

# Guanyu Li

✉ gl479@cornell.edu

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

## Education

August 2018 – August 2025



**Ph.D in Mathematics,**

Cornell University, Ithaca, NY

Advisor: Yuri Berest

Thesis title: Derived commuting schemes, representation homology, and cohomology of Lie algebras

August 2014 – June 2018



**BS in Mathematics and Applied Mathematics,**

Sun Yat-sen University, Guangzhou, China.

## Interests



My research interests are derived algebraic geometry, algebraic geometry, representation theory and homotopy theory, as well as fields related to derived algebraic geometry such as homological algebra and algebraic topology.



Most of my current projects are related to representation homology, which is a DAG object modeling derived representation scheme. I primarily focus on the computational aspects of these objects and on the connections between their higher information, the underlying algebro-geometric spaces, and classical results in other fields.

## Preprints and Publications

- 1 Michael K. Brown, Souvik Dey, **Guanyu Li**, and Mahrud Sayrafi. *Computing global Ext for complexes*. arXiv:2509.25103. 2025.
- 2 **Guanyu Li**. *A Step towards Computational Derived Algebraic Geometry: The RepHomology Package For Macaulay2*. arXiv:2410.18383. 2024.
- 3 **Guanyu Li**. “Commuting schemes of upper triangular matrices and representation homology”. In: *Journal of Algebra* 688 (2026), pp. 420–444. ISSN: 0021-8693. DOI: <https://doi.org/10.1016/j.jalgebra.2025.10.006>.

## Teaching

### Cornell University

Fall 2025	<b>MATH 1920 - Multivariable Calculus for Engineers</b>	Recitation TA.
	<b>MATH 2940 - Linear Algebra for Engineers</b>	Recitation TA.
Spring 2025	<b>MATH 2310 - Linear Algebra for Data-science</b>	Recitation TA.
Fall 2024	<b>MATH 4310 - Linear Algebra</b>	Grader.
Spring 2024	<b>MATH 4180 - Complex Analysis</b>	Grader.
Fall 2023	<b>MATH 1110 - Calculus I</b>	Instructor.
Summer 2023	<b>MATH 1110 - Calculus I</b>	Grader.
Spring 2023	<b>MATH 6510 - Algebraic Topology</b>	Grader.

## Teaching (continued)

Fall 2022	📖	MATH 1110 - Calculus I	Instructor.
Summer 2022	📖	MATH 2940 - Linear Algebra for Engineers	Grader.
Spring 2022	📖	MATH 6510 - Algebraic Topology	Grader.
Fall 2021	📖	MATH 3040 - Prove It!	Grader.
Summer 2021	📖	MATH 1110 - Calculus I	Grader.
Spring 2021	📖	MATH 6320 - Algebra	Grader.
Fall 2020	📖	MATH 2210 - Linear Algebra	Recitation TA.
Summer 2020	📖	MATH 1920 - Multivariables for Engineers	Grader.
Spring 2020	📖	MATH 4280 - Introduction to PDE	(Partial) Grader.
Fall 2019	📖	MATH 2210 - Linear Algebra	Recitation TA.
Spring 2019	📖	MATH 4500 - Matrix Groups	Grader.

## 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 the department of mathematics, organizing the bi-weekly teaching seminar, helping coordinate peer observations, and working on a small reading project for the spring semester to support TA professional development.
2022	<b>Teaching training program facilitator</b> for the department of mathematics.