# Pat Lank

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## PERSONAL

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

## RESEARCH INTERESTS

Algebraic geometry, commutative algebra, triangulated categories

## POSITIONS

**Università degli Studi di Milano** <span style="float:right">Fall 2024 — Present</span>

- Postdoctoral researcher
- Supervisor: Amnon Neeman

**Simons-Laufer Mathematical Sciences Institute** <span style="float:right">April 2024</span>

- Research associate

## EDUCATION

**University of South Carolina** <span style="float:right">January 2021 to May 2024</span>

- Phd in Mathematics
- Advisor: Matthew Ballard

**University of New Mexico** <span style="float:right">August 2017 to December 2020</span>

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

**University of Massachusetts in Lowell** <span style="float:right">August 2015 to August 2017</span>

- B.Sc. in Mathematics

## RESEARCH

### Published

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

### Preprints

- "Triangulated characterizations of singularities" joint with Sridhar Venkatesh - `arXiv version`
- "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 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`

### In preparation

- "Classification and nonexistence results for tensor t-structures on derived categories of schemes" joint with Rudradip Biswas, Alexander Clark, Kabeer Manali Rahul and Chris J. Parker
- "Approximability and Rouquier dimension for noncommuative algebras over schemes" joint with Timothy De Deyn and Kabeer Manali Rahul
- "Perfect complexes and proper descent for algebraic stacks" joint with Jack Hall, Fei Peng, and Alicia Lamarche

# INVITED TALKS

- 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

## 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

- 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

- 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

- 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