

Trung Chau | Curriculum Vitae

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• 🌐 <https://trungchaumath.github.io>

Education

Chennai Institute of Mathematics

Postdoc

Mentor: Manoj Kummini

Chennai

October 2024–present

University of Utah

Ph.D. student in Mathematics

Advisors: Anurag K. Singh and Srikanth B. Iyengar

Thesis: Barile-Macchia resolutions of monomial ideals and F -singularities of rings defined by commutator matrices and permanents

Salt Lake City, Utah

2019–August 2024

University of Science - Vietnam National University

B.S. in Mathematics

Ho Chi Minh City, Vietnam

2014–2018

Research

Research Interests

Commutative Algebra, Algebraic Geometry, Combinatorics, and Algebraic Topology.

Publications (in order of acceptance)

10. Trung Chau, Huy Tài Hà, and Aryaman Maithani. *Powers of Edge Ideals of Graphs with Minimal Cellular Resolutions*, to appear in Electronic Journal of Combinatorics (2025).
[arXiv version](#).
9. Trung Chau and Manoj Kummini. *Maximal minors of 1-generic matrices have rational singularities*, to appear in Archiv der Mathematik (2025).
[arXiv version](#).
8. Trung Chau. *The F -singularities of algebras defined by permanents*, Collectanea Mathematica (2025).
[journal version](#). [arXiv version](#).
7. Trung Chau. *Permanental ideals of symmetric matrices*, to appear in Proceedings of the American Mathematical Society (2025).
[arXiv version](#).
6. Trung Chau, Selvi Kara, and Kyle Wang. *Minimal Cellular Resolutions of Path Ideals*, Electronic Journal of Combinatorics (2025).
[journal version](#). [arXiv version](#).
5. Trung Chau, Nursel Erey, and Aryaman Maithani. *The Scarf complex of squarefree powers, symbolic powers of edge ideals, and cover ideals of graphs*, Communications in Algebra (2025).
[journal version](#). [arXiv version](#).
4. Trung Chau. *Minimal cellular resolutions of monomial ideals with five generators and their Artinian reductions*, Journal of Pure and Applied Algebra (2025).
[journal version](#). [arXiv version](#).
3. Trung Chau, Huy Tài Hà, and Aryaman Maithani. *Monomial ideals with minimal generalized Barile-Macchia resolutions*, Vietnam Journal of Mathematics (2025).
[journal version](#). [arXiv version](#).
2. Trung Chau. *The F -regularity of algebraic sets related to commutator matrices*, Journal of Algebra (2024).
[journal version](#). [arXiv version](#).

- Trung Chau and Selvi Kara. *Barile-Macchia resolutions*, Journal of Algebraic Combinatorics (2024). journal version. arXiv version.

Preprints.....

- * means undergraduates.
- Om Prakash Bhardwaj, Trung Chau, and Omkar Javadekar. *Projective monomial curves associated to numerical semigroups with multiplicity e , width $e - 1$, and embedding dimension $e - 2$* . arXiv:2511.06482. Submitted. (2025)
 - Trung Chau, Kanoy Kumar Das, Amit Roy, and Kamalesh Saha. *Admissible set and squarefree-power-like function with applications to squarefree symbolic powers*. arXiv:2510.01366. Submitted. (2025)
 - Trung Chau, Michale DeBellevue, Souvik Dey, K. Ganapathy, and Omkar Javadekar. *Periodicity of ideals of minors over some local rings and under deformation*. arXiv:2507.05225. Submitted. (2025)
 - Trung Chau, Kanoy Kumar Das, Animikha Dutta Dhar*, Pranath S Karanth*, and Aniruda Suswaram*. *Trees whose path ideals have linear quotients*. arXiv:2506.06209. Submitted. (2025)
 - Trung Chau, Kanoy Kumar Das, Amit Roy, and Kamalesh Saha. *Admissible matchings and the Castelnuovo-Mumford regularity of square-free powers*. arXiv:2504.11941. Submitted. (2025)
 - Trung Chau, Richie Sheng*, and Debbie Wooton*. *Homological invariants of edge ideals of weighted oriented graphs*. arXiv:2504.09703. Submitted. (2025)
 - Trung Chau, Kanoy Kunar Das, and Aryaman Maithani. *Edge ideals with linear quotients and without homological linear quotients*. arXiv:2503.11424. Submitted. (2025)
 - Trung Chau, Art M. Duval, Sara Faridi, Thiago Holleben, Susan Morey, Liana M. Ţega. *Realizing resolutions of powers of extremal ideals*. arXiv:2502.09585. Submitted. (2025)
 - James Cameron, Trung Chau, Sarasij Maitra, and Tim Tribone. *A family of simplicial resolutions which are DG-algebras*. arXiv:2412.21120 . Submitted. (2024)
 - Trung Chau, Selvi Kara, and Augustine O'Keefe. *The MorseResolutions package for Macaulay2*. arXiv:2307.03633. (2023)

Research Stays, Awards, Grants, and Fellowships

Research Stay

1-week stay, invited by Professor Sara Faridi

Dalhousie University, Halifax
January 2026

Research Stay

2-week stay, invited by Professor Huy Tai Ha

Tulane University, New Orleans
January 2026

Research Stay

2-week stay, invited by Professor Dang Hop Nguyen

VAST, Hanoi
October 2025

Thematic Program in Commutative Algebra and Applications

1-week stay

Fields Institute, Toronto
May 2025

Research Stay

1-week stay, invited by Professor Sara Faridi

Dalhousie University, Halifax
August 2024

SLMath's Summer Research in Mathematics

2-week stay with Art Duval, Sara Faridi, Thiago Holleben, Susan Morey, and Liana Sega

SLMath, Berkeley

June 2024

Research Stay

1-week stay, invited by Professor Jeffrey Mermin

Oklahoma State University, Stillwater

October 2023

Interactions Between Topological Combinatorics and Combinatorial CA

A one-week workshop hosted by BIRS

Invited Participant

BIRS, Banff, Canada

April 2023

Department of Mathematics, University of Utah

Departmental Summer Funding

Summer 2023

Research Stay

1-week stay, invited by Professor Huy Tài Hà

Tulane University, New Orleans

December 2022

VIASM

Students Scholarship of National Program for The Development of Mathematics

2015–2017

Conferences Organized**JMM 2026 Special Session**

Organizer

SLMath Special Sessions on Combinatorial Aspects in Commutative Algebra

Washington DC, USA

Spring 2026

IAS school

Tutor

Advanced Instructional School on the topic of André-Quillen and Hochschild cohomology functors

Chennai, India

Fall 2024

BRIDGES

Organizer

Aimed towards early graduate students and advanced undergraduate students interested in geometric group theory, number theory, algebraic geometry and commutative algebra

Salt Lake City, UT, USA

Summer 2022

Conference Presentations**Talks****JMM 2026 Special Session**

Extremal ideals and their universal nature

Invited Speaker

Washington DC, USA

January 2026

AMS Fall Eastern Virtual Sectional Meeting

Trees whose path ideals have linear resolution

Invited Speaker

Virtual

October 2025

Mini-workshop on Invariants of Modules over Commutative Rings

The periodicity of Fitting ideals

Invited Speaker

Hanoi

October 2025

Mathematical Congress of America 2025

Edge ideals without homological linear quotients

Invited Speaker

Miami

July 2025

AMS Spring Western Sectional Meeting

Powers of edge ideals with minimal cellular resolutions

Invited Speaker

San Francisco

May 2024

Canadian Mathematical Society's 2023 Winter Meeting

Barile-Macchia resolutions

Invited Speaker

Algebra Day

The F-regularity of algebraic sets related to commutator matrices

Invited Speaker

AMS Spring Southeastern Sectional Meeting

The F-regularity of algebraic sets related to commutator matrices

Invited Speaker

AMS Fall Southeastern Sectional Meeting

Bridge resolutions

Invited Speaker

The 11th VNU-HCMUS Scientific Conference

Counting integral points inside a polyhedron

Invited Speaker

Posters.....

KUMUNU

Barile-Macchia resolutions

Poster, Funded

AICoVE

Barile-Macchia resolutions

Poster

Combinatorial Algebra meets Algebraic Combinatorics

Barile-Macchia resolutions

Poster, Funded

KUMUNU

Morse resolutions

Poster, Funded

PASCA

Morse resolutions

Poster, Funded

Seminar Organized

Undergraduate Seminar in Algebra

Chennai Mathematical Institute

Spring 2025

Informal seminar, aimed towards fostering undergraduate research. Preprint [9] is one product of this seminar.

Commutative Algebra Seminar

Chennai Mathematical Institute

Spring 2025

Aimed towards giving introductory talks in research topics to initiate collaboration

BIKES, Commutative Algebra Graduate Student Seminar

University of Utah

2021–2022

Seminar Talks

Research Talks.....

Algebra and Number Theory Seminar

Extremal ideals and applications

VAST

October 2025

Algebra Seminar

The Frobenius singularities of permanental ideals

Chennai Mathematical Institute

February 2025

Teaching

Teaching Assistantships.....

Teaching Assistantships.....

| | |
|---|----------------------------------|
| Algebra Seminar | IIT Madras |
| <i>Knutson ideals</i> | <i>February 2025</i> |
| Combinatorial and Commutative Algebra Seminar | Oklahoma State University |
| <i>Barile-Macchia resolutions</i> | <i>October 2023</i> |
| Combinatorial and Commutative Algebra Seminar | McMaster University |
| <i>Barile-Macchia resolutions</i> | <i>October 2023</i> |
| Commutative Algebra Seminar | Purdue University |
| <i>The F-regularity of algebraic sets related to commutator matrices</i> | <i>September 2023</i> |
| Algebra and Combinatorics Seminar | Tulane University |
| <i>Barile-Macchia resolutions</i> | <i>December 2022</i> |
| Commutative Algebra Seminar | University of Utah |
| <i>Barile-Macchia resolutions</i> | <i>November 2022</i> |
| Graduate Student Seminars | |
| Commutative Algebra Graduate Student Seminar, Syracuse University | |
| Barile-Macchia resolutions for monomial ideals | <i>May 2024</i> |
| CARES, Commutative Algebra Regional Expository Seminar (virtual) | |
| Simplicial resolutions for monomial ideals | <i>December 2022</i> |
| <i>D</i> -modules and an application | <i>April 2022</i> |
| Commutative Algebra Graduate Student Seminar, University of Michigan | |
| Showing F -purity and F -regularity through examples | <i>March 2023</i> |
| BIKES, Commutative Algebra Graduate Student Seminar, University of Utah | |
| Discrete Morse Theory | <i>September 2023</i> |
| Principal radical systems | <i>April 2022</i> |
| Big Cohen-Macaulay modules and homological conjectures | <i>September 2022</i> |
| Multiple Morse resolutions of an ideal | <i>March 2022</i> |
| Cellular resolutions and hull resolutions | <i>March 2022</i> |
| Lyubeznik resolutions and Scarf complexes | <i>December 2021</i> |
| A quick look at the singularity category | <i>September 2021</i> |
| Modules of finite projective dimension in characteristic p | <i>February 2021</i> |
| Holonomic modules and applications | <i>November 2020</i> |
| A proof of Kunz's theorem using perfect rings | <i>July 2020</i> |
| Cohen-Macaulay rings | <i>September 2019</i> |
| General Math Talks | |
| Math Circle | University of Utah |
| Magic and maths | <i>2023</i> |
| Undergraduate Student Colloquium | University of Utah |
| Evolution of logical paradoxes | <i>2022</i> |
| Graduate Student Colloquium | University of Utah |
| Mathematics in Arts | <i>2020</i> |

Teaching Experience

Instructor of Record.....

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| Graduate Algebra 1 <i>Chennai Mathematical Institute</i> | co-teach with Professor Balaji <i>Fall 2025</i> |
| MATH 3160: Applied Complex Variables <i>University of Utah</i> | <i>Summer 2024</i> |
| MATH 1090: Business Algebra <i>University of Utah</i> | <i>Fall 2023</i> |
| MATH 3070: Applied Statistics I <i>University of Utah</i> | <i>Spring 2023</i> |
| MATH 1070: Statistic Inference <i>University of Utah</i> | <i>Fall 2022</i> |
| MATH 3150: PDEs for Engineers <i>University of Utah</i> | <i>Spring 2022</i> |
| MATH 1210: Calculus 1 <i>University of Utah</i> | <i>Fall 2021</i> |
| MATH 2270: Linear Algebra <i>University of Utah</i> | <i>Summer 2021</i> |
| MATH 1060: Trigonometry <i>University of Utah</i> | <i>Spring 2021, Fall 2020</i> |

Graduate Teaching Assistant.....

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| MATH 2250: Differential Equations and Linear Algebra <i>University of Utah</i> | <i>Spring 2020, Fall 2019</i> |
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Grader.....

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| MATH 6310: Modern Algebra 1 <i>University of Utah</i> | <i>Fall 2022</i> |
| MATH 6040: Probability <i>University of Utah</i> | <i>Fall 2021</i> |
| MATH 6210: Real Analysis <i>University of Utah</i> | <i>Fall 2021</i> |
| MATH 6320: Modern Algebra 2 <i>University of Utah</i> | <i>Spring 2021</i> |

Service/Outreach

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| University of Utah | Salt Lake City, Utah, USA |
| ○ Co-organizer Co-organized the 'Graduate Teacher Training Program' in Fall 2023 at the University of Utah. This week-long program is designed to train the incoming graduate students and postdoctoral fellows to improve their teaching and lab instruction skills, learn and understand issues pertaining to equity, diversity and inclusivity in Mathematics, and get accustomed to the department culture | <i>Fall 2023</i> |
| Salt Lake City, Utah, USA | |
| University of Utah | Salt Lake City, Utah, USA |
| ○ Graduate Student Advisory Committee | <i>2020–2023</i> |

- 2022–2023: **Cochair.**
- 2021–2022: **Recruitment committee.**
Welcoming prospective graduate students and organizing meetings with faculty for them.
- 2020–2021: **Co-chair of the peer mentoring program.**
Pairing incoming graduate students with advanced graduate students.
- 2020–2021: **Retention, Promotion, Tenure and Hiring.**
Make recommendations to the Department concerning promotion, tenure and retention of faculty members, and organize hiring teas with job candidates.

University of Utah

Salt Lake City, Utah, USA

2020–2024

- *Student Chapter of the Association for Women in Mathematics*

- 2023–2024: **Conference committee cochair.**

- 2021: **Presenter.**

Giving a talk to high-school students.

- 2020–2021: **Co-chair of mentoring program.**

Pairing advanced undergraduate students with first-year graduate students.

- 2020: **Facilitator of the 'What is math day?'**

Activity with middle school kids.

- 2020: **K-12 Outreach**

Middle school precalculus virtual homework help.

University of Utah

Salt Lake City, Utah, USA

2021–2022

- *Directed Reading Program in Mathematics*

Organizer

- 2019–2021: **Graduate Student Mentor**, University of Utah Directed Reading Program in Mathematics.

Mentoring an undergraduate student for an independent reading projects.

- Mentee: Cameron Schmitter, Project: Category Theory

- Mentee: Kaden Richards, Project: Topology

- Mentee: Gracie Liu, Project: Chaos Theory

Reviewer

- zbMATH
- MathSciNet/AMS

Referee/Peer-review

Electronic Journal of Combinatorics, Illinois Journal of Mathematics, Journal of Algebraic Combinatorics, Special Matrices, Algebraic Combinatorics, Mathematica Scandinavica, Journal of Algebra and Applications.

Professional Memberships

- Association for Women in Mathematics
- American Mathematical Society