

# DYLAN SPENCE

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## EDUCATION

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### Indiana University Bloomington

Ph.D. in Mathematics

Thesis: *Derived categories of singular curves*

*Expected May 2021*

Advisor: Valery Lunts

### Indiana University Bloomington

M.A. in Mathematics

*December 2018*

### University of Delaware

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

*May 2016*

## RESEARCH INTERESTS

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Algebraic geometry. In particular derived categories, deformation theory, moduli, and related equivariant questions. Applications to homological mirror symmetry, birational geometry, geometric representation theory, and motives. Further interests include noncommutative and higher algebraic structures arising in the above.

## PUBLICATIONS

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### Research Publications

- *A note on semiorthogonal indecomposability of some Cohen-Macaulay varieties.* arXiv 2104.13331. Submitted.
- *Reconstruction of projective curves from the derived category.* arXiv 2002.07961. Accepted to the Michigan Mathematical Journal.

### Other Publications

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

## TEACHING EXPERIENCE

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### Indiana University Bloomington

Instructor of Record

- 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*

Grader

- Math-M 502: Commutative Algebra *Spring 2021*

- Math-M 501: Survey of Algebra *Fall 2020*
- Math-M/S 403: Introduction to Modern Algebra I *Fall 2019*
- Math-M 501: Survey of Algebra *Spring 2018*
- Math-M 336: Topics in Euclidean Geometry *Spring 2018*
- Math-M 380: History of Math *Spring 2017*

### University of Delaware

Teaching Assistant

- PHYS202: Introductory Physics II *Winter 2016*
- PHYS202: Introductory Physics II *Winter 2015*

## UNDERGRADUATE MENTORING - DIRECTED READING PROGRAM

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**Directed Reading Program** *2018-Present*  
Program Coordinator

Graduate Mentor:

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

## AWARDS AND HONORS

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**Hazel King Thompson Fellowship** *Summer 2020*  
Research fellowship

**David A. Rothrock Teaching Award** *April 2018*  
For excellence in teaching

**Hazel King Thompson Fellowship** *Spring 2016*  
For the recruitment of excellent graduate candidates

## INVITED TALKS

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**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*

## SEMINARS (CO)ORGANIZED

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**Seminar on Homological Projective Duality** *Fall 2020*  
Co-organizer

**Seminar on K3 Surfaces** *Fall 2019*  
Organizer

**Seminar on Noncommutative Motives** *Fall 2019*  
Co-organizer

**Seminar on Pure Motives** *Spring 2019*  
Co-organizer

**Graduate Student Colloquium**

*Fall 2018*

Co-organizer

**Seminar on Poisson Geometry**

*Spring 2018*

Co-organizer

## CONFERENCES AND WORKSHOPS ATTENDED

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**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

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**IU Directed Reading Program**

*2018 - Present*

Program coordinator; supervised two projects

**American Mathematical Society**

*2016 - Present*

Member

**Jumpstart Qualifier Preparation**

*Summer 2018*

Instructor for algebra

**ScienceFest**

*2016, 2017*

Volunteer for a public science day at IU

**Delaware Science Olympiad**

*2012, 2013, 2015, 2016*

Event director