

# Sai Sivakumar

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University of Texas at Austin

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## Goals

To obtain a Ph.D. in Mathematics, followed by a career in academia.

## Education

- 2024– **Ph.D. in Mathematics**, *University of Texas at Austin*
- 2020–2024 **B.Sc. in Mathematics**, *University of Florida*
- 2020–2024 **Minors in Physics, Computer Science**, *University of Florida*

## Works

### Publications

- [1] **On virtual resolutions of points in a product of projective spaces**  
I. Bailly-Hall, C. Berkesch, K. Dovgodko, S. Guan, S. Sivakumar, J. Sun (2024). Submitted to the Journal of Pure and Applied Algebra.
- [2] **Ideals preserved by linear changes of coordinates in positive characteristic**  
B. Cattell-Ravdal, E. Delargy, A. Ganguly, S. Guan, T. Karn, M. Perlman, S. Sivakumar (2024). Submitted to Communications in Algebra.

### Miscellaneous

- [3] **Strong multiplicity one for classical modular forms**  
S. Sivakumar (2024). Senior thesis.

## Talks and Presentations

- Oct. 2024 Local systems, monodromy, elliptic curves, and the Picard-Fuchs equation  
UT Austin GRANT (Geometry, Representation theory, Algebra, and Number Theory) Seminar
- Jan. 2024 On virtual resolutions of points in a product of projective spaces  
Joint Mathematics Meetings 2024, in the AMS Contributed Paper Session on Commutative Algebra and Related Topics
- Jan. 2024 Ideals preserved by linear changes of coordinates in positive characteristic  
Joint Mathematics Meetings 2024, in the AMS Contributed Paper Session on Commutative Algebra and Related Topics
- Oct. 2023 Virtual resolutions of points in  $\mathbb{P}^n \times \mathbb{P}^m$   
UF Algebra Seminar
- Apr., Jul. 2023 Fourier analysis on LCA groups and Pontryagin duality  
For Dr. Sin's Introduction to Representation Theory class; for the Student Summer Representation Theory Seminar at the University of Minnesota, Twin Cities.
- Feb. 2022 Combinatorial proof of existence of Sylow subgroups  
UF Algebra seminar
- Falls 2021–2023 Annual L<sup>A</sup>T<sub>E</sub>X seminar  
Joint with the UF Graduate Mathematics Association (GMA) and the UF Association for Women in Mathematics (AWM) chapter.

## Conferences and Workshops

- Jan. 2024 Joint Mathematics Meetings, *San Francisco*

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## Teaching

Fall 2024 **Teaching Assistant**, *M 408N*: Differential Calculus for Science

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## Outreach and Service

- Oct. 2024– Volunteer at the Sunday Morning Math Group at UT Austin  
Exposes local junior high and high school students to fun and engaging topics in mathematics not typically appearing in the curricula; this group also hosts the AMC 8, 10, and 12 exams.
- 2024 AY Member of the Graduate Representative Committee at UT Austin  
We interface with UT Austin's graduate students by representing the interests of the graduate students in the department, and we organize events and tea. I specifically organize social events.
- 2024 AY Organizer of the Sophex seminar at UT Austin  
This seminar gives first-year graduate students a low-pressure environment to practice giving talks.
- 2023 AY President of the University Math Society at UF  
I managed the club, ensured all events ran smoothly, formed collaborations with the AWM chapter and the GMA, and encouraged a friendly, inclusive environment for all members.
- 2021, 2022 AY Teaching assistant and grader for *MAP2302* Elementary Differential Equations
- Mar. 2021– Moderator for a large online mathematics community  
Exceeding 230,000 members globally, it seeks to stimulate mathematical discussion and interest, as well as to provide assistance with math.
- 2021, 2022 AY Academic Director of the University Math Society at UF  
I scheduled talks from professors, gave talks myself, and encouraged undergraduate students to give talks.

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## Honors and Awards

- 2023 The Kermit Sigmon Scholarship.  
\$200, awarded every spring to promising undergraduate mathematics majors.

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## Skills

- $\text{\LaTeX}$  5+ years
- Macaulay2 Used in both REUs I attended
- Java, C++ In my undergraduate studies