

Douglas Knowles

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Current position

Graduate Student, Department of Mathematics, Dartmouth College

Areas of specialisation

Low-Dimensional Topology, Heegaard Floer theory

Publications & talks

JOURNAL ARTICLES

Coons, Jane Ivy, et al. "Numerical Ranges over Finite Fields." *Linear Algebra and Its Applications*, vol. 501, 2016, pp.37-47.

Heap, Aaron, and Knowles, Douglas. "Space-efficient knot mosaics for prime knots with mosaic number 6." *Involve*, vol.12, 2018.

Knowles, Douglas and Petkova, Ina. "Bordered Floer Homology with Integral Coefficients for Manifolds with Torus Boundary." Expected December 2020.

TALKS

Classifying Mosaic Knots: An Exploration of a Quantum Topological Space. Math-aulay Undergraduate Symposium, November 20, 2014.

Finite Fun with Numerical Ranges. Center for Undergraduate Research in Mathematics (CURM), Spring Conference, March 21, 2015.

An Introduction to Mosaic Knot Theory. GREAT Day at SUNT Geneseo, April 22, 2015.

Numerical Ranges over Finite Fields. MathFest, August 7, 2015.

A_∞ structures. Dartmouth Graduate seminar, Winter 2017.

Heegaard Floer Homology. Dartmouth Graduate seminar, Winter 2018.

4-manifolds and Kirby Calculus. Dartmouth Graduate seminar, May 22 2019.

Concordance Invariants of Knot Floer Homology. 3-part series, Dartmouth Topology Reading seminar, Spring 2019.

Bordered Floer Homology Over \mathbb{Z} . Joint Math Meetings, January 16, 2020.

Education

BA in Physics, SUNY Geneseo, Spring 2016
BS in Mathematics, SUNY Geneseo, Spring 2016
MSC in Mathematics, Dartmouth College, Fall 2017
PHD in Mathematics, Dartmouth College, expected Spring 2021.

Teaching

Instructor. Single-variable Calculus. Dartmouth College, Fall 2019.
Instructor. Introduction to Topology. Dartmouth College, Summer 2020. *Remote.*
Teaching Assistant. Accelerated Multi-variable Calculus. Dartmouth College, Fall 2016 and 2017.
Teaching Assistant. Differential Equations. Dartmouth College, Winter 2017.
Teaching Assistant. Calculus of Vector-valued Functions. Dartmouth College, Winter 2018.
Teaching Assistant. Graph Theory. Dartmouth College, Winter 2019.
Teaching Assistant. Real Analysis 1&2. SUNY Geneseo, Fall 2015 and Spring 2016.

Service and Professional Development.

Instructor. Math Camp on Networks and Game Theory. For middle school students, hosted by Dartmouth College. Summer 2019.
Mentor. New Hampshire State Math League team, Winter 2019.
Participant. Teaching Seminar for Pedagogical Development and Discourse, Dartmouth College. Summer 2019.
Participant. SEPA Grant for the development of STEM curriculum for underprivileged rural school districts. Academic year 2019-2020.

Grants, honours & awards

Pi Mu Epsilon Award for Excellence in Student Research
Eagle Scout