

# DYLAN SPENCE

Laurentide Hall 2235  $\diamond$  237 N Prince St  $\diamond$  Whitewater, WI 53190

dkspence952.github.io  $\diamond$  spenced@uww.edu

## EDUCATION

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### 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

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### University of Wisconsin - Whitewater

Assistant Professor of Mathematics

August 2022 - Present

## RESEARCH INTERESTS

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

## PUBLICATIONS

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### Research Publications

- *An explicit derived McKay correspondence for some complex reflection groups of rank two.* with A. Bhapuri, Y. Davidov, E. Faber, K. Honigs, P. McDonald, and C. E. Overton-Walker. To appear in *Advances in Mathematics*.
- *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). Belmans, P., Ho, W., & De Jong, A. (Eds.). (2022). *Stacks Project Expository Collection* (London Mathematical Society Lecture Note Series). Cambridge: Cambridge University Press. DOI: 10.1017/9781009051897

## COURSES TAUGHT

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### University of Wisconsin - Whitewater

Instructor of Record

- Math 124: Support for College Algebra F22
- Math 139: Quantitative Reasoning F23, F24, S25, Sum25, S26
- Math 142: College Algebra F22
- Math 151: Trigonometry S23, S24
- Math 280: Discrete Mathematics F25, S26
- Math 301: Introduction to Analysis F22, S23, F23, S24

- Math 355: Matrices and Linear Algebra *F23, S24, F24, S25*
- Math 433: Non-Euclidean Geometry *S25, S26*
- Math 464: Advanced Calculus *F24*
- Math 752: Abstract Algebra *Summer 24*
- Math 798: Individual Studies (Linear Algebra) *Sum23*

### **Indiana University Bloomington**

Instructor of Record

- Math-J 010: Introduction to Algebra *Sum18*
- Math-M 014: Basic Algebra *F16*
- Math-J 111: Introduction to College Math I *F19, F21*
- Math-M 106: Math of Decision and Beauty *Sum17, S18, Sum19, F20*
- Math-J 113: Introduction to Calculus with Applications *S19*
- Math-D 116: Introduction to Finite Math I *S22*

## **UNDERGRADUATE MENTORING**

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### **University of Wisconsin - Whitewater**

#### **Undergraduate Research**

- Project Title: A wall-and-chamber structure for the problem of Apollonius *2026 - Present*  
Students: Eli Wenig
- Project Title: Lines on real cubic surfaces *2024-2025*  
Students: Jing Anne McLaughlin, Aspen Price

#### **Research Assistant Program (RAP)**

Faculty Supervisor

- Project Title: Lines on real cubic surfaces *2024-2025*  
Student: Aspen Price
- Project Title: Lines on real cubic surfaces *2023-2024*  
Student: Jing Anne McLaughlin

### **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

## **TALKS & PRESENTATIONS**

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### **Derived And Non-Commutative Enthusiasts (DANCE) Seminar**

*May 2025*

Title: *The derived McKay correspondence for rank 2 reflection groups and semiorthogonal decompositions of equivariant derived categories*

Online

<b>Special Session on Cluster algebras, Hall algebras and representation theory</b>	<i>April 2024</i>
Title: <i>Derived categories of singular curves</i>	AMS Spring Sectional Meeting 2024
<b>AMS Contributed Paper Session</b>	<i>January 2023</i>
Title: <i>Derived categories of singular curves</i>	Joint Mathematics Meetings 2023
<b>Northwestern Algebraic Geometry Seminar</b>	<i>November 2021</i>
Title: <i>Derived categories of singular curves</i>	Northwestern University
<b>Midwest Algebraic Geometry Graduate Conference</b>	<i>May 2020</i>
Title: <i>Reconstruction of projective curves from the derived category</i>	Online
<b>Particle Physics Seminar</b>	<i>March 2018</i>
Title: <i>Complex and algebraic geometry in physics</i>	University of Delaware

## CONFERENCES AND WORKSHOPS ATTENDED

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<b>Midwest Topology Seminar</b>	<i>April 2024</i>
Indiana University - Bloomington	
<b>AMS Spring Central Sectional Meeting</b>	<i>April 2024</i>
University of Wisconsin - Milwaukee	
<b>MAA-WI Section Meeting (Co-organizer)</b>	<i>April 2024</i>
University of Wisconsin - Whitewater	
<b>Derived Categories: Arithmetic and Geometry (AMS MRC)</b>	<i>June 2023</i>
Beaver Hollow, NY	
<b>JMM Project NExT Workshop</b>	<i>January 2023</i>
Boston, MA	
<b>MathFest Project NExT Workshop</b>	<i>August 2022</i>
Philadelphia, PA	
<b>Derived Categories and Moduli Spaces FRG Workshop</b>	<i>April 2022</i>
Cornell University	
<b>SPONGE (Stacks Project ONline Geometry Event)</b>	<i>August 2020</i>
Online	
<b>Midwest Algebraic Geometry Graduate Conference</b>	<i>May 2020</i>
Online	
<b>The Geometry of Derived Categories</b>	<i>September 2019</i>
University of Liverpool	
<b>Derived Categories, Moduli Spaces, and Deformation Theory</b>	<i>June 2019</i>
Cetraro Italy	
<b>Stability Conditions and Homological Projective Duality</b>	<i>April 2018</i>
University of Michigan	

## SERVICE AND PROFESSIONAL DEVELOPMENT

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<b>Journal of Geometry and Physics</b>	<i>2025 - Present</i>
Reviewer	
<b>Fort Atkinson Science Fair</b>	<i>2023 - Present</i>
Treasurer, Judge	

<b>MAA - Wisconsin Section</b> High School Mathematics Contest Coordinator	<i>2023- Present</i>
<b>AMS MathSciNet</b> Reviewer	<i>2023-Present</i>
<b>Project NExT</b> Participant	<i>Red '22</i>
<b>IU Directed Reading Program</b> Program coordinator; supervised two projects	<i>2018 - 2022</i>
<b>American Mathematical Society</b> Member	<i>2016 - Present</i>
<b>Jumpstart Qualifier Preparation</b> Instructor for algebra	<i>Summer 2018, 2021</i>
<b>ScienceFest</b> Volunteer for a public science day at IU	<i>2016, 2017</i>
<b>Delaware Science Olympiad</b> Event director	<i>2012, 2013, 2015, 2016</i>