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## Academic Positions

<b>Associate Professor</b> , <i>Dartmouth College</i> , Hanover, NH	2022–present
<b>Assistant Professor</b> , <i>Dartmouth College</i> , Hanover, NH	2016–2022
<b>Term Lecturer</b> , <i>Barnard College, Columbia University</i> , New York, NY	2015–2016
<b>G.C. Evans Instructor</b> , <i>Rice University</i> , Houston, TX	2012–2015
<b>Program Associate</b> , <i>Mathematical Sciences Research Institute</i> Berkeley, CA	Spring 2010

## Education

<b>Ph.D., Mathematics</b> , <i>Columbia University</i> , New York, NY	2006–2012
Advisor: Peter Ozsváth	
Thesis: <i>Bordered Heegaard Floer homology, Satellites, and Decategorification</i>	
<b>B.A., Mathematics and Computer Science</b> , <i>Amherst College</i> , Amherst, MA	2002–2006
Advisor: Ruth Haas, Smith College	
Thesis: <i>Nonisomorphic Graph Colorings</i>	
<b>Semester Abroad</b> , <i>Budapest Semesters in Mathematics</i> , Budapest, Hungary	Fall 2004

## Research Interests

Knot theory and low-dimensional topology, Heegaard Floer homology.

## Long-Term Visits

<b>Visitor</b> , <i>CIRGET, UQAM</i> Montreal, Canada	Summer 2019
<b>Invited Participant</b> : program on “Quantum Knot Invariants and Supersymmetric Gauge Theories” <i>Kavli Institute for Theoretical Physics</i> Santa Barbara, CA	Fall 2018
<b>Program Associate</b> , <i>Mathematical Sciences Research Institute</i> Berkeley, CA	Spring 2010

## Publications and Preprints

**A Legendrian knot atlas for knots of arc index 10**, with *N. Schwartz*

arXiv version: [arXiv:2307.112120](https://arxiv.org/abs/2307.112120).

**Spectral GRID invariants and Lagrangian cobordisms**, with *M. Jubeir, N. Schwartz, Z. Winkler, C.-M. M. Wong*

arXiv version: [arXiv:2303.16130](https://arxiv.org/abs/2303.16130).

**Bordered Floer homology with integral coefficients for manifolds with torus boundary**, with *D. Knowles*

Under review at *Journal of Symplectic Geometry*. arXiv version: [arXiv:2104.15120](https://arxiv.org/abs/2104.15120).

**A friendly introduction to the bordered contact invariant**, with A. Alishahi, J. Licata, and V. Vértesi

The Open Book Series, Vol.5, No.1, 1–30, 2022. arXiv version: arXiv:2104.07616.

**Bordered Floer homology and contact structures**, with A. Alishahi, V. Földvári, K. Hendricks, J. Licata, and V. Vértesi

Forum of Mathematics, Sigma. 2023;11:e30. arXiv version: arXiv:2011.08672.

**Twisted Mazur pattern satellite knots and bordered Floer theory**, with B. Wong

Michigan Math. J. Advance Publication 1–50, 2021. arXiv version: arXiv:2005.12795.

**An absolute  $\mathbb{Z}/2$  grading on bordered Heegaard Floer homology.**

New York Journal of Mathematics, Vol.28, 90–116, 2022. arXiv version: arXiv:1401.2670.

**Khovanov homology and causality in spacetimes**, with V. Chernov and G. Martin

Journal of Mathematical Physics, Vol.61, no.2. arXiv version: arXiv:2001.07274.

**Skein relations in tangle Floer homology**, with M. Wong

Quantum Topology, Vol.11, no.1, 119–225, 2020. arXiv version: arXiv:1611.04065.

**Quantum  $gl(1|1)$  and tangle Floer homology**, with A. Ellis and V. Vértesi

Advances in Mathematics, Vol. 350, 130–189, 2019. arXiv version: arXiv:1510.03483.

**The decategorification of bordered Heegaard Floer homology.**

Journal of Symplectic Geometry, Vol. 16, no.1, 227–277, 2018. arXiv version: arXiv:1212.4529.

**An introduction to combinatorial tangle Floer homology**, with V. Vértesi

Proceedings of the Gökova Geometry-Topology Conference 2015, 168–186, Gökova Geometry/Topology Conference (GGT), 2016. arXiv version: arXiv:1604.08430.

**A self-pairing theorem for tangle Floer homology**, with V. Vértesi

Algebraic & Geometric Topology, Vol.16, no.4, 2127–2141, 2016. arXiv version: arXiv:1503.06374.

**Combinatorial tangle Floer homology**, with V. Vértesi

Geometry & Topology, Vol.20, no.6, 3219–3332, 2016. arXiv version: arXiv:1410.2161.

**Cables of thin knots and bordered Heegaard Floer homology.**

Quantum Topology, Vol.4, no.4, 377–409, 2013. arXiv version: arXiv:0911.2679.

## Grants and Awards

<b>NSF CAREER Award DMS-2145090</b>	2022–2027
<b>Jacobus Family Fellowship</b>	2022–2023
<b>Burke Research Initiation Award</b>	2016–2022
<b>NSF Grant DMS-1711100</b>	2017–2020
<b>Simons Collaboration Grant (declined)</b>	2017
<b>AMS Simons Travel Grant</b>	2014–2016
<b>John Woodruff Simpson Fellowship</b>	2010–2011
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<b>Robert H. Breusch Prize for Outstanding Senior Thesis</b> , Amherst College	2005–2006
<b>Amherst College Walker Prize</b>	2003–2004
<b>Amherst College Walker Prize</b>	2002–2003

## Invited Colloquia and Conference Talks

Cornell Topology Festival	May 2024
Third Annual Meeting of Young Bulgarian Mathematicians, Sofia, Bulgaria	July 2023
Mathematics Days in Sofia, Sofia, Bulgaria	July 2023
Moab Topology Conference (2 plenary lectures)	May 2023
The Low Dimensional Workshop, Budapest, Hungary	March 2023
Nearly Carbon Neutral Geometric Topology Conference, Plenary Lecture	September 2022
Georgia Topology Conference, Athens, GA	May 2022
Williams College Class of 1960s Lecture	April 2022
Recent Developments in Link Homology, SRS, Les Diablerets, Switzerland	February 2022
CMS Summer Meeting, SS on Low Dimensional Topology, Ottawa, ON, Canada	June 2021
Workshop on “Perspectives on Knot Homology”, BIRS, Canada	May 2021
CMS Winter Meeting, SS on Topology, Toronto, ON, Canada	December 2019
AMS Sectional Meeting, SS on Invariants of Knots, Links, and Low-dimensional Manifolds	October 2019
Perspectives on bordered Heegaard Floer theory, CIRGET, Montreal, Canada	May 2018
TQFT and Categorification, IESC, France	April 2018
Women In Mathematics In New England, Smith College (plenary talk)	September 2017
Hamilton Geometry and Topology Workshop, Trinity College Dublin	August 2016
Graduate Student Topology and Geometry Conference	April 2016
AMS Sectional Meeting, SS on Low-dimensional Topology and Geometry	March 2016
Gökova Geometry/Topology Conference	May 2015
AMS Joint Mathematics Meetings, SS on Knot Theory	January 2015
AMS Sectional Meeting, SS on Interactions between Knots and Manifolds	October 2014
Workshop on “Combinatorial Link Homology Theories, Braids, and Contact Geometry”, ICERM, Providence, RI	August 2014
Medgar Evers College (CUNY) Math Club/Colloquium	March 2014
TCU Math Colloquium	November 2013
SHSU Math Colloquium	October 2013
Workshop on “Interactions of gauge theory with contact and symplectic topology in dimensions 3 and 4”, BIRS, Canada	March 2013
AMS Sectional Meeting, SS on Algebraic and Combinatorial Structures in Knot Theory	March 2012
AMS Sectional Meeting, SS on Low Dimensional Topology and Contact and Symplectic Geometry	March 2011
AMS Joint Mathematics Meetings, SS on Knot Theory	January 2011
MSRI Connections for Women Workshop	January 2010
Knots in Washington XXIX, George Washington University	December 2009

## Seminar Talks

UGA Topology Seminar	March 2022
Boston College Geometry/Topology/Dynamics Seminar	February 2022
Syracuse University Geometry and Topology Seminar	February 2022
Berkeley String-Math Seminar	December 2021
University of Alabama Algebra/Topology Seminar	January 2021
Georgia Tech Geometry Topology Seminar	October 2020
MIT Geometry and Topology Seminar	March 2020
Duke Geometry/Topology Seminar	November 2018
Dartmouth Topology Seminar	November 2018
Dartmouth Topology Seminar	April 2018
Geometry and Topology Seminar, UMass Amherst	March 2018
Wesleyan Topology Seminar	March 2018
UQAM-CIRGET Geometry and Topology Seminar	March 2018
LSU Topology Seminar	March 2018
Topology Seminar, Dartmouth College	September 2017
University of Miami Geometry and Physics Seminar	April 2017
Columbia Symplectic Geometry, Gauge Theory, and Categorification Seminar	February 2017
Dartmouth Geometry and Topology Seminar (3 lectures)	October 2016
Brandeis Geometry and Topology Seminar	September 2016
MIT Geometry and Topology Seminar	April 2016
CUNY Representation Theory Seminar	March 2016
Boston College Geometry/Topology Seminar	October 2015
UQAM - CIRGET Geometry and Topology Seminar	June 2015
Rice University Topology Seminar	February 2015
Rice University VIGRE Topology Seminar	February 2015
University of Virginia Geometry Seminar	January 2015
Georgia Tech Geometry and Topology Seminar	January 2015
Joint Los Angeles Topology Seminar	November 2014
Princeton Topology Seminar	September 2014
Rice University VIGRE Topology Seminar	September 2014
Rice University VIGRE Topology Seminar	April 2014
LSU Topology Seminar	November 2013
LSU Topology Working Seminar	November 2013
Rice University VIGRE Topology Seminar	December 2012
Rice University Topology Seminar	November 2012
Columbia Geometric Topology Seminar	April 2012
Berkeley Topology Seminar	April 2012
Brandeis Topology Seminar	December 2011
UQAM - CIRGET Geometry and Topology Seminar	December 2011
Smith College Undergraduate Seminar	November 2010
Amherst College Math Seminar	April 2009
Columbia Undergraduate Math Seminar	March 2009
Columbia Graduate Student Topology Seminar	Spring 2009, 2011
HCCSiM	July 2005

## Teaching Experience

### **Dartmouth College**, Hanover, NH

Topics in Topology (Differential Topology)	Winters 2020–2024
Accelerated Multivariable Calculus	Fall 2023
The Shape of Space	Fall 2023
Calculus in One and Several Variables	Fall 2017, 2020, 2021; Winter 2023
Knot Theory	Winter 2018, Winter 2022
Current problems in Topology (Contact Topology)	Fall 2019
Algebra	Fall 2019
Current problems in Topology (Heegaard Floer Homology)	Winter 2019
Linear Algebra	Winter 2019
Multivariable Calculus	Fall 2016, Fall 2018
Differential Equations	Winter 2017

### **Mathland**, Hanover, NH

2024–present

### **Columbia University**, New York, NY

Calculus II	Spring 2016
Calculus I	Fall 2015

### **Rice University**, Houston, TX

Advanced Topics in Topology	Spring 2015
Geometry	Spring 2014
Multivariable Calculus	Spring 2014
Topics in Heegaard Floer Homology	Fall 2013
Elements of Knot Theory	Spring 2013
Single Variable Calculus II	Fall 2012, 2014

### **Columbia University**, New York, NY

Linear Algebra	Summer 2010
Calculus II	Spring 2009
Research Experience for Undergraduates (REU) – TA	Summer 2008, 2009, 2011
Differential Geometry – TA	Spring 2012
Undergraduate Topology – TA	Fall 2009, 2011
Knot Theory – TA	Fall 2008
Calculus III – TA	Summer 2008
Analysis and Optimization – TA	Summer 2008
Algebraic Topology I (graduate) – TA	Fall 2007, 2010
Algebraic Topology II (graduate) – TA	Spring 2008, 2011

### **Science Honors Program**, Columbia University, New York, NY (Instructor)

Graph Theory (Authored course material)	Fall 2007, Spring 2008
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### **Hampshire College Summer Studies in Mathematics**, Amherst, MA (Junior Staff)

Workshop in Number Theory, Graph Theory, Abstract Algebra, etc.	Summer 2005
Topology Mini Course (Authored course material)	Summer 2005

## Advising

### PhD Thesis Advisor

Samuel Tripp (2022 Ph.D.)

- currently Assistant Teaching Professor at WPI.

Zachary Winkeler (2022 Ph.D.)

- currently Visiting Assistant Professor at Smith College.

Douglas Knowles (2021 Ph.D.)

- currently Math Instructor at The Learning Strategies Center, Cornell.

### Postdoctoral mentor

C.-M. Michael Wong, 2020–2022

- currently Assistant Professor at University of Ottawa.

Samantha Allen, 2018–2021

- currently Assistant Professor at Duquesne University.

Nate Dowlin (NSF), 2018–2019

- currently Lecturer at Stanford University.

### Undergraduate Mentor

Eli Kimche (Summer 2023, Fall 2023)

Mitchell Jubeir (Summer 2022, research co-advised with M. Wong)

Liam Knight (Summer 2022, research co-advised with M. Wong)

Noah Schwartz (Summer 2022, research co-advised with M. Wong; 2022-2023 senior thesis)

Thomas Fenaroli (Winter 2022)

Athina Avrantini (Summer 2021, research co-advised with M. Wong)

Bibek Panthi (Summer 2021, research co-advised with M. Wong)

Boxian Wang (Summer 2021, research co-advised with M. Wong)

Jacob Swenberg (Spring and Summer 2020, research co-advised with S. Allen and V. Chernov)

### Dartmouth Dissertation Defense Committees

Ryan Maguire, 2024

Kathy Lin, 2024

Zachary Winkeler (chair), 2022

Samuel Tripp (chair), 2022

Douglas Knowles (chair), 2021

Chris Coscia, 2020

### Dartmouth Advancement Exam Committees

Lily McBeath, 2024

Matthew Ellison, 2022

Kathy Lin, 2021

Zachary Winkeler, 2019

Samuel Tripp, 2019

Douglas Knowles, 2018

## Service and Synergistic Activities

### Referee

*Experimental Mathematics · Michigan Mathematical Journal · Proceedings of the LMS · Glasgow Mathematical Journal · Journal of Symplectic Geometry · Advances in Mathematics · Geometry & Topology · Journal of Topology · Selecta Mathematica · Quantum Topology · Algebraic & Geometric Topology · Pacific Journal of Math*

### Seminars and Conferences

ICERM Project Leader: Women in Symplectic and Contact Geometry and Topology workshop	July 2019
Organizer of Dartmouth Topology Seminar	2017–present
Co-organizer of Columbia University Symplectic Geometry, Gauge Theory, and Categorification Seminar	2015–2016
Co-organizer of Rice University Putnam Seminar	2014–2015
Co-organizer of Rice University Topology Seminar	2014–2015
Co-organizer of Rice University Teaching Seminar	2013–2014
Co-organizer of Special session on Low-Dimensional Topology AWM Research Symposium 2013, Santa Clara, CA	March 2013
Colloquium Committee, Rice University Math Colloquium	2012–2013

### Undergraduate Outreach

Co-instructor at SHUR: A computational approach to Legendrian knots, Dartmouth College, Hanover, NH	2022
Co-instructor at SHUR: A graphical calculator for Legendrian knots, Dartmouth College, Hanover, NH	2021
Co-creator of SHUR (Summer Hybrid Undergraduate Research), Dartmouth College, Hanover, NH	2021
Speaker at the E.E. Just Science Forum, Dartmouth College, Hanover, NH	2018
Speaker at Undergraduate Math Seminar, Columbia University, New York, NY	2009, 2016
Perspectives in Mathematics co-organizer, Columbia University, New York, NY	Fall 2015
Speaker at Medgar Evers College Math Club, New York, NY	2014
Smith College Undergraduate Seminar (talk and discussion), Northampton, MA	2010
Speaker at Amherst College Math Seminar (talk and discussion), Amherst, MA	2009
REU Teaching Assistant, Columbia University, New York, NY	2008–2011

### K-12 Outreach

Mathland, Hanover, NH (director, founder, and faculty)	2024 – present
Co-organizer of Sonia Kovalevsky Day, Dartmouth College	2023
Co-organizer of Sonia Kovalevsky Day, Dartmouth College	2022
STEM Pathways speaker, Hanover High School, Hanover, NH	2019
Plenary speaker, Sonia Kovalevsky Day, Dartmouth College	2017
Math Circle talk: <i>Graph Theory</i> , Houston, TX	2015
Women in Mathematics video: <i>The Pythagorean Theorem</i> , available at <a href="http://www.girlsangle.org/page/filmpages/Pythagorean_theorem.html">http://www.girlsangle.org/page/filmpages/Pythagorean_theorem.html</a>	2009

Interview for Girls' Angle Bulletin, available at <http://www.girlsangle.org/page/bulletin-archive/GABv03n01.pdf> 2009  
 Instructor for Science Honors Program, Columbia University, New York, NY 2007–2008  
 HCSSiM talk: *Ina plays with matches* 2005  
 Junior Staff at Hampshire College Summer Studies in Mathematics, Amherst, MA 2005

**Service: Dartmouth College**

Open Education Initiative Committee 2019–2020  
 Judge for Association for Women in Mathematics (AWM) 2018, 2020  
 Upper Valley Essay Contest  
 Dartmouth Association of Magicians Advisor 2017–present  
 Departmental Committee Member  
 • Graduate Admissions Committee (Chair) 2022–present  
 • Preliminary Exam Ad-hoc Committee 2020–2021  
 • TA training Fall 2019  
 • Graduate Admissions Committee 2018–2019, 2020–2021, 2021–2022  
 • Colloquium Director Fall 2018, 2019–2021  
 • Teaching Evaluations Committee Fall 2017–Spring 2018, Fall 2019, Winter–Spring 2020  
 • Prize Committee Fall 2016–Spring 2018  
 • Undergraduate Program Committee UPC Fall 2016–Spring 2017  
 • Recruitment committee (x2)

**Other**

Panelist at Moab Topology Conference Career Panel May 2023  
 Panelist at WiSCon Career-Oriented Panel about Funding Opportunities, July 2019  
 Postdoc/TT Job Applications and Tips  
 Speaker at Amherst College Graduate School Event April 2017  
*(discussion with undergraduates about grad school in mathematics)*  
 Tribeca Film Festival Panelist for *The Man Who Knew Infinity* April 2016  
 Served on NSF Review Panel (x3)  
 Reviewer for Simons Collaboration Grants