

# Kathryn Mann

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## Appointments

<b>Directeur de Recherche</b> , Centre National de Recherche Scientifique	2026–
<b>Associate Professor of Mathematics</b> , Cornell University	2022-2026
<b>Assistant Professor of Mathematics</b> , Cornell University	2019-2022
<b>Manning Assistant Professor of Mathematics</b> , (Tenure-track) Brown University	2017-2019
<b>Morrey Visiting Assistant Professor / NSF postdoctoral researcher</b> , UC Berkeley	2014-2017
<b>Postdoctoral research fellow</b> , Mathematical Sciences Research Institute	Spring 2015
<b>Visitor</b> : Professeur Invité, Inst. Math. Jussieu (Paris)	May-June 2016
CNRS poste rouge, Inst. Math. Jussieu (Paris)	April-June 2022

## Education

<b>Ph.D. Mathematics</b> , University of Chicago Advisor: Benson Farb	2014
<b>B.Sc. Mathematics and Philosophy</b> , University of Toronto	2008

## Grants and Recognition

<b>Chern Professorship</b> Simons Laufer Mathematical Sciences Institute	Spring 2026
<b>NSF award topological approaches to Anosov flows in dimension 3</b> , DMS 2505228 \$200,000	2025-2028
<b>Simons Fellowship in Mathematics</b> \$108,513	2024
<b>Joyce Yelencsics &amp; Frederick Rosevear Faculty Leadership Fellow</b> , named position at Cornell	2022-27
<b>Cornell Topology Festival</b> , NSF conference 3-year grant, \$72,000	2023-25
<b>Mathematics department teaching award</b> , Cornell university	2021
<b>NSF CAREER award</b> , DMS 1844516 \$497,940	2019-2025
<b>Sloan Research Fellowship</b> , Alfred P. Sloan Foundation, \$70,000	2019-2023
<b>Kamil Duszenko Award</b> Wroclaw Mathematicians Foundation	2019
<b>AWM Birman Research Prize in Topology and Geometry</b> AWM early career award	2019
<b>Mary Ellen Rudin young researcher award</b> (annual Elsevier-sponsored award in topology)	2017
<b>NSF Mathematical Sciences Postdoctoral Research Fellowship</b> DMS 1606254	2016–19
<b>Distinguished teaching award</b> , UC Berkeley mathematics	2016
<b>Kowalsky Fellowship for Research Excellence</b> , University of Chicago	2013
<b>NSERC Postgraduate Scholarship</b> (Canadian science and engineering foundation)	2008–10; 2011–13
<b>McCormick Fellowship</b> , University of Chicago Mathematics	2008–2010

## Publications and preprints

**Monograph: Pseudo-Anosov flows, a plane approach.**

With Thomas Barthelmé. arXiv:2509.15375

**Reconstructing flows from the orbit space.**

With Thomas Barthelmé and Sergio Fenley. arXiv:2509.01594, submitted

**Non-transitive pseudo-Anosov flows.**

With Thomas Barthelmé and Christian Bonatti. arXiv:2411.03586, submitted

**Completing prelaminations.**

With Thomas Barthelmé and Christian Bonatti. arXiv:2402.06144, to appear in Math. Annalen

**Topological stability of relatively hyperbolic groups acting on their boundaries.**

With Jason Manning and Teddy Weisman. arXiv:2402.06144, to appear in Math. Zeit.

**Anosov flows with the same periodic orbits.**

With Thomas Barthelmé and Sergio Fenley. Journal of Modern Dynamics, Volume 21 (2025) 361-400

**Orbit equivalences of pseudo-Anosov flows.**

With Thomas Barthelmé and Steven Frankel. To appear in Inventiones Mathematicae (2025) <https://doi.org/10.1007/s00222-025-01332-1>

**Stability of hyperbolic groups acting on their boundaries.**

With Jason Manning and Teddy Weisman. To appear in Groups, Geometry, Dynamics (2025) <https://doi.org/10.4171/ggd/869>

**Orbit equivalences of R-covered Anosov flows and hyperbolic-like actions on the line.**

With Thomas Barthelme. Geometry & Topology 28:2 (2024) 867–89.

**On the action of the (2,3,7)-homology sphere group on its space of left-orders.**

With Michele Triestino. Fundamenta. Math. 261 (2023), no. 3, 297-302.

**Two results on end spaces of infinite type surfaces.**

With Kasra Rafi. Michigan Math. J. 74(5) (2024) 1109–1116.

**Groups acting at infinity.**

Proceedings of the International Congress of Mathematicians, vol IV pp 2594–2614. EMS Press, 2022.

**Stability for hyperbolic groups acting on boundary spheres.**

With Jason Manning. Forum Math. Sigma 11 (2023), Paper No. e83.

**Rotation sets and actions on curves.**

With Jonathan Bowden, Sebastian Hensel, Emmanuel Militon, and Richard Webb. Advances in Mathematics 408, Part B (2022) 108579.

**The structure of homeomorphism and diffeomorphism groups.**

Notices of the American Mathematical Society, vol 68 no. 4, (April 2021) 482–492.

**On the bordism group for actions on the torus.**

With Sam Nariman. Annales de l'Institut Fourier, Volume 72 (2022) no. 3, pp. 989-1009.

**There are no exotic actions of diffeomorphism groups on 1-manifolds.**

With Lei Chen. Groups Geometry and Dynamics 17 (2023), no. 1, 91-99.

**Large scale geometry of big mapping class groups.**

With Kasra Rafi. Geometry & Topology 27(2023), no.6, 2237-2296.

**$C^0$  stability of boundary actions and inequivalent Anosov flows.**

With Jonathan Bowden. Annales Scientifique de l'ENS. 4e série, t. 55, 2022. pp.1003–1046.

**Automatic continuity for homeomorphism groups of some noncompact manifolds.**

Michigan Math J. 74(1): 215-224 (2024).

**Reconstructing maps out of groups.**

With Maxime Wolff. Annales Scientifiques de l'ENS, (4) 56 (2023), no. 4, 1135-1156

**Dynamical and topological obstructions to extending group actions.**

With Sam Nariman. Mathematische Annalen, 377.3 (2020), 1313-1338.

**Structure theorems for actions of homeomorphism groups.**

With Lei Chen. Duke Math. J. 172 (2023), no. 5, 915-962.

**Rigidity of mapping class group actions on  $S^1$ .**

With Maxime Wolff. *Geometry & Topology*, 3.24 (2020), 1211-1223.

**Realization problems for diffeomorphism groups.**

With Bena Tshishiku. *Breadth in Contemporary Topology* AMS Proceedings of Symposia in Pure Mathematics 102, 2019.

**A characterization of Fuchsian actions by topological rigidity.**

With Maxime Wolff. *Pacific Journal of Math* 302.1 (2019), 181-200.

**Rigidity and geometricity for surface group actions on the circle.**

*Geometry & Topology* 28:5 (2024) 2345–2398.

**Unboundedness of some higher Euler classes.**

*Algebr. Geom. Topol.* Volume 20, Number 3 (2020), 1221-1234.

**Ping-pong configurations and circular orders on free groups.**

With Dominique Malicet, Cristobal Rivas, and Michele Triestino. *Groups, Geometry, Dynamics* 13.4 (2019), 1195-1218.

**On the number of circular orders on a group.**

With Adam Clay and Cristobal Rivas. *Journal of Algebra* 504 (2018), 336-363.

**Strong distortion in transformation groups.**

With Frédéric Le Roux *Bulletin of the London Math. Soc.* 50.1 (2018),46-62.

**The large-scale geometry of homeomorphism groups.**

With Christian Rosendal. *Ergodic theory and Dynamical Systems* 38.7 (2018), 2748-2779.

**Group orderings, dynamics, and rigidity.**

With Cristobal Rivas. *Annales de l'Institut Fourier*, 68.4 (2018), 1399-1445.

**PL(M) has no Polish group topology.**

*Fundamenta Mathematicae* 238 (2017), 285-296.

**Automatic continuity for homeomorphism groups.**

*Geometry & Topology* 20-5 (2016), 3033-3056. With an appendix with F. Le Roux.

**Rigidity and flexibility of groups acting on the circle.**

In *Handbook of Group Actions*, Advanced Lectures in Mathematics Vol. 41. International press, 2018.

**A short proof that  $\text{Diff}(M)$  is perfect.**

*New York J. Math* 22 (2016), 49-55.

**Spaces of surface group representations.**

*Inventiones Mathematicae*. 201, no. 2 (2015), 669-710.

**Left-orderable groups that don't act on the line.**

*Mathematische Zeitschrift* 280, no. 3 (2015), 905-918.

**Homomorphisms between diffeomorphism groups.**

*Ergodic Theory and Dynamical Systems* 35-01 (2015), 192-214.

**A counterexample to the simple loop conjecture for  $\text{PSL}(2, \mathbb{R})$ .**

*Pacific Journal of Math* 269-2 (2014), 425-432.

**Diffeomorphism groups of balls and spheres.**

*New York J. Math.* 19 (2013) 583-596.

**Bounded orbits and global fixed points for groups acting on the plane.**

*Algebraic & Geometric Topology* 12 (2012) 421-433.

## Recent invited conference talks (since 2018)

Pathways workshop (SLMATH topological and geometric structures in low dimensions program)

January 2026

ANR rencontre workshop on Collapsed Anosov flows ()

December 2025

AMS special session (AMS sectional meeting, St. Louis)	October 2025
Groups, dynamics and Surfaces (IMJ Paris)	September 2025
Geometry at Infinity (Max Planck inst, Leipzig)	April 2025
Symplectic geometry and Anosov flows (Heidelberg)	July 2024
Topology, representation theory and higher structures (Isle of Skye, Scotland)	June 2024
Low-dimensional group actions (Groups and Rigidity, Around the Zimmer Program at IHP)	May 2024
Big ideas in dynamics (AIM research communities online conference)	Jan. 2024
International colloquium on randomness, geometry and dynamics (IISER Pune, India)	Jan 2024
Midwest dynamical systems (UIC, Chicago)	Oct 2023
Group actions and rigidity: around the Zimmer program (Ventotene International Conference)	Sept 2023
Groups and dynamics in geometry conference for U. Hamenstadt (Ascona, Switzerland)	June 2023
Workshop on the Geometry and Dynamics of Groups of Transformations (Fields institute, Toronto)	Jan 2023
Joint Math Meetings (invited special session talk, Boston MA)	Jan 2023
Pacific Rim International Mathematical Association Congress (plenary lecture)	December 2022
ICM 2022 (Invited sectional address)	July 2022
Hyperbolic groups and their generalisations (Inst. Henri Poincaré, Paris)	June 2022
Geometry, Groups and Dynamics conference in honor of Francois Labourie (Corsica)	June 2022
Mapping class groups and $Out(F_n)$ (Inst. Henri Poincaré, Paris)	April 2022
Texas geometry and topology conference (UT Dallas)	Feb 2022
Congreso Latinoamericano de Matematicos (special session talk)	Sept. 2021
Canadian mathematical society 75th anniversary meeting (special session talk)	June 2021
AWM Distinguished Colloquium (University of Maryland)	April 2021
AMS southeastern sectional meeting (online)	March 2021
Kitao mathematics lecture (Swarthmore College)	November 2020
GROW mathematics conference, plenary talk (University of Chicago)	October 2020
Scheduled talks at: Cornell Topology Festival, CIRM, and VI Congresso latinoamericano de math. (Summer 2020, cancelled)	
AMS sectional meeting (Binghamton, NY)	October 2019
Aspects of Geometric Group Theory (IHES)	July 2019
Plenary talk at Dubrovnik IX conference on topology and dynamical systems (Dubrovnik)	June 2019
Keynote speaker at 44th Annual New York Regional Graduate Mathematics Conference (Syracuse)	March 2019
Workshop on geometry, groups and dynamics (SungKyunKwan University, Korea)	Dec. 2018
Fields medal symposium (Fields institute, Toronto)	Nov. 2018
AMS Invited Address Fall Southeastern Sectional Meeting	Nov. 2018
Dynamics, Foliations, and Geometry in Dimension 3 (Matrix Centre, Melbourne, Australia)	Sept. 2018
Workshop on Groups, Geometry and Dynamics (Montevideo)	July 2018
Keynote speaker at graduate student conference in geometry, algebra and topology (Temple university)	June 2018
Boston graduate topology seminar (Boston College)	April 2018
First Canadian geometry and topology seminar (Fields Inst., Toronto)	March 2018
New Methods for Zimmer's Conjecture (IPAM)	Jan. 2018

### Invited minicourses and lecture series

<i>Topological and Geometric Structures in Low Dimensions</i> SLMath grad student summer school (Berkeley)	July 2025
<i>Pseudo-Anosov flows on 3-manifolds</i> Minicourse at Stockholm Master Class in Dynamical Systems (KTH)	May 2025

<i>Pseudo-Anosov flows on 3-manifolds</i> Minicourse at Foliations and Diffeomorphism Groups (CIRM)	December 2024
<i>Flots d'Anosov en dimension 3.</i> Minicourse at St. Jacut de la mer (St. Jacut / Rennes)	October 2024
<i>Big mapping class groups and dynamics.</i> Minicourse at "group actions in low dimensions" (IHP, Paris)	April 2024
<i>Anosov-like group actions.</i> Minicourse at Young Geometric Group Theory (Bristol, UK)	April 2024
<i>Dynamics of group actions.</i> Minicourse at Fields Institute (Toronto)	January 2024
<i>Surface homeomorphisms and rotation sets.</i> Minicourse at Surfaces in Banyuls (France)	Dec. 2023
<i>Big mapping class groups.</i> Minicourse with C. Horbez at "Curves, surfaces, 3-manifolds" conference (Haifa)	May 2023
<i>Classifying pseudo-Anosov flows on 3-manifolds.</i> Minicourse at Beyond Uniform Hyperbolicity (Bedlewo)	May 2023
<i>Anosov flows in 3 dimensions and Anosov-like actions.</i> Minicourse w/ T. Barthelme (Anosov dynamics, CIRM)	April 2023
<i>Structure of homeomorphism groups.</i> Minicourse at "Huge groups" Conference (CRM Montreal)	April 2023
<i>Anosov flows, bifoliated planes, and ideal circles.</i> Minicourse (Simons center for geometry and physics)	March 2022
<i>Group actions in low dimensions.</i> Invited lecture series. (KAIST, Korea)	Dec. 2018
<i>1-dimensional dynamics.</i> Undergraduate minicourse at Mathematical Summer in Paris (ENS, Paris)	July 2018
<i>Flat bundles, foliations, and group actions on manifolds.</i> Young Topologists Meeting (Copenhagen)	July 2018
<i>Groups, geometry, and rigidity.</i> 3-week minicourse for graduate students (MIT)	March 2017
<i>Groups of circle homeomorphisms.</i> Beyond Uniform Hyperbolicity 2015 (Olmue, Chile)	September 2015

### Recent invited seminar talks

- 2026:** UC Berkeley math department colloquium, Simon Fraser University math colloquium.
- 2024:** University of Toronto AWM graduate seminar, Queens university (Ontario, Canada) dynamics seminar and colloquium, UCSB math colloquium, Toulouse Geometry and topology seminar, Dynamics day at University of Rennes, ENS Lyon geometry/topology seminar, UQAM (Montreal) geometry/topology seminar.
- 2023:** Yale University geometry seminar and Colloquium, Courant Topology and geometric analysis seminar, Inst. Fourier (Grenoble) topology seminar. Université Cote d'Azur (Nice) geometric group theory seminar and conference talk, University of Chicago (colloquium).
- 2022:** PATCH seminar at Temple university, Regensburg university SFB lecture (colloquium), Univ. Bourgogne geometry seminar, IHES geometry and discrete groups seminar, Inst. Math Jussieu colloquium, Ithaca College math colloquium, Columbia university topology seminar.
- 2021:** University of Toronto (colloquium), University of Michigan, UC Berkeley topology seminar, Rice University (colloquium), Maryland dynamics seminar, UW Milwaukee (colloquium), Einstein Institute, Hebrew university (colloquium), Zurich Colloquium in Mathematics, Pangolin online seminar in groups geometry and dynamics, Cornell Math colloquium (Oliver club).
- 2020:** Caltech geometry and topology seminar, Boston College dynamics seminar, Harvard colloquium, Penn State University dynamics seminar, Resistencia Dynamica dynamics seminar (IMPA/Brazil), Geometry and Topology Online (Warwick), Regensburg low-dimensional geometry and topology seminar, Binghamton topology seminar, "Big surfaces" online seminar, McGill geometric group theory, Columbia topology seminar, Virtual seminar in geometry and topology (KAIST / KIAS), Inst. Math. Jussieu dynamics seminar (Paris).
- 2019:** Caltech geometry seminar, UIC math colloquium, Wash U. St. Louis geometry/topology seminar and colloquium, University of Chicago geometry/topology, Queens U. colloquium and topology seminar
- 2018:** Tufts geometric group theory seminar, University of Toronto, Harvard "Open Neighborhood" seminar, Boston graduate topology seminar, University of Virginia geometry seminar and colloquium, University of Chicago dynamics, Monash University math colloquium, Cornell (x2), University of Michigan (x3), Columbia University

## Teaching

### Cornell University

Math 1110	Calculus (two sections)	Fall 2025
Math 7620	Topics in geometry (graduate course on pseudo-Anosov flows and 3-manifolds)	Spring 2024
Math 6320	Riemannian geometry (graduate course)	Spring 2023
Math 4310	Linear algebra (with active learning components, in cooperation with ALI team )	Fall 2022
Math 4520	Classical geometries and modern applications (+ development of active learning materials)	Fall 2021, 2023
Math 7520	Berstein Seminar in Topology. Graduate topics course on Anosov flows	Fall 2021
Math 2220	Undergraduate multivariable calculus, two sections	Spring 2021
Math 3210	Manifolds and differential forms (undergraduate)	Fall 2020
Math 7520	Berstein Seminar in Topology. Graduate topics course on Mostow rigidity	Spring 2020
Math 4530	Introduction to topology	Fall 2019

### Brown University

Math 2720	Introduction to dynamical systems (graduate)	Spring 2019
Math 1230	Graph theory (undergraduate)	Spring 2018, Spring 2019

### UC Berkeley

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

### University of Chicago

Math 161–2–3	<i>Inquiry Based Learning</i> 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

## Student supervision

### PhD students:

Mauro Carmago and Hazel Brenner (PhD August 2025), Isaac Broudy (expected May 2028).

Member of thesis committee for: Aria Beaupre, Colby Kelln, Sumun Iyer, Olu Olorode, Nikhil Sahoo, Chaitanya Tappu, Benjamin Thompson.

### Honors theses:

Undergraduate honors thesis of Taro Shima, Brown University	2019
Undergraduate honors thesis of Sophia Elia, UC Berkeley.	2016

### Project supervision:

Women in Groups Geometry and Dynamics project supervisor	2024-2026
Co-supervisor of graduate student reading group on mapping class groups and geodesic currents	Spring 2021
Supervisor of graduate student reading group on mapping class groups of infinite type surfaces	Fall 2019
Supervisor of RISD collaborative study project on projective geometry for architecture/engineering students	2018
Undergraduate summer research project on Orderable Groups and Topology, Brown university	2018

## Service

### I. Program Development for mathematics outreach and communication

*DRP Network.* Co-developer, and current lead of oversight team for a national network of *directed reading* (grad–undergrad mathematics mentorship) programs, providing resources and tools for program startup and best-practices and NSF–funded study of efficacy and outcomes. <https://sites.google.com/view/drp-network/>

*Communicating mathematics.* A series of conferences and events related to promoting excellent communication to diverse audiences. Lead organizer of 2022 Cornell workshop, and 2026 Joint Mathematics Meetings cluster. <https://sites.google.com/view/communicating-math-2026>

### II. Organization of thematic semester research programs

SLMath (MSRI) semester program on Topological and Geometric Structures in Low Dimensions (2026)

Group actions and rigidity: around the Zimmer program (Inst. Henri Poincaré thematic trimester, 2024)

Fields institute thematic program in Set-Theoretic Methods in Algebra, Dynamics, and Geometry (2023).

### III. Conferences and seminars co-organized

Recent progress: topological and geometric structures in low dimensions (SLMath)	March 2026
Group actions in low dimensions (Inst. Henri Poincaré)	April 2024
Communicating mathematics (NSF funded interdisciplinary conference at Cornell university)	August 2022
Cornell topology festival (main organizer)	May 2021
Ordered groups and rigidity in dynamics and topology (BIRS workshop)	June 2019
Special session on groups in low-dimensional topology and dynamics (AMS sectional meeting)	Nov 3-4, 2018
Directed Reading Program Workshop (MIT)	May 26-27, 2018
UC Berkeley Topology Seminar	2014-17
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 (UC Berkeley)	May 21-22, 2015
Cohomology of diffeomorphism groups (Joint Stanford-Berkeley research seminar)	2014-15

### IV. Outreach, animation and diffusion

Canada/USA Mathcamp (summer program for high school students) visiting instructor	Summer 2015, 2018, 2024
Co-organizer, Topology Students Workshop (professional development for grad students)	Summer 2018, 2020
Co-organizer of Topology Postdocs Workshop	July 2020
Faculty advisor for graduate-undergraduate mathematics Directed Reading Program (at Brown, then Cornell)	2017–
Research Experience for Undergraduates (U. Chicago), <i>Mentor for 8 undergrads</i>	2009, 2011
University of Chicago DRP <i>Supervised 7 undergraduate independent study projects</i>	2010-2013

### Undergraduate/general–audience talks at:

Cornell University, University of Chicago, UC Berkeley (x2), UC Santa Barbara, Sonoma State University, Harvard University, University of Michigan, Brown, Swarthmore, Cambridge Mathematics Society.

### V. Committee work

Comité de sélection (hiring committee in France)	2022 (MCF), 2024 (Prof)
Cornell math first year advising committee	2020–22
Undergraduate math major committee	2022–

Cornell mathematics diversity committee and library committee  
Brown mathematics department diversity committee and colloquium committees

2020-21, 2025-26  
2017-19

## **VI. Editorial work**

### **Member of editorial board of:**

Geometriae Dedicata (2020–2024),

Communications of the American Mathematical Society (2021–present),

Journal of Topology (2022–present)

Bulletin of the American Mathematical Society (2025–present).