

MurphyKate Montee

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EDUCATION

University of Chicago
PhD Candidate, Mathematics (Advisor: Danny Calegari) 2020
MS, Mathematics 2016

University of Cambridge
MASt, Mathematics 2014

University of Notre Dame
BS, Honors Mathematics and Music (Vocal Performance) 2013

PUBLICATIONS

Random groups at density $d < 3/14$ act non-trivially by isometries on $CAT(0)$ cube complexes.
In progress. Draft available upon request.

Knot projections with a single multi-crossing. With C. Adams, T. Crawford, B. DeMeo, M. Landry, A. Lin, S. Park, S. Venkatesh, F. Yhee. *Journal of Knot Theory and its Ramifications* **24** (3), 2015. arXiv:1208.5742

Complementary regions of multi-crossing projections of knots. 2015. arXiv:1210.0453

TALKS

Washington University in Saint Louis Geom/Top Seminar (Invited) Jan 2020
Tufts University Geometry Seminar (Invited) Nov 2019
UIC Geometry Seminar (Invited) Oct 2019
Young Geometric Group Theory *Bilbao, Sp* July 2019
Three Manifolds and Geometric Group Theory *CIRM, Luminy, Fr* June 2018
Joint Mathematics Meetings (Invited; Mathematics Research from the
SMALL Undergraduate Research Program), *San Diego, CA* Jan 2018

AWARDS AND FELLOWSHIPS

Chicago Center for Teaching Fellow *University of Chicago* 2019-2020
UChicago Women's Board Grant (*\$30,000 for Women in STEM Symposium*) 2019
Inclusive Pedagogy Grant (*\$5,000*) 2019
Graduate Student Leadership Award *University of Chicago* 2017
Amick Memorial Scholarship *University of Chicago* 2014
Churchill Foundation Fellowship 2014
NSF Graduate Research Fellowship 2013
Alice T Schafer Prize *AWM* 2013

CONFERENCES ATTENDED

Young Geometric Group Theory VIII, *Bilbao, Sp* July 2019
Aspects of Non-positive and Negative Curvature in Group Theory, *CIRM, Luminy, Fr* June 2019
Graphs, Surfaces, and Cube Complexes, *Warwick, UK* July 2018
Three manifolds and geometric group theory, *CIRM, Luminy, Fr* June 2018
Joint Mathematics Meetings, *San Diego* Jan 2018
Women and Mathematics: Geometry and Randomness in Group Theory, *IAS* May 2017
Workshop on Geometric Structures on 3-Manifolds, *IAS* Oct 2015
Chicago Summer School in Topology, *University of Chicago* June 2015

TEACHING

Instructor of Record

Duties include daily lecturing and office hours, managing team of course assistants, creating syllabi, writing homeworks and quizzes, writing and assessing exams, assigning final grades.

Math 13100, 13200 (Elementary Functions and Calculus I, II)	2019-2020
Calculus Review Camp (Harris School of Public Policy)	2017-2019
Fundamentals of Teaching Mathematics	2019
Math 19620 (Linear Algebra)	2018
How to Solve It	2017-2018
Number Theory for Secondary Teachers (SESAME)	2018

Teaching Assistant

Duties include grading and commenting on homework assignments, communicating with instructor of record about expectations and student progress, holding regular office hours, contributing questions to final exams. These jobs were held under varied official titles.

Course Design and College Teaching (Chicago Center for Teaching)	2018-2020
Math 16100, 16200, 16300 (Honors Calculus I-III)	2015-2016

Undergraduate Research

Duties include selecting texts for students to read, weekly advisory meetings with students, and instructing and commenting on expository papers.

UChicago REU	2016-2017
Charlotte Rieder: <i>Finitely generating the mapping class groups with Dehn twists</i>	
Mary Stelow: <i>Hamiltonicity in Cayley graphs and digraphs of finite abelian groups</i>	
Can Liu: <i>Ramsey theory</i>	
Emily Gentles: <i>Simple random walks</i>	
UChicago Directed Reading Program	2015-2019
Xingyu Wang: <i>Random Groups and Hyperbolicity</i>	
Eric Silva: <i>Riemannian geometry and the Gauss-Bonnet Theorem</i>	
Eric Silva: <i>Solving the word problem in hyperbolic groups</i>	
Jake Koenig: <i>Generating the mapping class group with Dehn twists</i>	

Grader

Math 317 (Graduate Algebraic Topology)	2016-2017
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PROFESSIONAL
DEVELOPMENT

Certificate in College Teaching (Chicago Center for Teaching)	2020
<i>Program by Chicago Center for Teaching to help graduate students develop and reflect on their teaching practices; discuss, appraise, and implement pedagogical practices in their own teaching; and receive formative assessment on their teaching. More information at https://teaching.uchicago.edu/courses-certificates.</i>	
What does an anti-racist classroom look like?	Oct 2019
Teaching@Chicago	Sep 2019
<i>Day-long conference designed to prepare new teachers at UChicago.</i>	
Institute of Maths Pedagogy Cuddesdon, UK	Aug 2019
<i>Intensive four-day-long conference focusing on visualization and imagery in math pedagogy. Run by Anne Watson and John Mason.</i>	
Inclusive Exams in STEM	May 2019
Seminar and Workshop on Teaching Portfolios	May 2019
Seminar and Workshop on Teaching Statements	May 2019
Mitigating Implicit Bias in the Classroom	Mar 2019
Inclusive Teaching in STEM, with Kimberly Tanner	Feb 2019
Individual Teaching Consultation	Feb 2019
Promoting an Inclusive Classroom Climate	Oct 2018
Teaching in the Distracted Classroom	May 2018
Course Design and College Teaching	2017
<i>Term-long course on designing and implemented a plan for teaching a new course.</i>	

SERVICE	<p>Organizer, UChicago Women in STEM Symposium 2019-2020 <i>Led a team of nine people to organize and run a two-day symposium with 200 attendees. This event was an extension of the Women in MATH symposium I created as Vice-President of UChicago AWM. Fund-raised over \$50,000. Website: https://voices.uchicago.edu/womeninstem</i></p> <p>Mentor, Physical Sciences Division Office of Equity, Diversity, and Inclusion 2019-2020 <i>Helped design and volunteered as a mentor for the inaugural class of mentors and mentees in the Physical Sciences Division at UChicago. This involved monthly meetings with two mentees to help improve retention rates for graduate students who are members of underrepresented groups.</i></p> <p>Judge for Science Ambassador Scholarship program 2016-2020 <i>Served on selection committee awarding a full scholarship annually to an undergraduate woman in a STEM major, funded by Cards Against Humanity.</i></p> <p>Creator, Fundamentals of Teaching in Mathematical Sciences 2019 <i>Planned and facilitated four 90-minute sessions training graduate students in evidence-based pedagogy, specifically in the context of mathematics education. Topics included active learning and constructivism, designing assessments, inclusive teaching practices, and student centered teaching.</i></p> <p>Contributor, <i>Inclusive Assessments in STEM</i> 2019 <i>Contributed content and editing to the Inclusive Assessments in STEM handout published by UChicago Center for Teaching. Website:</i></p> <p>President, AWM (UChicago Chapter) 2018-2019 <i>Doubled membership, created new events including an educational seminar for incoming graduate students on implicit bias, stereotype threat, and impostor syndrome.</i></p> <p>Creator, How to Solve It 2017-2018 <i>Created and led a weekly program designed to help undergraduates develop problem solving and mathematical communication skills.</i></p> <p>Representative, Dean of Students Advisory Committee 2016-2018 <i>Served on University-organized council to liaise with the Dean of the Physical Sciences Division and represent math graduate students.</i></p> <p>Departmental Ombudsperson 2016-2018 <i>Elected by graduate students in the math department to liaise with department chair and heads of committees to improve graduate student experience, in social and academic spheres.</i></p> <p>Vice President, AWM (UChicago Chapter) 2016-2018 <i>Created multiple new events including an annual symposium for Women in Math, which grew to an annual symposium for Women in STEM.</i></p> <p>Organizer, UChicago Women in Math Symposium 2017 <i>Created, fund-raised for, and facilitated a day-long symposium on Women in Math.</i></p> <p>Guest Lecturer, Six21 in London, England 2017 <i>Gave a talk and led a workshop on women in mathematics to high-school students at Six21, a sixth form in London, England. Also led problem-solving sessions in individual classes throughout the day.</i></p>
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MISCELLANEOUS Member of AWM, AMS; Proficient in \LaTeX and Python; US Citizen

HOBBIES Classical Vocal Performance (Soprano), Baking Pastries, Knitting, Open-Water Swimming

REFERENCES *Full contact information and letters are available upon request.*

Danny Calegari, UChicago Math Department (Advisor)
John Boller and Jitka Stehnova, UChicago Math Department (Teaching Letter)
Daniel Groves, UIC Math Department (Research Letter)
Joseph Lampert, UChicago Center for Teaching (Teaching Letter)
Piotr Przytycki, McGill University (Research Letter)