
CONTACT INFORMATION	<i>E-mail:</i> nscherich@math.ucsb.edu <i>Mobile:</i> 1-661-917-2659	<i>Website:</i> www.nancyscherich.com
RESEARCH INTERESTS	Combinatorial representation theory, representations of the braid groups, knot theory, finite type invariants, circuit algebras, topological quantum computation	
EDUCATION	PhD student in Mathematics, University of California, Santa Barbara Expected graduation date: June 2019 Advisor: Darren Long Thesis topic: Discrete Representations of the Braid Groups MS in Mathematics, <i>summa cum laude</i> , Oregon State University, 2013 Advisor: William Bogely, Thesis: <i>The Alexander Polynomial</i> BS in Mathematics, <i>magna cum laude</i> , University of California, Los Angeles, 2011	
PUBLICATIONS	<i>Ribbon 2-knots, $1+1=2$, and Duflo's Theorem for arbitrary Lie Algebras</i> , joint with Dror Bar-Natan and Zsuzsanna Dancso, Preprint, https://arxiv.org/abs/1811.08558 <i>Discrete Real Specializations of Sesquilinear Representations of the Braid Groups</i> , In Preparation <i>Real Discrete Specializations of the Burau Representation for B_3</i> , Mathematical Proceedings of the Cambridge Philosophical Society, 1-10. doi:10.1017/S0305004118000683 https://arxiv.org/abs/1801.08203 <i>A Survey of Grid Diagrams and a Proof of Alexander's Theorem</i> , to appear in Springer Proceedings of Knots in Hellas 2016 <i>A Simplification of Grid Equivalence</i> , Involve Journal, 2015, vol. 8, no. 5. <i>Turning Math Into Dance; Lessons From Dancing My PhD</i> , Proceedings of Bridges 2018: Mathematics, Art, Music, Architecture, Education, Culture; pg 351-354	
AWARDS AND HONORS	UCSB Graduate Division <i>Special Fellowship in the STEM Disciplines</i> , full academic year	2017-18
	Winner of Science Magazine's <i>Dance Your PhD</i> Competition	2017
	<i>Research Training Group (RTG) Fellowship</i> UCSB, Spring quarter	2016
	UCSB <i>Individualized Professional Skills Grant</i>	2018
	UCSB Academic Senate <i>Doctoral Student Travel Grant</i>	2018
	Nominated for <i>UCSB Outstanding Teaching Assistant Award</i>	2018
	<i>UCLA Alumni Scholar</i> , full tuition scholarship for two years	2009-2011
	<i>Aerospace Walk of Honor Scholarship</i> recipient in honor of Eileen Collins	2008
	<i>The Boeing Company Student Scholarship</i>	2007

TEACHING
EXPERIENCE

Lecturer

Mathematics for Elementary Teaching, UCSB, Summer 2017,
Integral Calculus, UCSB, Summer 2014
College Algebra, OSU, Summer 2012

Teaching Assistant

UCSB Fall 2013 to Present
OSU Fall 2011-Spring 2013

Mentor at Canada/USA Mathcamp

Summer 2015

A five week summer school program for high school students.

Instructor for SIMS, UCSB

Summer 2014, 2016, 2017

A two week freshman summer program.

Graduate Student Coordinator for TA Training, UCSB

Fall 2015

TALKS AND
PRESENTATIONS

Upcoming Invited Talks

Jan 2019 JMM, AMS Special Session on Number Theoretic Methods
In Hyperbolic Geometry
May 2019 MSRI National Math Festival, Washington DC

Invited Talks

2018 Australian National University, Quantum seminar, "Discrete Representations of the Braid Groups"

2018 University of Melbourne, Australia, Topology seminar, "Discrete Representations of the Braid Groups"

2018 Monash University, Australia, Topology seminar, "Discrete Representations of the Braid Groups"

2018 University of Sydney, Australia, Algebra seminar, "Discrete Representations of the Braid Groups"

2018 Claremont McKenna Topology seminar, "An application of Salem numbers to Representations of the Braid Groups"

2018 Oregon State Topology Seminar, "An application of Salem numbers to Representations of the Braid Groups"

2017 Loyola University, Chicago, Algebra seminar invited speaker, "An application of Salem numbers to Representations of the Braid Groups"

Research Presentations

2018 Topology Student Workshop, GA Tech, "Salem Numbers and Braid Group Representations"

2018 Knots in Washington conference, "An application of Salem numbers to Representations of the Braid Groups"

2018 GSTGC University of Chicago, at Illinois, "An application of Salem numbers to Representations of the Braid Groups"

2018 Bridges Math-Art Conference, Stockholm, "Turning Math into Dance; Lessons from Dancing My PhD"

2017 WimSoCal, "Mapping the Braid Groups into Lattices"

2016 UCSB Topology Seminar, "Mapping the Braid Groups into Lattices"

2016 Knots in Hellas Conference, poster presentation "Mapping the Braid Groups into Lattices"

2016 USCB Planar algebra seminar, "Intro to grid diagrams and possible applications to planar algebras"

2013 Oregon State University, Topology seminar, "The Alexander Polynomial"

2012 Oregon State University, Topology seminar, "Grid diagrams and the Alexander Polynomial"

2011 UCLA, Topology seminar, "On Grid Equivalence"

Outreach Talks

2017 UCSB AWM student chapter "Coping with Imposter Syndrome"

2016 UCSB AWM student chapter meeting, "On Imposter Syndrome"

CONFERENCES ATTENDED

Bridges Math-Art Conference, Stockholm	2018
Topology Student Workshop, GA Tech	2018
Thin Groups in Number Theory, Geometry and Topology Conference	2018
Knots in Washignton	2018
GSTGC University of Chicago, at Illinois	2018
Joint Math Meetings, San Diego	2018
AAAS annual meeting, Austin Tx	2018
GSAGT, Temple University	2017
AWM Symposium, UCLA	2017
WimSoCal, USC	2017
Joint Math Meetings, Atlanta	2017
Knots in Hellas, Ancient Olympia	2016
WimSoCal, Pomona College	2015
Cascade Topology Seminar, Portland State University	2013

Representations of the Braid Groups

In the summer of 2017, I made an aerial dance video describing the basics of braid groups and representation theory. This video garnered international attention and can be viewed on my youtube channel [HERE](#).

Awards

Winner of Science Magazine's 2017 *Dance Your PhD* competition

Official Selection in Raw Science Film festival 2018

Bridges Math Art Films Festival 2018

Honorable mention in UCSB's Art of Science competition 2018

Selected Publicity. For a complete list of publicity and links to articles visit

<https://nancyscherich.com/publicity-about-math-dance/>

WGN Morning News Chicago Interview

Wall Street Journal Article

Newsweek Article

Canadian Broadcasting Corporation Live Interview

Performative Lectures

Performative Lecture is a phrase I coined to describe a new lecture style where I perform aerial dancing in addition to a traditional lecture. These performances are outreach events to engage public interest in math.

Performances:

A special event for the UCSB AWM student chapter; May 26, 2018

UCSB Lunch and Learn Series; June 1, 2018

Tensegrity is an aerial dance piece that I choreographed. [HERE](#) is a video.

Volunteer Math Consultant for MOXI

November 2017-Present

MOXI is a children's museum of innovation in Santa Barbara. They have an innovative workshop which runs weekly art, craft and hands on creative activities. I have helped design four one-week long math projects for the workshop. The topics are knot theory, string art, minimal surfaces with bubbles, and tessellations. Later in the year I will help to design math puzzles and dance performances for their adult night events.

Volunteer for WISE Mentoring Program

Fall 2016-Present

WISE (Women in Science and Engineering) is non profit campus organization founded to promote equal opportunity for women and girls in science and engineering, and improve their scientific and career advancement. I serve as a graduate mentor for an undergraduate math student. I meet bimonthly with my mentee offering both academic and personal support.

Volunteer for POWERS Math Day

April 2017

POWERS Math Day is an undergraduate run outreach event for high school girls interested in math. I served as a graduate student panelist answering questions about college math programs.

Volunteer for Girls Inc.

March 2017

Girls Inc. is an after school program for middle school girls. Along with three other female mathematicians, I hosted a group of girls on campus at UCSB where we taught them how to gather data for the famous Monty Hall math problem in a simplified version of the game show, *Let's Make a Deal*.

NanoDays Volunteer

April 2016

NanoDays is part of a nationwide festival of educational programs about nanoscale science and engineering. It is a festival of interactive experiments and displays for children to learn about Nano-science. I hosted a booth about art in science.

OTHER
PROFESSIONAL
EXPERIENCE**Mentor for STEEM**

Fall 2015-Summer 2016

The STEEM program is a Scholarship for Transfers to Engage and Excel in Mathematics. As a mentor, I provided academic advisement, weekly tutoring and counseling to two transfer students.

Research Experience for Undergraduates REU

Summer 2010

I participated in a VIGRE funded REU at UCLA under the direction of Liam Watson. The topic of research was using grid diagrams to create simplified algorithms to prove invariance for knot invariants.

Tutor at Mathnasium

June 2007 to June 2009

Mathnasium is a private math tutoring business. I tutored preschool through calculus math for 15 hours a week.