Kathryn Mann

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Appointments

Morrey Visiting Assistant Professor / NSF postdoctoral researcher, UC Berkeley   2014-2017

Postdoctoral research fellow, Mathematical Sciences Research Institute   Spring 2015

Visiting position: Professeur Invité, Inst. Math. Jussieu (Paris VI)   May-June 2016

Education

Ph.D. Mathematics, University of Chicago   Advisor: Benson Farb   2014

B.Sc. Mathematics and Philosophy, University of Toronto   2008

Recognition and Grants

Mary Ellen Rudin young researcher award *(to be announced at Spring Topology and Dynamics conference)* 2016/17 year

NSF Mathematical Sciences Postdoctoral Research Fellowship, DMS 1606254   2016–18

Distinguished teaching award, UC Berkeley mathematics   2016

Kowalsky Fellowship for Research Excellence, University of Chicago   2013

NSERC (Canada) Postgraduate Scholarship   2008–10; 2011–13

McCormick Fellowship, University of Chicago mathematics   2008–2010

Norman Stuart Robertson Scholarship in Mathematics, University of Toronto   2007–08

Research interests

Topology, geometry, geometric group theory, and dynamics in low dimensions.
I study **groups acting on manifolds**, the topology of **moduli spaces of group actions**, and the **topology and algebraic structure** of groups of homeomorphisms and diffeomorphisms, from a wide range of perspectives.

Publications

13. Strong distortion in transformation groups.
With Frédéric Le Roux arXiv:1610.06720

12. The large-scale geometry of homeomorphism groups.
With Christian Rosendal.   arXiv:1607.02106   To appear in Ergodic theory and Dynamical Systems

11. Group orderings, dynamics, and rigidity.
With Cristobal Rivas.   arXiv:1607.00054   Submitted.

10. PL(M) has no Polish group topology.
arXiv:1602.02146.   To appear in Fundamenta Mathematicae.

9. Automatic continuity for homeomorphism groups.
Geometry & Topology 20-5 (2016), 3033-3056 . With an appendix with F. Le Roux.

8. Rigidity and flexibility of groups acting on the circle.
To appear in *Handbook of group actions*, L. Ji, A. Papadopoulos, and S.-T. Yau, eds.

7. A short proof that Diff(M) is perfect.
New York J. Math 22 (2016), 49-55.

6. Components of spaces of surface group representations.
Inventiones Mathematicae. 201, no. 2 (2015), 669-710.

5. Left-orderable groups that don't act on the line.
Mathematische Zeitschrift 280, no. 3 (2015), 905-918.

4. A counterexample to the simple loop conjecture for PSL(2,R).
Pacific Journal of Math 269-2 (2014), 425-432.

3. Diffeomorphism groups of balls and spheres.
New York J. Math. 19 (2013) 583-596.

2. Homomorphisms between diffeomorphism groups.
Ergodic Theory and Dynamical Systems 35-01 (2015), 192-214.

1. Bounded orbits and global fixed points for groups acting on the plane.
Algebraic & Geometric Topology 12 (2012) 421-433.

Teaching

At UC Berkeley

Math 141, Differential topology	2016
Math 113, Abstract algebra	2015, 2014
Math 130, The classical geometries	2015

At the University of Chicago

Math 161–2–3, *Inquiry Based Learning* honors calculus	2013-2014
Math 196, Linear algebra	2013
Math 195, Mathematical methods for the social sciences: Multivariable calculus	2012
Math 113, Introduction to groups and geometry for liberal arts students	2012
Math 112, Elementary number theory for liberal arts students	2011
Math 131–2–3, Single variable calculus	2010-2011
Teaching assistant for: Honors Calculus (Chicago) and Calculus, Symbolic Logic, Intro Philosophy (Toronto)	2007-09

Student supervision

Undergraduate honors thesis of Sophia Elia, UC Berkeley.	2016

Minicourses and lecture series

"Groups, geometry, and rigidity" *3-week minicourse for graduate students* (MIT)	March 2017
"Groups of circle homeomorphisms" at *Beyond Uniform Hyperbolicity 2015* (Olmue, Chile)	September 2015
"Algebraic structure of diffeomorphism groups" (Berkeley RTG grad student summer school)	June 2015

Invited Conference Talks (including upcoming/scheduled)

Approximation, deformation, quasification (Isaac Newton Inst.)	May 2017

Georgia International Topology Conference	*May 2017*
Spring topology and dynamics conference, (scheduled Plenary lecture) (New Jersey City)	*March 2017*
Workshop: Groups of Dynamical Origin (UNAM, Mexico City)	*February 2017*
Amenability, coarse embeddability and fixed point properties (MSRI geometric group theory)	*December 2016*
Surfaces in Luminy (CIRM)	*October 2016*
Foliations, Laminations and Contact structures (Munich)	*September 2016*
Foliations 2016 (Bedlewo, Poland)	*July 2016*
Groups acting on manifolds (Teresopolis / UFF, Brazil)	*June 2016*
AMS western sectional meeting (Descriptive Set Theory and Topology special session)	*April 2016*
Redbud Topology Conference (U. Oklahoma)	*April 2016*
Young Geometric Group Theory V (Karlsruhe, Germany)	*February 2016*
Dynamics on Moduli Spaces of Geometric Structures (MSRI)	*April 2015*
Connections for Women: Dynamics on Moduli Spaces (MSRI)	*January 2015*
Tech Topology Conference (Georgia Tech)	*December 2014*
Geometry, Topology and Physics (University of Pittsburgh)	*May 2014*
Groups and Dynamics II (University of Santiago, Chile)	*April 2014*
Geometric Groups on the Gulf (G^3)	*March 2014*
AMS Sectional Meeting (special session "geometric aspects of topology and group theory")	*October 2013*
Wasatch topology conference (Utah)	*August 2013*
GEAR Network junior retreat (UIUC)	*July 2012*
Recent progress on hyperbolic 3-manifolds (Michigan)	*May 2012*
Workshop on Cartan Connections, Geometry of Homogenous Spaces and Dynamics (ESI)	*July 2011*

Invited seminar talks

2017: *Stanford (colloquium), Stanford informal geometry seminar, Caltech topology seminar, Caltech Logic seminar. Upcoming: Tufts Geometric group theory seminar, U. Chicago dynamics seminar.*

2016: *Cornell topology seminar, CCNY (colloquium), Inst. Math. Jussieu seminar Analyse Algébrique, UW Madison (colloquium), Cornell (colloquium), Brown (colloquium), University of Michigan, MIT (colloquium).*

2015: *UIC geometry-topology-dynamics, UIC logic seminar, IMJ Jussieu (Paris), LMU (Munich), Sonoma state university math colloquium, Utah Topology RTG seminar, U Penn.*

2014: *UCSB topology, UCSB hypatian seminar (colloquium), Stanford ($\times 2$) Berkeley, Princeton, Philadelphia Area PATCH seminar, Rice, UT Austin.*

2013: *University of Maryland, Yale, Purdue, Ohio State University, Caltech, Northwestern.*

Earlier *UW Madison, SUNY Buffalo, EPFL, Caltech.*

Service

I. Conferences and seminars co-organized

UC Berkeley Topology Seminar	*2014-present*
Foliations seminar (Joint Stanford-Berkeley seminar/reading group)	*spring 2016*
RTG Graduate Student Summer School in topology (UC Berkeley)	*July 8-12, 2015*
Groups, Geometry and 3-manifolds, conference in honor of Daryl Cooper (local organizer)	*May 21-22, 2015*

Cohomology of diffeomorphism groups (Joint Stanford-Berkeley research seminar)   *2014-15*

Special session on geometry of real projective structures (AMS Joint Meetings)   *January 4-7, 2012*

Graduate student geometry/topology seminar (University of Chicago)   *2010-11*

On scientific committee for:

Young Geometric Group Theory VI (2017), Groups acting on manifolds workshop (UFF Brazil, 2016).

II. Mathematical outreach

- *Canada/USA Mathcamp (high-school advancement program) visiting speaker*   *Summer 2015*

- *Research Experience for Undergraduates (U. Chicago)*   *2009, 2011*
  Mentor for 8 undergraduate students

- *University of Chicago Directed Reading Program*   *2010-2013*
  Supervised 7 independent study projects for undergraduates

- *Undergraduate/general–audience talks given at: Chicago, Berkeley, UCSB, Sonoma state*

III. Mentorship

- *Mentor, Berkeley Science Network/Women in Mathematics retreat*   *March 2015*

- *Invited panelist, women in science discussion for the University of Chicago physical sciences*   *March 8, 2014*

- *Keynote speaker on women in academics and participation in the classroom*   *April 14, 2014*
  "Women Speak Up" conversation series, University of Chicago

IV. Referee for

Geometry & Topology, Journal of Topology, Alg. & Geom. Topology, Comment. Math. Helvet, Proc. LMS, Groups Geometry Dynamics, Trans. AMS, and others.