

Emily Stark

Wesleyan University
Department of Mathematics

Education

Ph.D. in Mathematics, Tufts University	2015
<i>Advisor: Genevieve Walsh</i>	
M.S. in Mathematics, Tufts University	2011
B.A. in Mathematics, Pomona College	2009
Budapest Semesters in Mathematics	Fall 2007

Employment

Assistant Professor, Wesleyan University	2020-present
Wylie Assistant Professor/Lecturer, The University of Utah	2019-2020
Postdoctoral fellow, Technion - Israel Institute of Technology	2016-2019
Postdoctoral fellow, University of Haifa, Department of Mathematics	2015-2016

Research Interests

My research lies in geometric group theory and low-dimensional topology. My interests include spaces with non-positive curvature, quasi-isometric classification and rigidity, notions of commensurability, group boundaries, and surfaces and 3-manifolds.

Awards and Honors

NSF Conference Standard Grant DMS-2554145, Co-PI	May 2026
<i>Title: Geometric Group Theory Around Cube Complexes</i>	
NSF Standard Grant DMS-2204339, PI	2022 – 2025
<i>Title: Rigidity and boundaries in non-positive curvature</i>	
NSF Conference Standard Grant DMS-2309427, Co-PI	August 2023
<i>Title: Groups, Actions, and Geometries Conference</i>	
Erwin Schrödinger Institute, Vienna, Research in Teams Grant, 1-month stay	July 2023
Zuckerman STEM Leadership Fellowship	2017 – 2019
National Science Foundation Graduate Research Fellowship	2009 – 2012
Tufts University Provost Fellowship	2009

Papers - Published or Accepted

- (20) Conformal dimension bounds, Pontryagin sphere boundaries, and algebraic fibering of right-angled Coxeter groups. (Joint with C. Cashen, P. Dani, K. Schreve.) To appear, **IMRN**.
- (19) Graphically discrete groups and rigidity. (Joint with A. Margolis, S. Shepherd, D. Woodhouse.)
Journal of Topology. 19(1) (2026), e70059, 1-73.
- (18) Failure of quasi-isometric rigidity for infinite-ended groups. (Joint with N. Lazarovich)
Contemporary Mathematics. 812 (2025), 297-304.
- (17) Coarse Alexander Duality for pairs and applications. (Joint with C. Hruska, H. Tran.)
Algebraic and Geometric Topology. 25(4) (2025), 1999-2035.
- (16) Action rigidity for free products of hyperbolic manifold groups. (Joint with D. Woodhouse.)
Annales de l'Institut Fourier. 74 (2024), no. 2, 50-544.

- (15) Free products from spinning and rotating families. (Joint with M. Bestvina, R. Dickmann, G. Domat, S. Kwak, P. Patel.) **L'Enseignement Mathématique**. 69 (2023), no. 3-4, 235-260.
- (14) Cannon–Thurston maps for CAT(0) groups with isolated flats. (Joint with B. Beeker, M. Cordes, G. Gardam, R. Gupta.) **Mathematische Annalen**. 384 (2022), no.1-2, 963-987.
- (13) Planar lattice subsets with minimal vertex boundary. (Joint with R. Gupta, I. Levcovitz, A. Margolis.) **Electronic Journal of Combinatorics**. 28 (2021), no. 3.
- (12) Surprising circles in Morse boundaries of right-angled Coxeter groups. (Joint with M. Graeber, A. Karrer, N. Lazarovich.) **Topology and its Applications**. 294 (2021), No. 107645.
- (11) Hyperbolic groups that are not commensurably coHopfian. (Joint with D. Woodhouse.) **International Mathematics Research Notices**. no 1. (2021), 582-598.
- (10) The visual boundary of hyperbolic free-by-cyclic groups. (Joint with Y. Algom-Kfir and A. Hilion.) **Israel Journal of Mathematics**. 244 (2021), no. 2, 501-538.
- (9) Nonplanar graphs in boundaries of CAT(0) groups. (Joint with K. Schreve.) **Groups, Geometry, and Dynamics**. 14 (2020), no. 4, 1205-1221.
- (8) Surface group amalgams that (don't) act on 3-manifolds. (Joint with C. Hruska and H. Tran.) **American Journal of Mathematics**. (2020), 142(3):885-921.
- (7) Quasi-isometric groups with no common model geometry. (Joint with D. Woodhouse.) **Journal of the London Mathematical Society**. (2) 99 (2019), 853–871.
- (6) Detecting a subclass of torsion-generated groups. **Algebraic and Geometric Topology**. 18-7 (2018), 4037-4068.
- (5) Topological rigidity fails for quotients of the Davis complex. **Proceeding of the American Mathematical Society**, 146 (2018), no. 12, 5357-5366.
- (4) Commensurability for certain right-angled Coxeter groups and geometric amalgams of free groups. (Joint with P. Dani and A. Thomas.) **Groups, Geometry, and Dynamics**. 12 (2018), 1273-1341.
- (3) Abstract commensurability and quasi-isometry classification of hyperbolic surface group amalgams. **Geometriae Dedicata**, (2017), 186(1), 39-74.
- (2) Intrinsically linked graphs in $\mathbb{R}P^3$. (Joint with J. Federman, J. Foisy, K. McNamara.) **Involve Journal of Mathematics**. (2017), Vol.10-1, 1 – 20.
- (1) Intrinsically linked graphs in projective space. (Joint with J. Bustamante, J. Federman, J. Foisy, K. Kozai, K. Matthews, K. McNamara, K. Trickey.) **Algebraic and Geometric Topology**, 3 (2009), No. 9, 1255 – 1274.

Papers - Submitted

- (3) Hyperbolic spaces with geometric and geometrically finite quasi-actions are symmetric. (Joint with D. Groves, G. Walsh, K. Whyte.) arXiv:2604.13898 (9 pages) *Submitted*.
- (2) Visual metrics on boundaries of hyperbolic spaces. arXiv:2506.10108. (56 pages) *Submitted*.
- (1) Conformal dimension bounds for certain Coxeter group Bowditch boundaries. (Joint with E. Field, R. Gupta, R. Lyman.) arXiv:2504.12404. (47 pages) *Submitted*.

Invited Conference Talks

Mathfest: New directions in group theory session, Boston, MA	August 2026
Summer Conference on Topology and its Applications, Split, Croatia	July 2026
AMS Sectional: Coarse geometry of non-positively curved complexes, New Orleans, LA	October 2025

Dubrovnik X - Topology and Dynamical Systems, Croatia	June 2024
Riverside Workshop on Geometric Group Theory (4-lecture mini-course)	May 2024
GAGTA, CIRM, Luminy, France	February 2024
Fairfield Algebra Regional Meeting	December 2023
AMS Sectional: Geometry of Groups and Spaces, Buffalo, NY	September 2023
Geometry of Subgroups, CRM Montreal	May 2023
AMS Sectional: Ends and Boundaries of Groups; Mihalik Conference, U. Cincinnati, OH	April 2023
Hyperbolic Groups and Their Generalizations, IHP, Paris, France	June 2022
New York Regional Graduate Mathematics Conference, Syracuse (Plenary speaker)	April 2022
AMS Sectional: Subgroups in Nonpositive Curvature, Tufts University (virtual)	March 2022
Spring Topology and Dynamics Conference, Waco, TX (Semi-plenary speaker)	March 2022
Cascade Topology Conference (virtual)	November 2021
Young Geometric Group Theory X, Newcastle, UK (virtual) (Plenary talk)	July 2021
AMS Sectional: Groups, Geometry, and Topology, Georgia Tech (virtual)	March 2021
Groups and Geometry in the South East, Oxford, England (virtual)	June 2020
Virtual Geometric Group Theory, CIRM, Luminy, France (virtual)	June 2020
AMS Sectional: Geometric Group Theory and Teichmuller Theory, Riverside, CA	November 2019
Non-positive curvature, Warsaw, Poland	May 2019
Summer Conference on Topology and its Applications, WKU (Semi-plenary speaker)	July 2018
Topological and Homological Methods in Group Theory, Bielefeld, Germany	April 2018
Structure of 3-manifold groups, CIRM, Luminy, France	February 2018
Israeli Mathematical Union Annual Meeting, Akko, Israel	May 2017
Spring Topology and Dynamics Conference, Jersey City	March 2017
Non-Positive Curvature in Action, Cambridge, England	January 2017
Israeli Mathematical Union Annual Meeting, Ein Bokek, Israel	June 2016
Topological Methods in Group Theory, Ohio State University	June 2014
Workshop in Geometric Topology, University of Wisconsin-Milwaukee	June 2014
AWM Research Symposium poster session, Santa Clara, CA	March 2013
Binghamton University Graduate Conference in Algebra and Topology	November 2012
Southern California Student Conference on Spatial Graphs, Caltech	April 2009

Invited Seminar Talks and Colloquia

Brandeis University Topology Seminar	November 2024
Bowling Green State and University of Toledo Geometry and Topology Seminar	October 2024
Columbia University Geometric Topology Seminar	April 2024
University of Wisconsin-Madison Group Actions and Dynamics Seminar	December 2024
Wesleyan University Topology et al Seminar	October 2022
Louisiana State University Topology Seminar	October 2022
Yale University Geometry and Topology Seminar	September 2022
University of Utah Max Dehn Seminar	September 2022
UNCG Algebra, Number Theory, Topology, Geometry Seminar (virtual)	March 2022
Tufts Geometric Group Theory and Topology Seminar	March 2022
Warwick Geometry and Topology Seminar (virtual)	December 2021
Oxford Topology Seminar (virtual)	November 2021
PATCH Seminar, Bryn Mawr (2 talks)	October 2021
Münster Geometric Group Theory Seminar (virtual)	July 2021
Binghamton Geometry and Topology Seminar (virtual)	April 2021
UNAM Geometric Group Theory Seminar (virtual)	April 2021

Vanderbilt Topology and Group Theory Seminar (virtual)	March 2021
Tufts Geometric Group Theory and Topology Seminar (virtual)	October 2020
Ohio State University Topology Seminar (virtual)	October 2020
ETH Zürich Geometry Seminar (virtual)	June 2020
New York Group Theory Seminar, CUNY (virtual)	May 2020
University of Oklahoma Colloquium	February 2020
University of Oklahoma Geometry and Topology Seminar	February 2020
University of Wisconsin-Madison Geometry and Topology Seminar	October 2019
BYU Topology Seminar	October 2019
University of Oxford Topology Seminar	October 2019
University of Utah Max Dehn Seminar	September 2019
University of Haifa Colloquium	June 2019
Karlsruhe–Heidelberg RTG Colloquium, KIT	May 2019
University of Haifa Geometry and Topology Seminar	November 2018
Temple University Geometry and Topology Seminar	October 2018
Tufts University Geometric Group Theory and Topology Seminar	October 2018
University at Albany Algebra/Topology Seminar	October 2018
Cornell University Topology Seminar	October 2018
University of California Santa Barbara Topology Seminar	June 2018
University of Wisconsin-Milwaukee Topology Seminar	April 2018
CUNY Geometry and Topology Seminar	April 2018
University of Haifa Geometry and Topology Seminar	December 2017
University of Michigan Topology Seminar	October 2017
Tufts University Geometric Group Theory and Topology Seminar	October 2017
Technion University Geometry and Topology Seminar	January 2017
MSRI Seminar, Berkeley, CA	October 2016
Tufts University Geometric Group Theory and Topology Seminar	September 2016
Technion University Geometry and Topology Seminar	December 2015
University of Haifa Geometry and Topology Seminar	November 2015
CCNY Mathematics Colloquium	October 2015
University of Illinois-Chicago Geometry, Topology, and Dynamics Seminar	April 2015
University of Wisconsin-Milwaukee Topology Seminar	April 2015
Brandeis University Topology Seminar	April 2015
Louisiana State University Topology Seminar	February 2015
Bowdoin College Mathematics Colloquium	December 2014
CUNY Geometry and Topology Seminar	November 2014
Tufts University Geometric Group Theory and Topology Seminar	February 2014
Claremont Colleges Topology Seminar	October 2008

Teaching experience

Wesleyan University Courses	2020–present
<i>Math 228, Discrete Mathematics</i> (Spring 2026)	
<i>Math 244, Point-Set Topology</i> (Spring 2026)	
<i>Math 525, Graduate Topology II: Topics in Geometric Group Theory</i> (Fall 2025)	
<i>Math 523, Graduate Topology I</i> (Fall 2025)	
<i>Math 223, Linear Algebra</i> (Spring 2025)	
<i>Math 122, Calculus II</i> (Spring 2025)	
<i>Math 525, Graduate Topology II: Low-dimensional geometries</i> (Fall 2024)	

Math 228, Discrete Math (Fall 2024)
Math 523, Graduate Topology I (Fall 2023)
Math 121, Calculus I (Fall 2023)
Math 523, Graduate Topology I (Fall 2022)
Math 121, Calculus I (Fall 2022)
Math 524, Graduate Topology I (Spring 2022)
Math 244, Point-Set Topology (Spring 2022)
Math 223, Linear Algebra (Fall 2021)
Math 122, Calculus II (Fall 2021)
Math 526, Graduate Topology II: Geometric Group Theory (Spring 2021)
Math 121, Calculus I (Spring 2021)
Math 223, Linear Algebra (Fall 2020)
Math 245, Algebraic Topology (Fall 2020)

Wesleyan University Tutorials - Individual Reading Courses

2020–present

Reading course with graduate student Adrienne Nolt. (Spring 2026)
Reading course with graduate student Eleanor Rhoads. (Spring 2026)
Reading course with graduate student Adrienne Nolt. (Fall 2025)
Reading course with graduate student Eleanor Rhoads. (Fall 2025)
Reading course with undergraduate Alex Mussomeli. (Summer 2025)
Reading course with graduate student Arianna Zikos. (Spring 2025)
Reading course with graduate student Eleanor Rhoads. (Spring 2025)
Reading course with graduate student Arianna Zikos. (Fall 2024)
Reading course with graduate student Eleanor Rhoads. (Fall 2024)
Reading course with graduate student Arianna Zikos. (Spring 2024)
Reading course with graduate student Eleanor Rhoads. (Spring 2024)
Reading course with graduate student Arianna Zikos. (Fall 2023)
Reading course with graduate student Eleanor Rhoads. (Fall 2023)
Reading course with graduate student Arianna Zikos. (Fall 2022)
Honors reading course with undergraduate student Bram Silbert. (Fall 2022)
Reading course with graduate student Arianna Zikos. (Spring 2022)
Reading course with graduate student Jacob Tolman. (Spring 2022)
Reading course with graduate student Arianna Zikos. (Fall 2021)
Reading course with undergraduate Duncan Kreutter. (Summer 2021)

Wesleyan University Tutorials - Reading Groups

2020–present

Reading group on lattices in isometry groups of Fuchsian buildings. (Spring 2026)
with faculty D. Constantine, A. Margolis, and graduate students
Reading group on quasi-isometric rigidity of higher-rank symmetric spaces. (Fall 2025)
with faculty D. Constantine, A. Margolis, and graduate students
Reading group on connectivity in group boundaries. (Spring 2025)
Reading group on connectivity in group boundaries. (Fall 2024)
Reading group on volume in hyperbolic groups (Fall 2023)
with faculty K. Collins, D. Constantine, Y. Chang, and graduate students

<i>Reading group on surface subgroups</i> (Fall 2022) with faculty I. Adeboye, D. Constantine, C. Leidy, Y. Chang, and graduate students	
<i>Reading group on quasi-isometric rigidity of Fuchsian buildings</i> (Spring 2022) with D. Constantine, S. Shrestha; E. Shrestha, L. Yardimici, A. Zikos.	
<i>Reading group on quasi-isometric rigidity of Fuchsian buildings</i> (Fall 2021) with D. Constantine, S. Shrestha; E. Shrestha, L. Yardimici, A. Zikos.	
The University of Utah	2019-2020
<i>Calculus I</i> (Spring 2020, Fall 2019)	
Summer Projects in Mathematics, Technion	September 2018
<i>Co-directed a project on geometric group theory for undergraduates and masters students</i>	
Summer@ICERM, Brown University	Summer 2015
<i>Research experience for undergraduates; Mentor to groups in applied topology and dynamics</i>	
Tufts University	2012-2015
Instructor:	
<i>Applied Calculus II</i> (Spring 2014, Fall 2013, Spring 2013)	
<i>Calculus II</i> (Summer 2013), <i>Introduction to Calculus</i> (Fall 2012)	
Teaching Assistant:	
<i>Math of Social Choice</i> (Spring 2015), <i>Discrete Math</i> (Fall 2014)	
Teaching Assistant, CIRM, Luminy, France	January 2014
<i>Hyperbolic groups mini-course</i>	
Teaching Mentor & Grader, Pomona College	2008-2009
<i>Calculus III, Real Analysis I, Galois Theory</i>	

Graduate Student Advising at Wesleyan

Ph.D. advisor of Adrienne Nolt (May 2028 expected graduation.)
 Ph.D. advisor of Eleanor Rhoads (May 2027 expected graduation.)
 BA/MA advisor of Tomás Perez (May 2027 expected graduation.)
 Ph.D. advisor of Arianna Zikos (May 2025 graduation.)
Dissertation: Groups acting on the trivalent tree

Service to the Math Department at Wesleyan

Wesleyan Topology et al Seminar Co-organizer	Fall 2021–present
Wesleyan AWM Student Chapter Faculty Advisor	Spring 2025–present
Wesleyan Mathematics Departmental Student Engagement Committee	AY2025-2026
Wesleyan Math Club Advisor	AY2025-2026
Honors Thesis Committee (Tomás Perez)	Spring 2026
Wesleyan Putnam Exam Advisor	Fall 2025
Ph.D. Thesis Committee (Elvin Shrestha, Leyla Yardimci)	May 2025
Honors Thesis Committee (Ford McDill)	May 2025
Van Vleck Post-doc Hiring Committee	Spring 2025
Wesleyan Mathematics Departmental Student Engagement Committee	AY2024-2025
Wesleyan Putnam Exam Advisor	Fall 2024
Master's Thesis Committee (Christa Ishimwe)	April 2024
Wesleyan Mathematics Departmental Advisory Committee	Fall 2023
Wesleyan Putnam Exam Advisor	Fall 2022

Special Preliminary Exam Committee (Leyla Yardimci)	April 2022
Wesleyan Mathematics Department Colloquium Committee	AY2021-2022
Honors Thesis Committee (Sam Bidwell)	April 2021
Wesleyan Mathematics Departmental Advisory Committee	Spring 2021
Wesleyan Mathematics Department Secretary	Fall 2020
Wesleyan Putnam Exam Advisor	Fall 2020

Service to Wesleyan

Wesleyan Women in Science student lunch guest	January 2026
Natural Sciences and Mathematics lunch seminar speaker	November 2023
Wesleyan Women in Science student lunch guest	March 2022
Wesleyan Women in Science student lunch guest	April 2021
Natural Sciences and Mathematics lunch seminar speaker	April 2021
Wesleyan Women's Ultimate Frisbee Team Advisor	Fall 2020

Service to the profession

Organizer, Cube Complexes in Geometric Group Theory Workshop, Wesleyan	July 2026
Co-organizer, Geometric Group Theory around Cube Complexes, CIRM, Luminy, France (Michah Sageev Birthday Conference)	May 2026
Co-organizer, AMS Special Session in Geometric Group Theory, U. Albany	October 2024
Co-organizer, AMS Special Session in Geometric Group Theory, UW-Milwaukee	April 2024
Co-organizer, Groups, Actions, and Geometries Conference, Tufts University	August 2023
Organizer and founder, Tufts University Graduate Student Seminar	2010-2015
Co-organizer, MRC Special Session in Geometric Group Theory. JMM, Baltimore	January 2014

Outreach

Middletown Science Camp, Session on Mathematics	August 2026
Middletown Girls in Science Camp, Session on Mathematics	August 2024
University of Hartford Undergraduate Mathematics Colloquium	September 2023
Middletown Girls in Science Camp, Session on Mathematics	August 2022
Yale SUMRY REU speaker	July 2022
Association for Women in Mathematics Panel, Tufts University	March 2022
SUNY Potsdam REU speaker	July 2021
Undergraduate Colloquium, University of Utah Pre-REU	June 2020
Undergraduate Colloquium, University of Utah	February 2020
Department lunch seminar speaker, Technion	January 2019
Math/Stats club speaker, Mount Holyoke College	October 2018
Math Circles for elementary and secondary students	2012 - 2015
<i>Instructor, Harvard Math Circle (Fall 2013, Spring 2014, Fall 2014, Spring 2015)</i>	
<i>Lead organizer, Tufts Math Circle (Fall 2013)</i>	
<i>Instructor, Tufts Math Circle (Spring 2012, Fall 2012, Spring 2013, Fall 2013)</i>	
<i>Guest Lecturer, Northeastern Math Circle (Spring 2013)</i>	
Volunteer tutor, Community Learning Center, Cambridge, MA	Jan. 2011 - Jan. 2012
<i>Weekly one-on-one sessions with an adult learner</i>	
Volunteer instructor, Museum of Science, Boston	Oct. 2009 - Jan. 2011
<i>Facilitated weekly activities in the Discovery Center</i>	

Selected programs attended

Mathematical Research Communities: Geometric Group Theory, Snowbird, UT	June 2013
PCMI-IAS Graduate Summer School in Geometric Group Theory, Park City, UT	July 2012
University of Nebraska IMMERSE Summer Program	June-July 2009