

# Emily Stark

Technion - Israel Institute of Technology  
Department of Mathematics  
Haifa, Israel

## Education

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Ph.D. in Mathematics, Tufts University	2015
<i>Thesis 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

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Postdoctoral fellow, Technion - Israel Institute of Technology	2016- present
Postdoctoral fellow, University of Haifa, Department of Mathematics	2015-2016

## Research Interests

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My research is in geometric group theory and low-dimensional topology. My interests include quasi-isometric classification and rigidity, notions of commensurability, surfaces and 3-manifolds, hyperbolic and CAT(0) geometry, free-by-cyclic groups, Coxeter groups, and group boundaries.

## Awards and Honors

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Zuckerman STEM Leadership Fellowship	2017 – 2018
National Science Foundation Graduate Research Fellowship	2009 – 2012
Tufts University Provost Fellowship	2009

## Papers

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- (1) The visual boundary of hyperbolic free-by-cyclic groups. (Joint with Y. Algom-Kfir and A. Hilion.) arXiv:1801.04750. *Submitted*, (2018).
- (2) Quasi-isometric groups with no common model geometry. (Joint with D. Woodhouse.) arXiv:1711.05026. *Submitted*, (2017).
- (3) Detecting a subclass of torsion-generated groups. arXiv:1710.05684. *Submitted*, (2017).
- (4) Surface group amalgams that (don't) act on 3-manifolds. (Joint with C. Hruska and H. Tran.) arXiv:1705.01361. *Submitted*, (2017).
- (5) Topological rigidity fails for quotients of the Davis complex. *Proceedings of the American Mathematical Society*. To appear, (2017).
- (6) Commensurability for certain right-angled Coxeter groups and geometric amalgams of free groups. (Joint with P. Dani and A. Thomas.) *Groups, Geometry, and Dynamics*. To appear, (2017).
- (7) Abstract commensurability and quasi-isometry classification of hyperbolic surface group amalgams. *Geometriae Dedicata*. (2017) 186(1), 39-74.
- (8) 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.
- (9) 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.

### Invited Conference Talks

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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	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	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
U. Nebraska Conference for Undergraduate Women in Mathematics	January 2009
Joint Mathematical Meetings undergraduate poster session	January 2009

### Invited Seminar Talks and Colloquia

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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

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Teaching Assistant, Summer@ICERM, Brown University	2015
<i>Research experience for undergraduates program</i>	
<i>Mentor to research groups in applied topology and dynamics</i>	
Graduate Student Teaching Assistant, Tufts University	2012-2015
Primary Instructor:	
Math 30, <i>Introduction to Calculus</i> (Fall 2012)	
Math 34, <i>Calculus II</i> (Summer 2013)	
Math 36, <i>Applied Calculus II</i> (Spring 2013, Fall 2013, Spring 2014)	
Teaching Assistant:	
Math 61, <i>Discrete Math</i> (Fall 2014)	

Math 19, *Math of Social Choice* (Spring 2015)

Teaching Assistant, CIRM, Luminy, France January 2014  
*Hyperbolic groups mini-course*

Teaching Mentor & Grader, Pomona College 2008-2009  
*Calculus III, Real Analysis I, Galois Theory*

**Service**

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Organizer and founder, Tufts University Graduate Student Seminar 2010-2015

Co-organizer, MRC Special Session in Geometric Group Theory,  
Joint Mathematical Meetings, Baltimore, MD January 2014

**Outreach**

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Math Circles for elementary and secondary students 2012 - 2015

*Instructor, Harvard Math Circle* (Fall 2013, Spring 2014, Fall 2014, Spring 2015)

*Lead organizer, Tufts Math Circle* (Fall 2013)

*Instructor, Tufts Math Circle* (Spring 2012, Fall 2012, Spring 2013, Fall 2013)

*Guest Lecturer, Northeastern Math Circle* (Spring 2013)

Volunteer tutor, Community Learning Center, Cambridge, MA Jan. 2011 - Jan. 2012

*Weekly one-on-one sessions with an adult learner*

Volunteer instructor, Museum of Science, Boston Oct. 2009 - Jan. 2011

*Facilitated weekly activities in the Discovery Center*

**Selected programs attended**

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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

**Citizenship:** United States of America

May 1, 2018