ZACHARY WINKELER

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ACADEMIC POSITIONS

Visiting Assistant Professor, *Smith College*, Northampton, MA — Fall 2022 - Present

EDUCATION

Ph.D., Mathematics, *Dartmouth College*, Hanover, NH — Summer 2022

Advisor: Ina Petkova

Thesis: Spectral sequences and Khovanov homology

A.M., Mathematics, *Dartmouth College*, Hanover, NH — Spring 2019

B.S., Computer Science and Mathematics, *Northeastern University*, Boston, MA — Spring 2017

PUBLICATIONS

Khovanov homology and Lagrangian cobordisms (with G. Martin and I. Petkova)

arXiv version available at arXiv:2412.15351.

Spectral GRID invariants and Lagrangian cobordisms
(with M. Jubeir, I. Petkova, N. Schwartz, and C.-M. M. Wong)

To appear in *Studia Scientiarum Mathematicarum Hungarica*.

arXiv version available at arXiv:2303.16130.

On the invariance of the Dowlin spectral sequence (with S. Tripp)

To appear in *Algebraic & Geometric Topology*.

arXiv version available at arXiv:2207.14415.

Khovanov homology for links in thickened multipunctured disks

Michigan Math. J. 74 (4), 743-773, (September 2024). DOI: 10.1307/mmj/20216166

arXiv version available at arXiv:2106.03834.

TALKS

2024 Fall Eastern AMS Sectional Meeting — October 2024

Special Session on Invariants of Knots, Links, and Low-dimensional Manifolds

2023 CMS Summer Meeting — June 2023

Computational Aspects in Low-Dimensional Topology and Contact Geometry

UMass Amherst Geometry and Topology Seminar — March 2023

Smith College Math Department Talk — September 2022

2022 Joint Mathematics Meetings — April 2022

AMS Special Session on Knots, Links, 3-manifolds,... and 4-manifolds, (virtual)

Binghamton University Graduate Combinatorics, Algebra, and Topology Conference (BUGCAT) November 2021

Dartmouth Topology Seminar October 2021

Dartmouth Graduate Student Seminar 2019 - 2022

MENTORING

Undergraduate Research Project Supervisor, *Smith College*, Northampton, MA Fall 2024

"Graph Colorings and Gridlock" (three students)

Reading Course Advisor, *Smith College*, Northampton, MA Fall 2024

"Category Theory" (one student)

Senior Capstone Advisor, *Northampton High School*, Northampton, MA Fall 2024

"Real Analysis" (one student)

Summer Hybrid Undergraduate Research (SHUR) 2022, *Dartmouth College* Summer 2022

"A Computational Approach to Legendrian Knots" (three students)

Directed Reading Program, *Dartmouth College* Winter 2021

"The Curry-Howard Isomorphism" (two students)

PROFESSIONAL ACTIVITIES

WIMIN Conference Organizer, *Smith College* Fall 2022, Fall 2024

Putnam Competition Supervisor, *Smith College* Fall 2022

Topology Reading Seminar Organizer, *Dartmouth College* 2018 - 2021

LaTeX Workshop Organizer, *Dartmouth College* Fall 2018 - Winter 2020

TEACHING

Course Instructor, *Smith College*, Northampton, MA Fall 2022 - Present

MTH 255, Graph Theory (Spring 2024)

MTH 333, Topics in Abstract Algebra - Category Theory (Fall 2023)

MTH 153, Discrete Mathematics (Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024)

MTH 254, Combinatorics (Spring 2023)

MTH 212, Multivariable Calculus (Fall 2022, Fall 2024)

Course Instructor, *Dartmouth College*, Hanover, NH Fall 2019 - Fall 2021

Math 22, Linear Algebra with Applications (Fall 2021)

Math 13, Calculus of Vector-valued Functions (Fall 2020)

Math 1, Introduction to Calculus (Fall 2019)

Teaching Assistant, *Dartmouth College*, Hanover, NH Fall 2017 - Spring 2019

Math 22, Linear Algebra with Applications (Fall 2017, Spring 2019)

Math 11, Accelerated Multivariable Calculus (Fall 2018)

Math 13, Multivariable Calculus (Winter 2018)

Teaching Assistant, *Northeastern University*, Boston, MA — Fall 2014 - Spring 2017

CS 7805, Theory of Computation (Spring 2017)

CS 3800, Theory of Computation (Spring 2016)

CS 2510, Fundamentals of CS II (Spring 2015)

CS 2500, Fundamentals of CS I (Fall 2014)

EDUCATIONAL OUTREACH

Explore Data Science 2024, *Virginia Tech*, Blacksburg, VA — July 2024

Risk: Using games to study human behavior

Rainstorm, *Learning Unlimited (virtual)* — Fall 2020 - Winter 2022

If It's Knot Theory Then What Is It? (Summer 2021)

It's Sort Of Math (Summer 2021)

How to Win at (Some More) Games (Spring 2021)

How to Win at (Some) Games (Fall 2020, Spring 2021, Winter 2022)

GIV Summer Math Immersion, *University of Vermont*, Burlington, VT — Summer 2019 - 2021

Partizan Combinatorial Games (Summer 2021, virtual)

Programming with Circles and Arrows (Summer 2020, virtual)

Impartial Games (Summer 2019)

Exploring Mathematics 2019, *Dartmouth College*, Hanover, NH — Summer 2019

Splash/Waterfall, *Northeastern University*, Boston, MA — Spring 2014 - 2017

How to Count to Infinity (Spring 2017)

How to Program with Circles and Arrows (Spring 2017)

How to Add Things that Aren't Really Numbers (Fall 2016)

How to Beat Your Friends at Tic-Tac-Toe (Fall 2015, Spring 2016)

A Crash Course in Calculus (Spring 2014)

Let's Get Ready, *Let's Get Ready*, Boston, MA — Fall 2013 - Spring 2017

AWARDS

Outstanding Graduate Student Teacher, *Dartmouth College*, Hanover, NH — Spring 2022

Gridley Fellowship, *Dartmouth College*, Hanover, NH — Fall 2017 - Spring 2018