

# Pat Lank

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## PERSONAL

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- Born on October 7th, 1993
- Citizenship: United States

## RESEARCH INTERESTS

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Algebraic geometry, commutative algebra, triangulated categories

## POSITIONS

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Università degli Studi di Milano

Fall 2024 — Present

- Postdoctoral researcher
- Supervisor: Amnon Neeman

Simons-Laufer Mathematical Sciences Institute

April 2024

- Member

## EDUCATION

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University of South Carolina

January 2021 to May 2024

- Phd in Mathematics
- Advisor: Matthew Ballard

University of New Mexico

August 2017 to December 2020

- M.Sc. in Mathematics
- Advisor: Alexandru Buium

University of Massachusetts in Lowell

August 2015 to August 2017

- B.Sc. in Mathematics

## RESEARCH

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### Published

- Descent conditions for generation in derived categories, *J. Pure Appl. Algebra* (2024)

### Preprints

- "Triangulated characterizations of singularities" joint with Sridhar Venkatesh - in preparation
- "Behavior of Rouquier dimension under base change" joint with Alicia Lamarche - in preparation
- "Closedness of the singular locus and generation for derived categories" joint with Souvik Dey - [arXiv version](#)
- "Dévissage for generation in derived categories" joint with Souvik Dey - [arXiv version](#)
- "Approximation by perfect complexes detects Rouquier dimension" joint with Noah Olander - [arXiv version](#)
- "A note on generation and descent for derived categories of noncommutative schemes" joint with Anirban Bhaduri, Souvik Dey - [arXiv version](#)
- "Strong generation and (co)ghost index for module categories" joint with Souvik Dey, Ryo Takahashi - [arXiv version](#)
- "High Frobenius pushforwards generate the bounded derived category" joint with Matthew Ballard, Srikanth Iyengar, Alapan Mukhopadhyay, and Josh Pollitz - [arXiv version](#)

## INVITED TALKS

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- Representation Theory and Related Geometry: Progress and Prospects, University of Georgia May 2024
- AMS Special Session on Commutative Algebra and its Applications, Howard University, Washington, DC April 2024

• COMA/NAG Joint Graduate Student Seminar for Simons-Laufer Mathematical Sciences Institute	March 2024
• AMS Contributed Paper Session on Commutative Algebra at the Joint Mathematics Meetings	January 2024
• Algebraic Geometry seminar, University of Georgia	October 2023
• Syzygies and mirror symmetry workshop, American Institute of Mathematics	September 2023
• New Directions in Group Theory and Triangulated Categories	May 2023
• Georgia Algebraic Geometry Symposium, University of Georgia	May 2023
• Categorical methods in moduli theory, University of Pennsylvania	April 2023
• AMS Special Session on Interactions between Noncommutative Ring Theory and Algebraic Geometry, Spring Central Sectional	April 2023
• AMS Special Session on Recent Developments in Commutative Algebra, Southeast Sectional	March 2023
• Algebraic Geometry seminar, University of Utah	September 2022
• Algebraic Geometry & Singularity theory workshop, University of Washington	June 2022
• Commutative Algebra Regional Expository Seminar	April 2022
• University of South Carolina, Algebraic Geometry & Commutative Algebra Seminar	February 2022
• Commutative Algebra Regional Expository Seminar	October 2021
• University of South Carolina, Algebraic Geometry Number Theory Seminar	March 2021
• Algebra & Geometry Seminar, University of New Mexico	November 2019
• Algebra & Geometry Seminar, University of New Mexico	December 2018
• Women in Mathematics in New England (WIMIN 2016), Smith College	September 2016
• MAA Northeast Spring Section Meeting, University of New England	June 2016

## TEACHING

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### University of South Carolina

#### Instructor of Record

• MATH 241 - Calculus III	Summer 2021, Summer 2022
• MATH 174 - Discrete structures for computer science	Spring 2023
• MATH 122 - Business Calculus	Spring 2021, Spring 2022, Spring 2024
• MATH 115 - Precalculus	Fall 2021
• MATH 111 - Basic College Mathematics	Fall 2021 (overload), Fall 2022
• MATH 111i - Intensive Basic College Mathematics	Fall 2023

### University of New Mexico

#### Instructor of Record

• MATH 180 - Calculus I	Summer 2020
• MATH 121 - College Algebra	Fall 2017
• MATH 101, 102, 103 - Intermediate Algebra Part I, II, III	Fall 2018

#### Graduate Teaching Assistant

• MATH 521 - Abstract Algebra	Spring 2020
• MATH 327 - Discrete Structures	Spring 2019
• MATH 322 - Modern Algebra	Spring 2019
• MATH 321 - Linear Algebra W/ Applications	Fall 2019
• Math 319 - Number theory	Spring 2020

## ORGANIZATION

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• Joint Mathematics Meeting Special Session on Derived Categories, Arithmetic and Geometry	January 2024
• Graduate Colloquium, University of South Carolina	Fall 2021 to Spring 2023
• Algebraic Geometry & Commutative Algebra Seminar, University of South Carolina	Fall 2021 to Spring 2023

## AWARDS & GRANTS

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• Outstanding Graduate Student Award in Mathematics at University of South Carolina	Spring 2024
• Teaching Award from Student Disability Resource Center at University of South Carolina	Fall 2023
• AMS Graduate Student Sectional Travel Grant	Spring 2023

## SERVICE

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| • Math 111 Textbook Committee for University of South Carolina | Spring 2024              |
| • Math Tutoring Center Coordinator                             | Summer 2023              |
| • Graduate Student Panel Committee                             | Summer 2021, Spring 2022 |
| • Proctor for UNM PNM State Wide Mathematics Exam              | Fall 2017, Spring 2019   |
| • City-wide Concert & Fundraiser, Nashua NH Soup Kitchen       | Fall 2011                |