Isaac Sundberg

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Education

Ph.D. in Mathematics, Expected 2022, Bryn Mawr College, Bryn Mawr, Pennsylvania, USA
Advisor: Paul Melvin

M.A. in Mathematics, 2018, Bryn Mawr College, Bryn Mawr, Pennsylvania, USA
Thesis title: On fibering 3-manifolds
Advisor: Paul Melvin

B.S. in Mathematics, 2016, University of Wisconsin La Crosse, La Crosse, Wisconsin, USA

Research Interests

Low-dimensional topology: Khovanov homology, knot concordance, knot traces, link cobordisms, smooth 4-manifolds, surfaces in 4-manifolds

Papers

Khovanov homology and exotic surfaces in the 4*-ball*, 2021, in preparation

Relative Khovanov-Jacobsson classes, joint with Jonah Swann, 2020, arXiv:2103.01438, submitted for publication

Multiplication operators on weighted Banach spaces of a tree, joint with Robert F. Allen, Bulletin of the Korean Mathematical Society, 54:3 (2017), 747-761

Teaching

Instructor of Record, Department of Mathematics, Bryn Mawr College, Spring 2020
Courses: Calculus I

Teaching Assistant, Department of Mathematics, Bryn Mawr College, 2016-2021
Courses: Abstract Algebra I & II, History of Math, Theory of Probability, Transitions, Topology
Responsibilities: Grade most course materials, regularly hold problem sessions to review lecture material and discuss assignments, meet individually with students, assist with lectures and lecture occasionally

Substitute Lecturer, Department of Mathematics, Bryn Mawr College, 2016-2019
Courses: Abstract Algebra, Graduate Algebraic Topology, History of Math, Graduate Topology
Responsibilities: Prepare and give one or more lectures for the planned absence of an instructor

Tutor in Mathematics, Murphy Learning Center, UW La Crosse, 2013-2016
Courses: College Algebra, Pre-calculus and Trigonometry, Calculus I, II, & III, Differential Equations
Responsibilities: Assist students with homework, review lecture material, train new tutors

Service

Graduate Research Seminar, Bryn Mawr College
Co-founder (2019), Organizer (2019)

Graduate Student Association (GSA), Bryn Mawr College
Co-chair (2017-2019), Mathematics Department Representative (2019-2020), Graduate Council (2017-2020)

Professional Development Seminar, Bryn Mawr College
Organizer (2018-2019)

AMS Graduate Student Chapter, Bryn Mawr College
President (2018-2020)

UW La Crosse Mathematics & Statistics Club, UW La Crosse
President (appointed 2015-2016)

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FastTrack Remedial Mathematics Camp, UW La Crosse
Tutor and staff (2015)

Girls in Science Day Camp, UW La Crosse
Teaching Assistant and Staff (2015)

Talks

Distinguishing slice disks with their induced maps on Khovanov homology
Nearly Carbon Neutral Geometric Topology Conference, Online, Jun 2021[⊗]

Relative Khovanov-Jacobsson classes
AIM Research Community in 4-dimensional Topology, Online, Apr 2021[⊗]

Khovanov homology and TQFTs
Graduate Research Seminar, Bryn Mawr College, Nov 2019

The Mazur cork
Graduate Research Seminar, Bryn Mawr College, Sep 2019

The ins and outs of eversions
Graduate Student Research Symposium, Bryn Mawr College, Apr 2019

Knot traces and sliceness
GSTGC, UI Urbana-Champaign, Mar 2019
EPaDel, King's College, Mar 2019

An introduction to manifolds
UWL Mathematics & Statistics Club, UW La Crosse, Nov 2018 [⊗]

On fibering 3-manifolds
Master's defense, Bryn Mawr College, Apr 2018
EPaDel, Temple University, Mar 2018

Your daily dose of fiber (Bundles)
Graduate Student Research Symposium, Bryn Mawr College, Mar 2018

Brouwer fixed point theorem
Distressing Math Seminar, Bryn Mawr, Feb 2017 [⊗]
UWL Mathematics & Statistics Colloquium, UW La Crosse, Apr 2016 [⊗]

Multiplication operators on weighted Banach spaces of a tree
Creativity Research Symposium, UW La Crosse, Mar 2016
AMS Session on Undergraduate Research, JMM Seattle, Jan 2016
UWL Mathematics & Statistics Colloquium, UW La Crosse, Oct 2015 [⊗]

On the classification of surfaces
UWL Mathematics & Statistics Colloquium, UW La Crosse, Dec 2015 [⊗]

On the theory of real numbers
"Keeping it ℝeal" Seminar, UW La Crosse, Apr 2015

[⊗]Invited speaker

Conferences & Workshops

Nearly Carbon Neutral Geometric Topology Conference
Invited speaker, Online, Jun 2021
Participant, Online, Jun 2020

AIM Research Community in 4-dimensional Topology
Invited speaker, Current Events Seminar, Apr 2021

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Graduate Student Topology and Geometry Conference
Contributing speaker, UI Urbana-Champaign, 2019 ⊕

Graduate Student Conference in Algebra, Geometry, & Topology
Participant, Temple University, 2018, 2019

EPaDel MAA Section Meeting
Contributing speaker, King's College, 2019
Contributing speaker, Temple University, 2018

MSRI Summer Graduate School on H-Principles
Participant, Tambara Institute, University of Tokyo, Jun-Jul 2018 ⊕

Summer 2018 Geometry/Topology RTG mini-conference
Participant, Princeton University, 2018

Topology Student Workshop
Participant, Georgia Institute of Technology, 2018 ⊕

Joint Mathematics Meeting
AMS Session on Undargraduate Research speaker, Seattle, WA, 2016

⊕Received partial or full funding by program.

Research Seminars

Philadelphia Area Contact Topology (PACT)
Bryn Mawr College, 2016-Present

Philadelphia Area Topology Contact/Hyperbolic (PATCH)
Bryn Mawr College, Haverford College, Temple University, University of Pennsylvania, 2016-Present

Awards & Honors

Doris Sill Carland Award for Excellence in Teaching, Bryn Mawr College, 2021

Research Assistantship, Bryn Mawr College, Fall 2020, Fall 2021

Bryn Mawr Community Building Honor Roll, Bryn Mawr College, 2019

Convocation Speaker Representing the Graduate Student Association, Bryn Mawr College, 2018

McPherson Graduate Award for Excellence, Bryn Mawr College, 2018

Department of Mathematics Outstanding Service Award, UW La Crosse, 2016

SIAM Outstanding Efforts & Accomplishments in the Chapter, UW La Crosse, 2016