

# Pat Lank

University of South Carolina  
Department of Mathematics

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## Personal

Born on October 7th, 1993

Citizenship: United States

## Positions

Program Associate for Noncommutative Algebraic Geometry in April 2024 at SLMath, Berkeley, California

## Education

Ph.D. Mathematics, University of South Carolina, USA 2020 to present, Dissertation Adviser: Dr. Matthew Ballard

M.S. Mathematics, University of New Mexico, USA 2017 to 2020, Thesis Advisor: Dr. Alexandru Buium

B.S. Mathematics, University of Massachusetts in Lowell, USA, 2015 to 2017

## Grants

AMS Graduate Student Sectional Travel Grant for the South Sectional Meeting March 2023, Georgia Institute of Technology, Atlanta, GA

## Research & Publications

"Triangulated characterizations of singularities" joint with Sridhar Venkatesh - in preparation

"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](#)

"Descent conditions for generation in derived categories" - [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

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

AMS Contributed Paper Session on Commutative Algebra and Related Topics at the 2024 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

## Academic Employment

*University of South Carolina*

### **Instructor of Record**

MATH 111i - Intensive Basic College Mathematics, Fall 2023

MATH 174 - Discrete structures for computer science, Spring 2023

MATH 111 - Basic College Mathematics, Fall 2022

MATH 241 - Calculus III, Summer 2022

MATH 122 - Business Calculus, University of South Carolina, Spring 2022, Spring 2024

MATH 111 - Basic College Mathematics, Fall 2021 (Overload)

MATH 115 - Precalculus, Fall 2021

MATH 241 - Calculus III, Summer 2021

MATH 122 - Business Calculus, University of South Carolina, Spring 2021

## *University of New Mexico*

### **Instructor of Record**

MATH 180 - Calculus I, University of New Mexico, Summer 2020

MATH 101, 102, 103 - Intermediate Algebra Part I, II, III, University of New Mexico, Fall 2018

MATH 121 - College Algebra, University of New Mexico, Fall 2017

### **Graduate Teaching Assistant**

Math 319, 521 - Number theory, Abstract Algebra II, University of New Mexico, Spring 2020

MATH 321 - Linear Algebra W/ Applications, University of New Mexico, Fall 2019

MATH 321, 322, 327 - Linear Algebra, Modern Algebra, and Discrete Structures, University of New Mexico, Spring 2019

## Awards

Student Disability Resource Center at University of South Carolina "Two Thumbs Up Recognition"

## 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

## Service

Math 111 Textbook Committee for University of South Carolina

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