

Department of Mathematics
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**Research
Interest**

Geometric group theory
Low dimensional topology
Automorphisms of surfaces

Education

Ph.D. in Mathematics, State University of New York at Stony Brook, May 2004.
Thesis Advisor: Yair Minsky
B.A. in Mathematics (with Honors), University of California at Berkeley, May 1998.

Appointments

Ritt Assistant Professor of Mathematics Columbia University	July 2007–Present
Postdoctoral General Member Mathematical Science Research Institute	August 2007–December 2007
VIGRE Assistant Professor of Mathematics University of Utah	July 2005–June 2007
Assistant Professor of Mathematics Barnard College, Columbia University	July 2004–June 2005

**Awards and
Grants**

NSF grant #DMS-0812513 Principal Investigator, 2007-2009.
NSF grant #DMS-0604524 Principal Investigator, 2006-2009.
NSF VIGRE Postdoctoral Fellowship, 2005–2007.
NSF grant #DMS-0501702 Co-Principal Investigator, supporting the conference
“Braids, Links, and Mapping Class Groups,” Barnard College/Columbia Univer-
sity; Spring 2005.
Dorothy Pieper Merit Award for Outstanding Entering Doctoral Students, 1998.

**Publications
& Preprints**

1. Asymptotic geometry of the mapping class group and Teichmüller Space. *SUNY Stony Brook Ph.D Dissertation*.
Available at: <http://www.math.columbia.edu/~jason> .
2. Asymptotic geometry of the mapping class group and Teichmüller Space. **Geometry & Topology**, vol. 10 (2006) 1523–1578.
3. Curve complexes and finite index subgroups of mapping class groups, with Dan Margalit. **Geometriae Dedicata**, vol. 118 (2006) 71–85.
4. Dimension and rank for mapping class groups, with Yair Minsky. **Annals of Mathematics**, vol. 167, (2008), 1055–1077.

5. Quasi-isometric classification of graph manifolds, with Walter Neumann. **Duke Mathematical Journal**, vol. 141, (2008) 217–240.
6. Thick metric spaces, relative hyperbolicity, and quasi-isometric rigidity, with Cornelia Druţu and Lee Mosher. <http://arXiv/math.GT/0512592>. Preprint
7. Commensurability and QI classification of free products of finitely generated abelian groups, with Tadeusz Januszkiewicz and Walter Neumann. **Proceedings of the American Mathematical Society**, to appear.
8. Geometry and rigidity of mapping class groups, with Bruce Kleiner, Yair Minsky, and Lee Mosher. <http://arXiv:0801.2006>. Preprint.
9. Growth of intersection numbers for free group automorphisms, with Matt Clay and Mladen Bestvina. <http://arXiv:0806.4975>. Preprint.
10. The rapid decay property for mapping class groups, with Yair Minsky. Preprint.
11. Subgroups of mapping class groups, with Cornelia Druţu and Mark Sapir. In preparation.

Lectures

Invited Conference and Colloquia Lectures

- Colloquium; University of Muenster, Germany. Fall 2008
- Geometric Group Theory, Geometric Analysis, and Mapping Class Groups; Johns Hopkins University, Maryland. Summer 2008.
- Colloquium; Tufts University, Massachusetts. Spring 2008.
- Colloquium; Tulane University, Louisiana. Spring 2008.
- Colloquium; Lehman College, CUNY, New York. Fall 2007.
- Research conference on geometric group theory; Mathematical Science Research Institute, Berkeley, California. Fall 2007. (Plenary Lecture.)
- Analysis on Homogeneous Spaces; University of Arizona. Spring 2007. (Plenary.)
- Topology; Banff International Research Station, Canada. Winter 2007. (Plenary.)
- Outre-espace et Espace de Teichmüller; Centre International de Rencontres Mathématiques, Luminy, France. Winter 2007. (Plenary.)
- AMS/MAA National Joint Meeting, Special Section on Geometric Group Theory; New Orleans, Louisiana. Winter 2007.
- AMS Sectional Meeting, Special Section on Low Dimensional Topology and Geometry; University of Utah. Fall 2006.
- Conference on Geometric Group Theory; Centre de Recherches Mathématiques, Montréal, Canada. Summer 2006. (Plenary.)
- Summer Research Program on Low Dimensional Topology; Park City Math Institute, Utah. Summer 2006. (Plenary.)
- Georgia Topology Conference; University of Georgia. Summer 2006. (Plenary.)
- Combinatorial and Geometric Group Theory Conference; Vanderbilt, Tennessee. Summer 2006.
- Spring Lecture Series; University of Arkansas. Spring 2006.

Spring Topology and Dynamics Conference; UNC Greensboro. Spring 2006.

Geometric and Probabilistic Methods in Group Theory and Dynamical Systems; Texas A&M, Texas. Fall 2005.

AMS Sectional Meeting, Special Section on Geometric Group Theory; Bard College, New York. Fall 2005.

Colloquium; Brigham Young University, Utah. Fall 2005.

Asymptotic and Probabilistic Methods in Geometric Group Theory; University of Geneva, Switzerland. Summer 2005.

Geometric and Asymptotic Methods in Group Theory; Banff International Research Station, Canada. Summer 2005. (Plenary.)

Geometric Groups in the Gulf; Florida. Fall 2004. (Plenary.)

Albany Group Theory Conference; New York. Fall 2004.

Conference on Combinatorial Topology in Mapping Class Groups; University of Chicago. Spring 2004. (Plenary.)

Albany Group Theory Conference; New York. Fall 2003.

Invited Seminar Lectures

University of Muenster, Germany. Geometry Seminar. Fall 2008

University of Muenster, Germany. Topology Seminar. Fall 2008

Vanderbilt University; Noncommutative Geometry Seminar (2 lectures). Spring 2008.

Yale University; Topology Seminar. Spring 2008.

University of California, Davis; Geometry/Topology Seminar. Spring 2008.

University of Southern California; Geometry and Topology Seminar. Fall 2007.

Rutgers University, New Brunswick; Topology and Geometry Seminar. Fall 2007.

Columbia University; Geometric Topology Seminar. Fall 2007.

University of Pennsylvania; Geometry and Topology Seminar. Fall 2007.

Brown University; Geometry and Topology Seminar. Spring 2007.

Harvard University; Geometry and Dynamics Seminar. Spring 2007.

Tufts University; Geometric Group Theory and Topology Seminar. Spring 2007.

University of California, Berkeley; Topology Seminar. Spring 2007.

University of Southern California; Geometry and Topology Seminar. Fall 2006.

Princeton University; Topology Seminar. Fall 2006.

Rutgers University, New Brunswick; Topology and Geometry Seminar. Fall 2006.

Vanderbilt University; Topology and Group Theory Seminar. Spring 2006.

University of Texas, Austin; Topology Seminar. Spring 2006.

Columbia University; Geometric Topology Seminar. Fall 2005.

Ohio State University; Geometric Group Theory Seminar. Fall 2005.

Cornell University; Topology and Geometric Group Theory Seminar. Fall 2005.

University of Utah; Max Dehn Seminar. Fall 2005.

Columbia University; Geometric Topology Seminar. Spring 2005.
CUNY, Graduate Center; Magnus Seminar. Fall 2004.
Cornell University; Topology and Geometric Group Theory Seminar. Fall 2004.
SUNY Stony Brook; Thesis Defense. Spring 2004.
Rutgers University, New Brunswick; Topology and Geometry Seminar. Spring 2004.
University of Utah; Max Dehn Seminar. Spring 2004.
California Institute of Technology; Geometry and Topology Seminar. Fall 2003.
University of Chicago; Geometry and Topology Seminar. Fall 2003.
University of Illinois, Chicago; Geometry, Topology, and Dynamics Seminar. Fall 2003.
Columbia University; Geometric Topology Seminar. Fall 2003.
Yale University; Student Topology Seminar. Fall 2003.
SUNY Stony Brook; Complex Analysis and Geometry Seminar. Fall 2002.

Expository Lectures for Undergraduates

Tulane University, Louisiana. Spring 2008.
Columbia University, New York. Spring 2008.

**Teaching
Experience****Columbia University**

Fall 2007–Spring 2008: Multivariable Calculus.

University of Utah

Fall 2006: Trigonometry

Spring 2006: Algebraic Topology.

Fall 2005: Point-set Topology; Honors Undergraduate Thesis reading course on One-dimensional Dynamical Systems; Graduate reading course in Topology (4 graduate students).

Barnard College

Fall 2004–Spring 2005: First Semester Calculus and Multivariable Calculus.

SUNY Stony Brook

Fall 2001–Fall 2002: First Semester Calculus, Instructor.

Spring 2003: Mathematical Logic (Upper Division Mathematics/Computer Science course).

Fall 2000–Spring 2001: First and Second Semester Calculus, Teaching Assistant.

Professional Service

Referee for journals including:

Algebraic & Geometric Topology

Geometry & Topology

Journal of Topology

Michigan Mathematical Journal

Proceedings of the American Mathematical Society

Transactions of the American Mathematical Society

Reviewer for *Math Reviews*.

Co-organizer of the Max Dehn Seminar, University of Utah, 2005–2007.

Co-organizer of “Braids, Links, and Mapping Class Groups,” an international conference in honor of Joan Birman; Spring 2005.

Co-organizer of the Geometric Topology Seminar, Columbia University, 2004–2005.

Co-organizer of the Complex Analysis and Geometry Seminar, SUNY Stony Brook, 2002–2003.

Co-organizer of the Dynamical Systems Seminar, UC Berkeley, 1996–1997.

Synergistic Activities

Organized and ran an NSF supported Research Experience for Undergraduates (REU) program at Columbia University of Utah on “The Tower of Hanoi” for 5 students, Summer 2008.

Organized and ran an NSF supported Research Experience for Undergraduates (REU) program at the University of Utah on “The Geometry of Mobius Transformations” for 8 students.

Organizer of the Mini Max Dehn (Graduate Topology) Seminar, University of Utah, Spring 2006.

Advisor for Undergraduate Honors Thesis at the University of Utah, Fall 2005.

Organized and ran a Graduate reading course in Topology for beginning graduate students.

Recruitment of new incoming students (intended mathematics majors) for Barnard College.

As a volunteer, taught Pre-Algebra to a group of 25 inmates at San Quentin State Prison, California, who were working towards Associate in Arts degrees.

References

Mladen Bestvina, University of Utah, bestvina@math.utah.edu

Yair Minsky, Yale University, yair.minsky@yale.edu

Lee Mosher, Rutgers University at Newark, mosher@andromeda.rutgers.edu

Walter Neumann, Barnard College, Columbia University, neumann@math.columbia.edu

David Bayer (teaching), Barnard College, Columbia University, bayer@math.columbia.edu