

DYLAN SPENCE

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EDUCATION

Indiana University Bloomington

Ph.D. in Mathematics

Thesis: *Derived categories of singular curves*

May 2022

Advisor: Valery Lunts

University of Delaware

B.S. in Applied Mathematics & B.S. in Physics

May 2016

EMPLOYMENT

University of Wisconsin - Whitewater

Assistant Professor of Mathematics

August 2022 - Present

RESEARCH INTERESTS

- Derived categories of sheaves on (singular) varieties and their relation to deformation theory and moduli theory.
- Applications of the above to homological mirror symmetry, birational geometry, geometric representation theory, and motives.
- Further interests include noncommutative and higher algebraic structures arising in the above.

PUBLICATIONS

Research Publications

- *A note on semiorthogonal indecomposability of some Cohen-Macaulay varieties.* Journal of Pure and Applied Algebra, Volume 226, Issue 10, 2022. DOI: 10.1016/j.jpaa.2022.107076
- *Reconstruction of Projective Curves from the Derived Category.* Michigan Math. J. Advance Publication 1 - 24, 2021. DOI: 10.1307/mmj/20205910

Other Publications

- *Boundedness of semistable sheaves.* with H. Guo, S. Shivaprasad, and Y. Wu. arXiv 2112.03834. Submitted as part of the Stacks Project Expository Collection (SPEC) to be published in the London Mathematical Society Lecture Note Series.

COURSES TAUGHT

University of Wisconsin - Whitewater

Instructor of Record

- MATH 142: College Algebra Fall 2022
- MATH 254: Calculus and Analytical Geometry II Fall 2022

Indiana University Bloomington

Instructor of Record

- Math-D 116: Introduction to Finite Math I Spring 2022
- Math-J 111: Introduction to College Math I Fall 2021
- Math-M 106: Math of Decision and Beauty Fall 2020
- Math-J 111: Introduction to College Math I Fall 2019
- Math-M 106: Math of Decision and Beauty Summer 2019

- Math-J 113: Introduction to Calculus with Applications *Spring 2019*
- Math-J 010: Introduction to Algebra *Summer 2018*
- Math-M 106: Math of Decision and Beauty *Spring 2018*
- Math-M 106: Math of Decision and Beauty *Summer 2017*
- Math-M 014: Basic Algebra *Fall 2016*

UNDERGRADUATE MENTORING

Indiana University Bloomington

IU Directed Reading Program

2018-2022

Program Coordinator

Graduate Mentor:

- Project Title: Rational points on elliptic curves *Spring 2019*
Book: *Elliptic curves* by Dale Husemöller.
- Project Title: Introduction to algebraic geometry *Spring 2018*
Book: *Algebraic Geometry: A Problem Solving Approach* by Thomas Garrity, et. al.

Laboratory of Geometry at IU

Spring 2022

Project Supervisor

- Project Title: *Lines on Real Cubic Surfaces*

INVITED TALKS

Northwestern Algebraic Geometry Seminar

November 2021

Title: *Derived categories of singular curves*

Northwestern University

Midwest Algebraic Geometry Graduate Conference

May 2020

Title: *Reconstruction of projective curves from the derived category*

Online

Particle Physics Seminar

March 2018

Title: *Complex and algebraic geometry in physics*

University of Delaware

CONFERENCES AND WORKSHOPS ATTENDED

Derived Categories and Moduli Spaces FRG Workshop

April 2022

Cornell University

SPONGE (Stacks Project ONLINE Geometry Event)

August 2020

Online

Midwest Algebraic Geometry Graduate Conference

May 2020

Online

The Geometry of Derived Categories

September 2019

University of Liverpool

Derived Categories, Moduli Spaces, and Deformation Theory

June 2019

Cetraro Italy

Stability Conditions and Homological Projective Duality

April 2018

University of Michigan

SERVICE AND PROFESSIONAL DEVELOPMENT

IU Directed Reading Program

2018 - 2022

Program coordinator; supervised two projects

American Mathematical Society

2016 - Present

Member

Jumpstart Qualifier Preparation

Summer 2018, 2021

Instructor for algebra

ScienceFest

2016, 2017

Volunteer for a public science day at IU

Delaware Science Olympiad

2012, 2013, 2015, 2016

Event director