

# Bhargavi Parthasarathy

📍 Syracuse, NY    🔗 [bhargaviparthasarathy.github.io](https://bhargaviparthasarathy.github.io)

## Education

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| <b>Syracuse University</b><br>PhD, Mathematics<br>Advisor: Prof. Graham J. Leuschke   | Aug 2026 |
| <b>Syracuse University</b><br>MS, Mathematics   | May 2021 |
| <b>Indian Institute of Science Education and Research (IISER), Pune</b><br>Integrated BS-MS program<br>Master of Science in Mathematics | May 2019 |

## Research Interests

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Commutative algebra: maximal Cohen-Macaulay modules over Cohen-Macaulay rings  
Formalization of mathematics for proof assistants

## Publications

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*Homomorphisms of Maximal Cohen-Macaulay modules over the cone of the Fermat cubic* (in preparation)  
*Homomorphisms of Maximal Cohen-Macaulay modules over the cone of all elliptic curves* (in preparation)

## Invited Conference and Seminar Talks

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| <b>2026 Spring Eastern Sectional Meeting</b><br>Homomorphisms of Maximal Cohen-Modules over the cone of an elliptic curve                                    | Mar 2026 |
| <b>2026 Joint Mathematical Meetings</b><br>Homomorphisms of Maximal Cohen-Modules over the cone of an elliptic curve   | Jan 2026 |
| <b>Commutative Algebra and Algebraic Geometry Seminar, CUNY Graduate Center</b><br>Homomorphisms of Maximal Cohen-Modules over the cone of an elliptic curve | Nov 2025 |
| <b>CAAG student seminar, CUNY Graduate Center</b><br>Matrix Factorizations: An Incomplete Summary  | Nov 2025 |
| <b>Algebra Seminar, University of Connecticut</b><br>Homomorphisms of Maximal Cohen-Modules over the cone of an elliptic curve                               | Nov 2025 |
| <b>Arithmetic Geometry Seminar, Binghamton University</b><br>Homomorphisms of Maximal Cohen-Modules over the cone of an elliptic curve                       | Nov 2025 |
| <b>2025 Fall Eastern Virtual Sectional Meeting</b><br>Homomorphisms of Maximal Cohen-Modules over the cone of an elliptic curve                              | Oct 2025 |
| <b>Algebra Seminar, Syracuse University</b><br>Homomorphisms of Maximal Cohen-Modules over the cone of an elliptic curve                                     | Sep 2025 |
| <b>AWM Research Symposium, University of Wisconsin-Madison</b><br>Homomorphisms of Maximal Cohen-Modules over the cone of an elliptic curve                  | May 2025 |

## Awards and Grants

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| <b>AWM Research Symposium Travel Grant</b><br>Association for Women in Mathematics | May 2025 |
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**AMS Sectional Travel Grant**

American Mathematical Society

Oct 2023

**Departmental Summer Fellowship**

Syracuse University

May 2023

## Teaching

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**Syracuse University****Instructor of Record**

Taught in small-section formats ( $\approx 25$  students) as part of coordinated multi-section courses. Summer courses were taught in accelerated 6 week format with frequent assessments. Presented the course material as lectures; created exams, quizzes, and worksheets; assigned final grades.

MAT 284 Business Calculus

Spring 25, Spring 23

MAT 285 Life Sciences Calculus I

Spring 24, Summer 22, Spring 21

MAT 295 Calculus I

Fall 24, Spring 22, Fall 21

MAT 296 Calculus II

Summer 25, Summer 24, Fall 23

**Recitation Leader**

Conducted recitations and set quizzes; graded quizzes and exams.

MAT 183 Elements of Modern Mathematics

Fall 19, Fall 20

MAT 284 Business Calculus

Spring 20

MAT 295 Calculus I

Fall 22

MAT 296 Calculus II

Fall 25

**Math Drop-in Clinic Instructor**

Provided specialized support for multiple differential equations and linear algebra courses

Spring 26

Provided one-on-one support for undergraduate mathematics courses

Spring 24, Fall 21, Summer 21

**Grader**

MAT 485 Differential Equations and Matrix Algebra for Engineers

Spring 26

MAT 121 Probability and Statistics for Liberal Arts I

Summer 20

**Indian Institute of Science Education and Research (Pune)****Teaching Fellow**

Mentored students for their semester project using the history of science, technology and medicine framework.

HSS 201 Introduction to History of Science, Medicine and Technology

Fall 18

## Contributed Conference and Seminar Talks

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**Working ALgebra Knowledge Seminar (WALKS), Syracuse University**

Maximal Cohen-Macaulay modules and the elliptic group law

Sep 2025

**50th Annual New York State Regional Graduate Mathematics Conference****(ANYSRGM), Syracuse University**

Homomorphisms of Maximal Cohen-Macaulay Modules over the cone of an elliptic curve

Apr 2025

**Working ALgebra Knowledge Seminar (WALKS), Syracuse University**

Matrix Factorizations: An Incomplete Summary

Jan 2025

**Working ALgebra Knowledge Seminar (WALKS), Syracuse University**

AR Sequences

Oct 2023

**MGO Graduate Colloquium, Syracuse University**

AR sequences and Cohen-Macaulay modules

Apr 2023

## Departmental Service

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### **Directed Reading Program, Syracuse University**

Graduate Mentor

Had weekly meetings with four undergraduate students to discuss a dive deeper into a mathematical topic of their choice which culminated with a presentation given by them at the end of the semester.

- Spring 2022 - Group theory (Yuming Jiang)
- Fall 2023 - Graph Colorings and the Axiom of Choice (Lillian Impastato)
- Spring 2025 - Applications of Gröbner basis (Qiong Wu and Meagan Gonzalez)

### **Syracuse Mathematics Peer Mentoring Program**

2023-24

Peer Mentor

Organized various social events for first year graduate students to foster a supportive environment and create a sense of community.

### **Mathematics Graduate Organization, Syracuse University**

Colloquium Organizer

2021-22

Organized weekly research and expository talks given by graduate students.

### **Association for Women in Mathematics-Syracuse University Chapter**

President

2021-22

Vice President

2020-21

Organized job preparation workshops, mental health discussions, academic and industry career panels, research communication event, team building exercises and movie screenings for the mathematics graduate student body.

## Outreach

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### **Networking 101 at the Conference for Undergraduate women and Gender Minorities in Physics (CU\*IP)**

Jan 2025

Facilitated a group discussion among Physics undergraduates (women and gender minorities) about constructing elevator pitches and talking to professors.

### **Math E-Carnival with Institute for Advanced Study's Women and Math program**

Apr 2021

Presented various activities to an audience of children and interacted with the underlying mathematics concepts in these activities

### **Science and Technology Entry Program (STEP) at Syracuse University**

Sep 2020-Apr 2021

Worked with middle and high school students on a weekly basis to improve their understanding of various mathematical concepts.

## Professional Development

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### **Teaching Seminar**

Fall 2024

Department of Mathematics, Syracuse University

A weekly seminar to discuss pedagogy with the mathematics education experts in the department and testing different ways to implement them.

### **Future Professionals Program**

2023-25

Women in Science and Engineering (WISE), Syracuse University

A two year long professional development program with events that address various aspects of building a career in STEM including networking, preparing for academic jobs, improving instructional abilities.

## Workshops Attended

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### **Commutative Algebra and its Interaction with Algebraic Geometry**

May 2023

CMND, Notre Dame and SLMATH, Berkeley

### **Women and Mathematics: Representation theory and categorification**

Apr 2021

Institute of Advanced Study, Princeton

## Conferences Attended

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| AWM Research Symposium, University of Wisconsin-Madison      | May 2025 |
| 50th ANYSRGMC, Syracuse University                           | Mar 2025 |
| Route 81, Cornell University                                 | Nov 2024 |
| AMS Fall Eastern Sectional Meeting, University at Albany     | Oct 2024 |
| 49th ANYSRGMC, Syracuse University                           | Apr 2024 |
| Fairfax Algebra Days, George Mason University                | Mar 2024 |
| Introductory Workshop: Commutative Algebra, SLMath, Berkeley | Jan 2024 |
| Connections Workshop: Commutative Algebra, SLMath, Berkeley  | Jan 2024 |
| Route 81, Syracuse University                                | Nov 2023 |
| AMS Fall Central Sectional Meeting, Creighton University     | Oct 2023 |
| KUMUNU, University of Missouri                               | Sep 2023 |
| Morgantown Algebra Days, West Virginia University            | Apr 2023 |
| 48th ANYSRGMC, Syracuse University                           | Apr 2023 |
| 47th ANYSRGMC, Syracuse University                           | Apr 2022 |
| 46th ANYSRGMC, Syracuse University                           | Apr 2021 |
| 45th ANYSRGMC, Syracuse University                           | Apr 2020 |