Alex Wright

✉ alexmw@umich.edu
www-personal.umich.edu/~alexmw/

Academic Appointments

2022–	Associate Professor, University of Michigan
2019–2022	Assistant Professor, University of Michigan
2018–2019	Visiting Assistant Professor, University of Michigan
2016–2018	Acting Assistant Professor, Stanford University
2014–2015	Visiting Fellow, Stanford University
2015	Member, Institute for Advanced Study
2015	Postdoctoral Fellow, Mathematical Sciences Research Institute

Education

2014	Ph.D., University of Chicago Advisor: Alex Eskin
2008	B.Math., University of Waterloo

Selected Honors and Awards

2022–2027	NSF CAREER Award DMS-2142712 ($500,000)
2022	Frontiers of Science Award
2021	Bourbaki seminar by Elise Goujard on my joint work on totally geodesic subvarieties
2021	Mathematical Council of the Americas MCA Prize
2020-2022	Sloan Research Fellowship
2019–2022	NSF Grant DMS 1856155 ($319,999)
2019	American Math Society Levi L. Conant Prize
2018	Michael Brin Dynamical Systems Prize for Young Mathematicians
2014–2019	Clay Research Fellowship
2013	Canadian Math Society G. de B. Robinson Award
2009–2012	NSERC Postgraduate Scholarship
2008–2009	NSERC Julie Payette Award

Preprints

32. Spheres in the curve graph and linear connectivity of the Gromov boundary

Refereed Publications

31. Towards optimal spectral gaps in large genus, with M. Lipnowski
Annals of Probability, to appear

30. High rank invariant subvarieties, with P. Apisa
Annals of Mathematics, to appear

29. The asymmetry of Thurston's Earthquake flow, with F. Arana–Herrera
Geometry and Topology, to appear

28. Generalizations of the Eierlegende-Wollmilchsau, with P. Apisa
Cambridge Journal of Mathematics, 10 (2022) 4, 859–933

27. Hodge and Teichmüller, with J. Kahn
Journal of Modern Dynamics, 18 (2022), 149–160

26. Mirzakhani's work on earthquake flow
Panoramas et Synthèses, 58 (2022) 101–134

25. Reconstructing orbit closures from their boundaries, with P. Apisa
Memoirs of the American Mathematical Society, to appear

24. Marked points on translation surfaces, with P. Apisa
Geometry and Topology, 25 (2021) 6, 2913–2961

23. The WYSIWYG compactification, with D. Chen
Journal of the London Mathematical Society, 103 (2021) 2, 490–515

22. Nearly Fuchsian surface subgroups of finite covolume Kleinian Groups, with J. Kahn
Duke Mathematical Journal, 170 (2021) 3, 503–573

21. Billiards, quadrilaterals and moduli spaces, with A. Eskin, C. McMullen and R. Mukamel
Journal of the American Mathematical Society, 33 (2020) 4, 1039–1086

20. A tour through Mirzakhani's work on Riemann surfaces
Bulletin of the American Mathematical Society, 57 (2020) 3, 359–408

19. A smooth mixing flow on a surface with non-degenerate fixed points, with J. Chaika
Journal of the American Mathematical Society, 32 (2019) 1, 81–117

18. Totally geodesic submanifolds of Teichmüller space
Journal of Differential Geometry, 115 (2020) 3, 565–575

17. The algebraic hull of the Kontsevich-Zorich cocycle, with A. Eskin and S. Filip
Annals of Mathematics, 188 (2018) 1, 281–313
This paper won the Frontiers of Science Award

16. Full rank affine invariant submanifolds, with M. Mirzakhani
Duke Mathematical Journal, 167 (2018) 1, 1–40

15. Cubic curves and totally geodesic subvarieties of moduli space, with C. McMullen and R. Mukamel
Annals of Mathematics, 185 (2017) 3, 957–990

14. The boundary of an affine invariant submanifold, with M. Mirzakhani
Inventiones Mathematicae, 209 (2017) 3, 927–984

13. From rational billiards to dynamics on moduli spaces
Bulletin of the American Mathematical Society, 53 (2016) 1, 41–56
This paper won the American Math Society Levi L. Conant Prize

12. Finiteness of Teichmüller curves in non-arithmetic rank 1 orbit closures, with E. Lanneau and D.-M. Nguyen
American Journal of Mathematics, 139 (2017) 6, 1449–1463

11. Translation surfaces and their orbit closures: An introduction for a broad audience
European Mathematical Society Surveys in Mathematical Sciences, 2 (2015) 1, 63–108

10. Classification of higher rank orbit closures in $\mathcal{H}^{odd}(4)$, with D. Aulicino and D.-M. Nguyen
Journal of the European Mathematical Society, 18 (2016) 8, 1855–1872

9. Hodge-Teichmüller planes and finiteness results for Teichmüller curves, with C. Matheus
Duke Mathematical Journal, 164 (2015) 6, 1041–1077

8. Non-Veech surfaces in $\mathcal{H}^{hyp}(4)$ are generic, with D.-M. Nguyen
Geometric and Functional Analysis, 24 (2014) 4, 1316–1335

7. Cylinder deformations in orbit closures of translation surfaces
Geometry and Topology, 19 (2015) 1, 413–438

6. The field of definition of affine invariant submanifolds of the moduli space of abelian differentials
Geometry and Topology, 18 (2014) 3, 1323–1341

5. Schwarz triangle mappings and Teichmüller curves: the Veech-Ward-Bouw-Möller curves
Geometric and Functional Analysis 23 (2013) 2, 776–809

4. Schwarz triangle mappings and Teichmüller curves: abelian square-tiled surfaces
Journal of Modern Dynamics, 6 (2012) 3, 405–426

3. Sums of Adjoint orbits and L^2–singular dichotomy for $SU(m)$
Advances in Mathematics, 227 (2011) 1, 253–266

2. Operator algebras with unique preduals, with K. Davidson
Canadian Mathematical Bulletin, 54 (2011) 3, 411–421
This paper won the Canadian Math Society G. de B. Robinson Award

1. Regular orbital measures on Lie algebras
Colloquium Mathematicum, 113 (2008) 1, 1–11

Teaching Experience

2023 Outer automorphism groups of free groups (Math 636, Michigan), graduate class

2022 Coarse geometry and Teichmüller theory (Math 797, Michigan), graduate class

2021 Introduction to Differential Geometry (Math 433, Michigan)
Applied Modern Algebra (Math 312, Michigan)

2020 Teichmüller theory (Math 697, Michigan), graduate class

2019 Differential Topology (Math 591, Michigan), graduate class

2017 Teichmüller theory (Math 282A, Stanford), graduate class

2016 Complex analysis (Math 116, Stanford)

2014 Linear algebra (Math 196, Chicago)
Multivariate calculus (Math 195, Chicago)

2013 Linear algebra (Math 196, Chicago)
Multivariate calculus (Math 195, Chicago)
2012 Linear algebra (Math 196, Chicago), two sections
2011 Multivariate calculus (Math 195, Chicago)
Calculus III (Math 153, Chicago)
2010 Calculus II (Math 152, Chicago)
Analysis in $\mathbb{R}^n$ II (Math 204, Chicago), assisted with Inquiry Based Learning section
2009 Analysis in $\mathbb{R}^n$ I (Math 203, Chicago), assisted with Inquiry Based Learning section

Lecture Series and Minicourses

2021 Pacific Dynamics Seminar, online (joint with P. Apisa)
2018 Teichmüller Theory and its Connections, Fields Institute
Teichmüller dynamics, mapping class groups and applications, Grenoble
2017 Maryland Analysis and Geometry Atelier, Maryland
Geometric Structures and Representation Varieties Retreat, Stanford
2015 Dynamics Beyond Uniform Hyperbolicity, Chile
Dynamics on Moduli Spaces of Geometric Structures, MSRI
2014 Working Seminar: Dynamics and its Working Tools, Penn State
Graduate Workshop on Moduli of Curves, Simons Center

Conference Talks

2025 Mathematical Congress of the Americas, Miami
2023 Midwest Dynamics Conference, Chicago
2022 Laplacians on random hyperbolic surfaces and on random graphs, Northwestern
Ergodic Theory and its Connections (in honor of Boshernitzan), Rice
2021 Mathematical Congress of the Americas, Buenos Aires (prize lecture)
Scott Wolpert's 70th birthday symposium, Maryland
Geometry and Topology of (Almost) Complex Structures, Online
2019 The U.P. Regional MAA Meeting, Marquette (plenary speaker)
Midwest Dynamical Systems Conference, Chicago
Topology & Dynamical Systems, Dubrovnik
Geometry Festival, Maryland
Workshop on strata of abelian differentials and related topics, Michigan
2018 Board of Trustees, MSRI
Fourth Duke Mathematical Journal Conference, Duke
Teichmüller Dynamics, Warwick
LMS Meeting in Honour of Maryam Mirzakhani, Warwick
Mirzakhani Memorial Conference, Stanford
Teichmüller dynamics, mapping class groups and applications, Grenoble

Workshop in Dynamical Systems and Related Topics, Penn State
Fields Medal Symposium in honour of Maryam Mirzakhani, Fields Institute

2017 Teichmüller Space, Polygonal Billiard, Interval Exchanges, CIRM

2016 Cycles on Moduli Spaces, Geometric Invariant Theory, and Dynamics, ICERM

2015 AMS Special Session on Smooth and Symbolic Ergodic Theory, Rutgers
Geometry and Dynamics on Moduli Spaces, CMI
Dynamics and Geometry in the Teichmüller Space, CIRM
Thematic Program on Boundaries and Dynamics, Notre Dame
Academic Sponsors Day, MSRI
Current Events Bulletin, Joint Mathematics Meetings, San Antonio

2014 Bloomington Geometry Workshop, Indiana
Workshop on Dynamical Systems and Related Topics, Maryland
Flat Surfaces and Dynamics on Moduli Space, MFO

2013 Geometric Structures in Low-Dimensional Dynamics, ICERM
Wasatch Topology Conference, Utah
AMS Special Session on Multi-Dimensional Dynamical Systems, Iowa

2012 Geometric Structures and Representation Varieties, Urbana-Champaign

2011 Dynamics on Moduli Spaces, MFO

Colloquia

2022 Washington University

2019 Waterloo, Indiana, Yale

2018 Yale, British-Columbia, Toronto

2017 Wisconsin, Stony Brook, Utah, Minnesota, UCSD, Queen's, Notre Dame, UIC, Caltech, Michigan, Rutgers, USC, Columbia, Berkeley, Stanford, Brown, Rice

2016 Washington, Utah, Michigan

2015 MIT, CCNY

2014 Penn State

Seminar Talks

2023 Geometry and Topology at Brown and Yale

2022 Toronto, Random Geometry and Statistical Physics (international, virtual)

2021 Quasiworld (international, virtual), Chicago

2019 Chicago, Yale

2018 Princeton, British-Columbia

2017 Northwestern, Michigan, Washington, UIUC, Berkeley

2016 Toronto, Stanford

2015 Maryland, IAS, MSRI

2014 Austin, Berkeley, UIUC, Penn State

2013 Boston College, Rice, Purdue, Harvard

2012 Stanford, UIUC

2011 Indiana, Frankfurt

PhD students

Current Henry Talbott, Michigan

Sayantan Khan, Michigan

Former Ben Dozier, co-advised with Mirzakhani, Stanford, graduated spring 2018

Francisco Arana-Herrera, co-advised with Kerckhoff, Stanford, graduated spring 2021

Bradley Zykoski, Michigan, graduated spring 2023

Chris Zhang, Michigan, graduated spring 2023

Research experience for undergraduates

2023 Supervised an REU that produced a paper:

Optimal connectivity results for spheres in the curve graph of low and medium complexity surfaces,
by Helena Heinonen, Roshan Klein-Seetharaman, and Minghan Sun

2020 Co-supervised a REU that produced three papers:

Periodic points on the regular and double n-gon surfaces,
by Paul Apisa, Rafael Saavedra, and Chris Zhang,
Geometry Dedicata, 216 (2022) 6, Paper No. 69

Strongly Obtuse Rational Lattice Triangles,
by Anne Larsen, Chaya Norton, and Bradley Zykoski,
Transactions of the American Mathematical Society, 374 (2021) 10, 7119–7142

Thurston's fibered faces for non-orientable 3-manifolds and an application to minimal stretch factors,
by Sayantan Khan, Caleb Partin, and Becca Winarski,
Algebraic & Geometric Topology, to appear

Editorial work

2022–2026 Conformal Geometry and Dynamics, editor

Service

2024– MaCSS Scholars mentor

2024 NSF panelist

2023–2024 Ph.D. admissions committee

2021–2024 Personnel (tenure-line hiring) committee

2020 NSF panelist

2019–2021 Ph.D. admissions committee

2020–2022 Doctoral committee

2018 Co-organizer, Fields Institute Thematic Program on Teichmüller Theory and its Connections to Geometry, Topology and Dynamics

2018 Co-organizer, Fields Institute Workshop on Dynamics and Moduli Spaces of Translation Surfaces

2018 Co-organizer, Stanford Mirzakhani Memorial Conference

Industry Experience

2007 Programmer, Maplesoft
Wrote wavelet algorithms in C

Last updated January 31, 2024.