri Rolla.
- Tufts Departmental Committees:  
Graduate Committee, (2008-2009) (2009 - 2010) (2011-2012) (Spring 2013).  
Curriculum Committee, (Spring 2007).  
Hiring Committee, (2007-2008) (2009- 2010) (2012-2013). Chair, (2010-2011).  
Thesis/Dissertation Committees: Maggie LaPlante (2007), Emily Grant (2008), Aaron Brown (2011).
- Tufts University Committees: Committee on Information Technology, (2007-2008) (2009-2010) (2010-2011) (2011-2012).  
Library Committee, (2012-2013).
- VIGRE Graduate Management Team. 2004-2005, University of Texas at Austin.
- Referee for: **Algebraic and Geometric Topology**, **American Mathematical Monthly**, **Journal of the London Mathematical Society**, **Geometriae Dedicata**, **Geometry and Topology**, **Pacific Journal of Mathematics**.
- Reviewer for Mathematical Reviews (since 2003).
- Indexed *The Geometry and Topology of Three-Manifolds*, W. P. Thurston’s Princeton course notes.