Joseph Maher CV

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Education

Ph.D Mathematics, University of California, Santa Barbara. 2002
Dissertation title: Period three actions on the three-sphere are standard.
Advisor: Daryl Cooper.

MA Mathematics, University of California, Santa Barbara. 1997

MMath (Part III), Cambridge University, UK. 1996

BA (Hons) Mathematics, Cambridge University, UK. 1995

Appointments

CUNY College of Staten Island, Professor.	2019–current
CUNY Graduate Center, Doctoral Faculty.	2011–current
CUNY College of Staten Island, Associate Professor.	2013–2019
CUNY College of Staten Island, Assistant Professor.	2009–2013
Oklahoma State University, Assistant Professor.	2006–2009
Université du Québec à Montréal, CRM Postdoctoral Fellowship.	2005–2006
California Institute of Technology, Taussky–Todd Instructor.	2003–2005
The University of Melbourne, Australia, Research Fellow.	2002

Grants (External)

Simons Foundation CGM 579762	2018–23
Simons Foundation CGM 234477	2012–17
NSF grant DMS-0706764 (PI)	2007–11

Grants (Internal)

PSC-CUNY TRADB	43-20, 44-178, 45-17, 46-3, 47-2, 50-260, 51-242, 51-242, 53-2	2012–23
PSC-CUNY PSCOOC	41-80	2010–11

Publications and preprints

1. J. Maher, H. Masai, S. Schleimer, Quotients of the curve complex, (with H. Masai, S. Schleimer), *Groups, Geometry and Dynamics*, to appear.

2. Random trees in the boundary of Outer space, (with I. Kapovich, C. Pfaff, S. Taylor), *Geometry and Topology*, 26 (2022) 127–162.

3. Random walks, WPD actions, and the Cremona group, (with G. Tiozzo), *Proceedings of the London Mathematical Society*, Volume 123, Issue 2, August 2021, 153–202.

4. Random outer automorphisms of free groups: Attracting trees and their singularity structures, (with I. Kapovich, C. Pfaff, S. Taylor), *Transactions of the American Mathematical Society*, 375 (2022) 525–557.

5. The compression body graph has infinite diameter, (with S. Schleimer), *Algebraic and Geometric Topology*, 21 (2021) 1817–1856.

6. Morse functions to graphs and topological complexity for hyperbolic 3-manifolds, (with D. Hoffoss), *Communications in Analysis and Geometry*, Vol. 30 (2022), no. 4, 843–868.

7. Recurrence of quadratic differentials for harmonic measure, (with V. Gadre), *Mathematical Proceedings of the Cambridge Philosophical Society*, 169 (2020), no. 2, 299–305.

8. Random subgroups of acylindrically hyperbolic groups and hyperbolic embeddings, (with A. Sisto), *International Mathematics Research Notices*, Vol. 2019 (13) 3941–3980.

9. The stratum of random mapping classes, (with V. Gadre), *Ergodic Theory and Dynamical Systems*, (2018) Vol. 38 (7) 2666–2682.

10. Random walks on weakly hyperbolic groups, (with G. Tiozzo), *Journal für die reine und angewandte Mathematik (Crelle's Journal)*, Vol. 2018, Issue 742, 187–239, .

11. Morse area and Scharlemann-Thompson width for hyperbolic 3-manifolds, (with D. Hoffoss), *Pacific Journal of Mathematics*, Vol. 281 (2016) No. 1, 83–102.

12. Random methods in 3-manifold theory, (with A. Lubotzky and C. Wu), *Proceedings of the Steklov Institute*, 2016, Vol. 292, 118–142.

13. Teichmüller geodesics and singularity of harmonic measure, (with V. Gadre and G. Tiozzo), *Commentarii Mathematici Helvetici*, 92 (2017), no. 1, 1–36.

14. Word length statistics and Lyapunov exponents for Fuchsian groups with cusps, (with V. Gadre, G. Tiozzo), *New York Journal of Mathematics*, Volume 21 (2015) 511–531.

15. Statistics and compression for scl, *Ergodic Theory and Dynamical Systems*, (with D. Calegari), **35** (2015), Issue 1, 64–110.

16. Exponential decay in the mapping class group, *Journal of the London Mathematics Society*, (2012) 86(2), 366–386.

17. Random walks on the mapping class group, *Duke Mathematical Journal*, Vol. 156, Number 3 (2011), 429–468.

18. Asymptotics for pseudo-Anosov elements in Teichmüller lattices, *Geometric and Functional Analysis*, **20** (2010), 527–544.

19. Random Heegaard splittings, *Journal of Topology*, (2010) **3** (4), 997–1025.

20. Linear progress in the complex of curves, *Transactions of the American Mathematics Society*, **362** (2010), 2963–2991.

21. Period three actions on lens spaces, *Algebraic and Geometric Topology*, Vol 7 (2007), 2021–2102.

22. Heegaard gradient and virtual fibers, *Geometry and Topology*, Vol. 9 (2005), 2227–2259.

23. Period three actions on the three-sphere are standard, (with J. H. Rubinstein), *Geometry and Topology*, Vol. 7 (2003), 329–397.

24. Virtually embedded boundary slopes, *Topology and its Applications*, (95) 1 (1999), 63–74.

Recent conference talks

GAGTA, Vienna, "Singularity of measures for Cannon-Thurston maps.	Jul 2023
Del Duca Workshop on Cremona Groups, Toulouse.	Sep 2019
Boundaries of Random Walks and Applications, Bowdoin.	Jun 2019
Computational Problems in Low-dimensional Topology II, OIST, Japan.	Apr 2019
Characters in low-dimensional topology, Montréal.	Jun 2018
Foundations of Computational Mathematics, Barcelona.	Jul 2017
Probabilistic Methods in Topology, CRM, Montréal.	Nov 2016

Recent seminar talks

UC Berkeley	2023
University of Vienna, CUNY GT seminar	2022
Queens University, CUNY Applied Topology seminar	2020
University of Melbourne, Monash, University of Sydney	2019
Rutgers, Columbia	2018
Glasgow, UCSB, UC Berkeley, Stanford, Wisconsin, Toronto	2017
Yale, CUNY Mathfest	2016

Joseph Maher CV

Teaching Experience

I have taught over 20 distinct courses, from large lecture calculus classes with over 60 students to graduate topics classes with 6 students.

Undergraduate classes: I have taught pre-calculus, all three semesters of a three semester calculus sequence, a computer lab for calculus, statistics, linear algebra, differential equations and geometry. I have also designed a new introduction to proof course for mathematics majors at CSI which I taught for the first time in Spring 2018. I have also taught a one semester real analysis course for undergraduates at CSI.

Masters in eduction classes: I have taught a Geometry for high school teachers class at CSI.

Graduate classes: At the CUNY Graduate Center I have taught both semesters of a one year graduate class in algebraic topology, as well as a topics course on random walks on groups. I taught graduate classes in algebraic topology, geometric topology and hyperbolic geometry at Oklahoma State, and classes in algebraic topology and differential geometry at Caltech.

Graduate students

Matt Sunderland, CUNY Graduate Center (PhD 2018).

Selected committees

CUNY Graduate Center Topology qualifying exam committee.	2012–current
CUNY Graduate Center Mathematics curriculum committee.	2012–2016
CUNY CSI Hiring committees.	2012–23

Recent conferences organized

Reflections on Geometry, Columbia.	Jun 2022
Random walks beyond hyperbolicity, AIM.	Apr 2022
Boundaries for groups and spaces, AMS Joint Meeting, San Diego.	Jan 2018

Outreach

Professional development seminar with Staten Island K-12 math teachers.	Spring 2015
Surface topology workshop for artists at GROUNDWORK creative retreat.	May 2015

Other activities

Visiting Lecturer, AIMS Senegal.	Mar-Apr 2023
Visiting Scholar, UC Berkeley.	Jan-Jun 2017
Research Member, MSRI Geometric Group Theory Program.	Aug-Dec 2016

Visiting researcher at the Hausdorff Institute, Bonn. May–Jun 2010

Visiting assistant professor at the Tokyo Institute of Technology. May–Aug 2009

Grant reviewer for CUNY, the NSF and the Simons Foundation.

Referee for over 20 journals and various conference proceedings.