Sean C. **Sanford**

Department of Mathematics The Ohio State University University 231 W 18th Ave Columbus, OH 43210

■ sanford.189@osu.edu | 🖀 seancs.page

Education

Indiana University Bloomington, IN

PHD IN MATHEMATICS, ADVISOR: JULIA PLAVNIK 2017-2022

University of Hawaii at Mānoa Honolulu, HI

MA IN MATHEMATICS, ADVISOR: HEINER DOVERMANN 2014-2017

University of Hawaii at Mānoa Honolulu, HI

2006-2010

BS IN MATHEMATICS, WITH A MINOR IN JAPANESE LANGUAGE

Research Interests

Tensor Categories, Higher Representation Theory, and Topological Quantum Field Theories

Honors & Awards

Outstanding Thesis Award Bloomington, IN

IU MATH DEPARTMENT ANNUAL AWARDS CEREMONY Spring 2023

AMS Graduate Student Travel Grant Seattle, WA

JOINT MATHEMATICS MEETING Spring 2022

Hazel King Thompson Scholarship Bloomington, IN

IU MATH DEPARTMENT ANNUAL AWARDS CEREMONY Spring 2020, & Spring 2021

James P. Williams Memorial Award Bloomington, IN

IU MATH DEPARTMENT ANNUAL AWARDS CEREMONY Spring 2018

Kotaro Kodama Scholarship Honolulu, HI

Fall'16 - Spring'17

Articles

MASTER'S THESIS

Manifestly Unitary Higher Hilbert Spaces arxiv.org/abs/2410.05120

JOINT WITH QUAN CHEN, GIOVANNI FERRER, BRETT HUNGAR, AND DAVID PENNEYS To be submitted soon

Invertible Fusion Categories arxiv.org/abs/2407.02597

JOINT WITH NOAH SNYDER Submitted to Selecta Math.

Levin-Wen is a gauge theory: entanglement from topology arxiv.org/abs/2401.13838

JOINT WITH KYLE KAWAGOE, COREY JONES, DAVID GREEN, DAVID PENNEYS To appear in Comm. Math. Phys.

Fusion Categories over Non-Algebraically Closed Fields doi.org/10.1016/j.jalgebra.2024.09.010

(ARTICLE VERSION) J. Algebra

Enriched String-net Models and their Excitations doi.org/10.22331/g-2024-03-28-1301

ARTICLE, JOINT WITH DAVID GREEN, PETER HUSTON, KYLE KAWAGOE, DAVID PENNEYS, AND ANUP POUDEL Quantum

Tambara-Yamagami Categories over the Reals: the Non-Split Case arxiv.org/abs/2303.17843

ARTICLE, JOINT WITH JULIA PLAVNIK AND DALTON SCONCE Submitted to PLMS

Fusion Categories over Non-Algebraically Closed Fields Available here PHD THESIS ProQuest

Smooth Actions of Compact Lie Groups on S^2 are Smoothly Equivalent to Linear Actions Available here

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Recent Presentations

(Notes from and recordings of selected talks available at https://seancs.page/Talks)

Invertible Fusion categories U Notre Dame

Quasy-Con II May, 2024

Invertible Fusion categories

BIRS

Subfactors and Fusion (2-)Categories

December 2023

Non-Split Tambara-Yamagami Categories over the Reals

CMS Summer 2023: Special Session on Hopf Algebras and Related Topics

June 2023

U Ottawa

(Virtual)

Morita Theory of Fusion (Higher) Categories, Joint with Thibault Décoppet

GLOBAL CATEGORICAL SYMMATRIES POSTDOC/GRADUATE STUDENT SEMINAR

November 2022

Community Work _____

Research Mentor

The Ohio State U

RESEARCH OPPORTUNITIES IN MATHEMATICS FOR UNDERREPRESENTED STUDENTS (ROMUS) PROGRAM,

Mentee: Yoyo Jiang, Co-mentor:David Green Summer, 2023

Research Mentor Virtual

MIT PRIMES-USA PROGRAM,

Mentee: Sophie Zhu, Co-mentor: Julia Plavnik. This project won multiple awards (link).

Co-Organizer Virtual

2021 AMS FALL WESTERN SECTIONAL: SPECIAL SESSION ON TENSOR CATEGORIES AND APPLICATIONS October, 2021

Research Mentor Indiana U

Indiana University Math department REU Program

Mentee: Dalton Sconce, Co-mentor: Julia Plavnik

Summer, 2021

Super-M Program UH Mānoa

Outreach Coordinator Fall 2014 - Spring 2015

Teaching

OSU Math Department Columbus, OH

INSTRUCTOR, AND REU MENTOR Fall 2022 - Present

 IU Math Department
 Bloomington, IN

 TA, INSTRUCTOR, AND REU MENTOR
 Fall 2017 - Spring 2022

 UHM Math Department
 Honolulu, HI

 TA AND INSTRUCTOR
 Fall 2015 - Spring 2017

References_

Julia Plavnik

Indiana University Math Dept.

Charlotte Ann Griffin Associate Professor jplavnik@iu.edu

Dmitri NikshychU New Hampshire Math Dept.

Professor Dmitri.Nikshych@unh.edu

Noah Snyder Indiana University Math Dept.

PROFESSOR nsnyder1@indiana.edu

David PenneysThe Ohio State U Math Dept.

PROFESSOR penneys.2@osu.edu

Theo Johnson-FreydDalhousie U Math Dept. and Perimeter Institute

Assistant Professor theojf@dal.ca, theojf@pitp.ca

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