

Alex Wright

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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)
- 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. The asymmetry of Thurston's Earthquake flow, with F. Arana-Herrera
31. A new orbit closure in genus 8, with V. Delecroix and J. R uth
30. Towards optimal spectral gaps in large genus, with M. Lipnowski
29. High rank invariant subvarieties, with P. Apisa

Refereed Publications

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, to appear
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
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. Laneeau 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. Auricino 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

- 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

- 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
2020 8th Iberoamerican Congress on Geometry, Morelia (plenary speaker, postponed)
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

- 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 Chris Zhang, Michigan
Sayantan Khan, Michigan
Bradley Zykoski, Michigan

Former Ben Dozier, co-advised with Mirzakhani, Stanford, graduated Spring 2018
Francisco Arana-Herrera, co-advised with Kerckhoff, Stanford, graduated Spring 2021

Research experience for undergraduates

2020 Co-organized 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

2021–2022 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