Guanyu Li

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

Interests

- My mathematical research interests 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 aspects of the object and manage to connect the higher information to the original algebro-geometric spaces. I'm very interested in the connections of representation homology with other (co)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

[Li24a] 1 **Guanyu Li**. *A Step towards Computational Derived Algebraic Geometry: The RepHomology Package For Macaulay2*. 2024. arXiv: 2410.18383.

[Li24b] 2 **Guanyu Li**. *Commuting Varieties of Upper Triangular Matrices and Representation Homology*. 2024. arXiv: 2403.13953.

Teaching

Cornell University

Fall 2024	**MATH 4310 - Linear Algebra**	Grader.
Spring 2024	**MATH 4180 - Complex Analysis**	Grader.
Fall 2023	**MATH 1110 - Calculus I**	Instructor.
Summer 2023	**MATH 1110 - Calculus I**	Grader.
Spring 2023	**MATH 6510 - Algebraic Topology**	Grader.
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.

Teaching (continued)

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

Miscellaneous Experience

2024-2025	**Teaching Development Fellow** 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	**Teaching training program facilitator** for the department of mathematics.