

Steven Frankel

Department of Mathematics and Statistics
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Employment

2017- Assistant Professor
Department of Mathematics, Washington University in St. Louis
St. Louis, MO

2013-2017 Gibbs Assistant Professor
Department of Mathematics, Yale University
New Haven, CT

2015-2016 Member
School of Mathematics, Institute for Advanced Study
Princeton, NJ

Education

2011-2013 University of Cambridge: PhD, Pure Mathematics
Cambridge, UK
Dissertation: Quasigeodesic flows from infinity
Advisor: Danny Calegari

2008-2011 California Institute of Technology: PhD Student, Mathematics
Pasadena, CA
Advisor: Danny Calegari

2005-2008 Cooper Union: Bachelor of Engineering with Honors
New York, NY
Senior Thesis Advisor: Fred L Fontaine

Research Interests

Geometric topology and dynamics, especially in combination: hyperbolic geometry, quasigeodesic and pseudo-Anosov flows, partially hyperbolic diffeomorphisms, groups acting on 1-manifolds and trees, etc.

Awards

2018 Robert Bartnik Fellowship, Monash University

2016 NSF continuing grant DMS-1611768, \$225,000 total award

2015 Eric and Wendy Schmidt Fellowship, Institute for Advanced Study

2008 Harry W. Reddick Award for Meritorious Work in Mathematics

Publications

Quasigeodesic flows and Mobius-like groups,
J. Diff. Geom. **93** (2013), no. 3, 401-429

Quasigeodesic flows and sphere-filling curves,
Geom. Topol. **13** (2015), no. 3, 1249-1262

Coarse hyperbolicity and closed orbits for quasigeodesic flows,
Ann. of Math. (2) **188** (2018), no. 1, 1-48

Research Announcement: Partially hyperbolic diffeomorphisms homotopic to the identity on 3-manifolds
(with T. Barthelme, S. Fenley, and R. Potrie),
2018 MATRIX Annals. Eds. D.R. Wood, J. de Gier, C.E. Praeger, T. Tao. Springer International Publishing, 2020.

Partially hyperbolic diffeomorphisms homotopic to the identity in dimension 3,
Part I: The dynamically coherent case
(with T. Barthelme, S. Fenley, and R. Potrie),
submitted (2019), *arXiv:1908.06227*

Dynamical incoherence for a large class of partially hyperbolic diffeomorphisms
(with T. Barthelme, S. Fenley, and R. Potrie),
submitted (2020), *arXiv:2002.10315*

Partially hyperbolic diffeomorphisms homotopic to the identity in dimension 3,
Part II: Branching foliations
(with T. Barthelme, S. Fenley, and R. Potrie),
submitted (2020), *arXiv:2008.04871*

From quasigeodesic to pseudo-Anosov flows,
preprint

Service

Editor for Experimental Results

Referee for Geometry and Topology, JAMS, JEMS, Bull. LMS

Co-organizer, Geometry and Topology Seminar at Yale University

Co-organizer, Geometry and Topology Seminar at Washington University in St Louis

Co-organizer, Workshop on Dynamics, Foliations, and Geometry in Dimension 3 (2018),
MATRIX Institute, Australia

Senior thesis advisor at Yale University

Selected Talks

Mar 2011 Workshop on Low Dimensional Topology and Geometry, Princeton University
Closed orbits of quasigeodesic flows

June 2011 Topological Methods in Dynamical Systems, University of Campinas
Closed orbits of quasigeodesic flows

Nov 2011 Geometry and Topology Seminar, Cambridge University
Quasigeodesic flows and Mobius-like groups

May 2012 Geometry and Topology Seminar, University of Strasbourg
Quasigeodesic flows and Mobius-like groups

May 2013 Dynamics Seminar, University of Chicago
Quasigeodesic flows and pseudo-Anosov dynamics

Oct 2013 Geometry and Topology Seminar, Yale University
Quasigeodesic flows and pseudo-Anosov dynamics

Oct 2013 AMS Fall Sectional Meeting, Washington University
Quasigeodesic flows and pseudo-Anosov dynamics

Feb 2014 Geometry and Topology Seminar, Brown University
Quasigeodesic flows and dynamics at infinity

Mar 2014 Dynamics Seminar, Penn State University
Quasigeodesic flows and dynamics at infinity

Aug 2014 Geometry on Groups and Spaces, KAIST
Quasigeodesic flows and dynamics at infinity

Nov 2014 Complex Analysis and Dynamics Seminar, CUNY Graduate Center
Quasigeodesic flows and dynamics at infinity

Feb 2015 Geometry and Topology Seminar, CUNY Graduate Center
Product structures and closing lemmas for flows

Apr 2015 RTG Geometry and Topology Seminar, UC Berkeley
Flows, product structures, and closing lemmas

Apr 2015 RTG Geometry and Topology Seminar, UC Berkeley
Periodic orbits for quasigeodesic flows

May 2015 Spring Topology and Dynamics Conference, Bowling Green State University
Periodic orbits for quasigeodesic flows

Jun 2015 Dynamics Seminar, University of Chicago
Periodic orbits for quasigeodesic flows

Sep 2015 Dynamics Seminar, Penn State University
Coarse hyperbolicity and closed orbits for quasigeodesic flows

Oct 2015 Geometry and Topology Seminar, Boston College
Coarse hyperbolicity and closed orbits for quasigeodesic flows

Oct 2015 Geometry and Topology Seminar, University of Virginia
Coarse hyperbolicity and closed orbits for quasigeodesic flows

Nov 2015 AMS Fall Sectional Meeting, Rutgers University
Coarse hyperbolicity and closed orbits for quasigeodesic flows

Dec 2015 Workshop on Flows, Foliations, and Contact Structures, Institute for Advanced Study
Coarse hyperbolicity and closed orbits for quasigeodesic flows

Feb 2016 Mathematical Conversations, Institute for Advanced Study
Hyperbolicity in geometry and dynamics

- Mar 2016 Geometry and Topology Seminar, SUNY Binghamton
Quasigeodesic and pseudo-Anosov flows
- Apr 2016 Seminário de Sistemas Dinâmicos, Universidade de São Paulo
Quasigeodesic and pseudo-Anosov flows
- July 2016 Foliations 2016, Bedlewo, Poland
Quasigeodesic and pseudo-Anosov flows
- Aug 2016 31st Summer Conference in Topology and its Applications, University of Leicester
Plenary Lecture: Quasigeodesic and pseudo-Anosov flows
- Sep 2016 Foliations, Laminations, and Contact Structures, LMU München
Minicourse: Flows, planes, and circles
- Oct 2016 Geometry and Topology Seminar, Brown University
Laminar decompositions and orbit semi-stability
- Nov 2016 Department Colloquium, Queen's University
Laminar decompositions and orbit semi-stability
- Nov 2016 Dynamics Seminar, University of Chicago
Laminar decompositions and orbit semi-stability
- Apr 2017 Joint LA Topology Seminar, Caltech
Laminar decompositions and orbit semi-stability
- Apr 2018 Department Colloquium, University of Virginia
Hyperbolicity in dynamics and geometry
- Jun 2018 International Conference in Dynamical Systems, SUSTech, Shenzhen, China
From quasigeodesic to pseudo-Anosov
- Sep 2018 Dynamics, Foliations, and Geometry in Dimension 3, MATRIX Institute, Australia
Minicourse: Quasigeodesic and pseudo-Anosov flows
- Sep 2018 Geometry and Topology Seminar, Monash University, Melbourne, Australia
Partially hyperbolic diffeomorphisms homotopic to the identity
- Nov 2018 Dynamics Seminar, University of Chicago
Partially hyperbolic diffeomorphisms homotopic to the identity
- May 2019 2019 Georgia Topology Conference, University of Georgia
Quasigeodesic flows and multiconvergence groups
- Nov 2019 Geometry & Topology Seminar, University of Illinois at Urbana-Champaign
Partially hyperbolic diffeomorphisms homotopic to the identity

Teaching Experience

Assistant Professor, Washington University in St. Louis

- Spring 2020 Math 547, Introduction to Geometric Group Theory (Graduate)
- Spring 2020 Math 5046, Geometry & Topology II: Differential Topology (Graduate)
- Fall 2019 Math 5045, Geometry & Topology I: Algebraic Topology (Graduate)
- Spring 2019 Math 310, Foundations for Higher Mathematics (Undergraduate)
- Spring 2018 Math 544, Dynamics on 3-Manifolds (Graduate)
- Fall 2017 Math 371, Graph Theory (Undergraduate)

Gibbs Assistant Professor, Yale University

- Spring 2016 Math 544, Introduction to Algebraic Topology II (Graduate)
- Spring 2016 Math 435, Differential Geometry (Undergraduate)
- Fall 2016 Math 544, Introduction to Algebraic Topology I (Graduate)
- Spring 2015 Math 545, Introduction to Algebraic Topology II (Graduate)
- Fall 2014 Math 115, Calculus of Functions of One Variable II (Undergraduate)
- Fall 2014 Math 544, Introduction to Algebraic Topology I (Graduate)
- Spring 2014 Math 843, Flows, Foliations, and Circles (Graduate)
- Spring 2014 Math 430, Introduction to Algebraic Topology (Undergraduate)
- Fall 2013 Math 544, Introduction to Algebraic Topology I (Graduate)

Teaching Assistant, California Institute of Technology

- Spring 2011 MA151c, Algebraic and Differential Topology III
- Winter 2011 MA151b, Algebraic and Differential Topology II
- Fall 2010 MA151a, Algebraic and Differential Topology I
- Spring 2010 MA1c, Calculus of One and Several Variables and Linear Algebra
- Winter 2010 MA109b, Introduction to Geometry and Topology II
- Fall 2009 MA109a, Introduction to Geometry and Topology I
- Fall 2008 MA1a, Calculus of One and Several Variables
- Spring 2009 MA1c, Calculus of One and Several Variables and Linear Algebra
- Winter 2009 MA1b, Linear Algebra

References

Ian Agol

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University of Florida
338 Little Hall
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