

# Guanyu Li

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🌐 <https://sites.google.com/view/guanyu-li-math/home>

## Interests

- My research interests on mathematics are derived algebraic geometry, algebraic geometry, homotopy theory and cohomology theories, as well as fields related to derived algebraic geometry such as category theory, algebraic topology, algebra, complex geometry, and mathematical physics.
- Most of my current projects are related to representation homology, which is a DAG object. I focus on computational aspect of these objects and manage to connect the higher information with the original algebro-geometric spaces. I'm very interested in the connections of representation homology with other homology theories.

## Education

- August 2018 – Present **Ph.D in Mathematics**,  
Cornell University, Ithaca, NY  
Advisor: Yuri Berest
- August 2014 – June 2018 **BS in Mathematics and Applied Mathematics**,  
Sun Yat-sen University, Guangzhou, China.

## Publications

- [LL] **1** Guanyu Li and Yun Liu. “Relative Categories and Relative Adjunctions”. in preparation.
- [Li24] **2** Guanyu Li. *Commuting Varieties of Upper Triangular Matrices and Representation Homology*. 2024. arXiv: 2403.13953.

## Teaching

### Cornell University

2024 Fall	<b>MATH 4310 - Linear Algebra</b>	Work as a grader.
2024 Spring	<b>MATH 4180 - Complex Analysis</b>	Work as a grader.
2023 Fall	<b>MATH 1110 - Calculus I</b>	Work as an instructor.
2023 Summer	<b>MATH 1110 - Calculus I</b>	Work as a grader.
2023 Spring	<b>MATH 6510 - Algebraic Topology</b>	Work as a grader.
2022 Fall	<b>MATH 1110 - Calculus I</b>	Work as an instructor.
2022 Summer	<b>MATH 2940 - Linear Algebra for Engineers</b>	Work as a grader.
2022 Spring	<b>MATH 6510 - Algebraic Topology</b>	Work as a grader.
2021 Fall	<b>MATH 3040 - Prove It!</b>	Work as a grader.
2021 Summer	<b>MATH 1110 - Calculus I</b>	Work as a grader.
2021 Spring	<b>MATH 6320 - Algebra</b>	Work as a grader.
2020 Fall	<b>MATH 2210 - Linear Algebra</b>	Work as a recitation TA.
2020 Summer	<b>MATH 1920 - Multivariables for Engineers</b>	Work as a grader.
2020 Spring	<b>MATH 4280 - Introduction to PDE</b>	(Partially) Work as a grader.

## Teaching (continued)

2019 Fall	📖 MATH 2210 - Linear Algebra	Work as a recitation TA.
2019 Spring	📖 MATH 4500 - Matrix Groups	Work as a grader.

## Invited talks

Algebra Seminar, Cornell	<b>Commuting Varieties of Upper Triangular Matrices and Representation Homology</b> Friday, March 08, 2024
BUGCAT, Binghamton University	<b>Representation homology and some computations with unipotent coefficients</b> Saturday, November 11, 2023
Sun Yat-sen University	<b>Deriving the representation variety</b> Friday, June 09, 2023
Olivetti Club, Cornell	<b>Algebraic Topology is Inevitable</b> Tuesday, March 28, 2023
	<b>Why Should Algebraic Geometry be Derived?</b> Tuesday, November 5, 2019

## Miscellaneous Experience

2024-2025	<b>Teaching Development Fellow</b> for math department, organizing the bi-weekly teaching seminar, helping coordinate peer observations, and working on a small project for the semester to support TA professional development.
2022	<b>Teaching training program facilitator</b> for math department.