

Kesavan Mohana Sundaram | CV

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▪ [kesavan-ms.github.io](https://github.com/kesavan-ms)

▪ [arXiv](#)

📍 Office: 326 Avery Hall, University of Nebraska–Lincoln

Education

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| ◦ University of Nebraska–Lincoln
<i>PhD Candidate in Mathematics; Advisors: Eloísa Grifo and Jack Jeffries</i> | Lincoln, Nebraska
2023–Present |
| ◦ University of Nebraska–Lincoln
<i>M.S. in Mathematics</i> | Lincoln, Nebraska
2023–2025 |
| ◦ Indian Institute of Technology Madras
<i>M.Sc. in Mathematics</i> | Chennai, India
2021–2023 |
| ◦ Ramakrishna Mission Vivekananda College
<i>B.Sc. in Mathematics</i> | Chennai, India
2016–2019 |

Research Interests

I am interested in Commutative algebra and homological algebra, and their interactions with algebraic geometry. In particular: arithmetic rank, local cohomology, modules of finite length and finite projective dimension, and cohomological support varieties.

Publications and Preprints

Published papers

- 1 *The arithmetic rank of the residual intersections of a complete intersection ideal*, with Manav Batavia, Taylor Murray, and Vaibhav Pandey, *International Mathematics Research Notices* (2026), no. 10, rnag091. doi:10.1093/imrn/rnag091 | [arXiv:2510.17049](#).

Preprints

- 2 *Lifting systems for finite length modules*, with Benjamin Katz, Nawaj KC, Andrew J. Soto Levins, and Ryan Watson, 19 pp. [arXiv:2602.01440](#).
- 3 *Cohomological support varieties for monomial ideals*, with Kara Fagerstrom, Julianne Faur, Benjamin Katz, Stephen Stern, and Ryan Watson, 32 pp. [arXiv:2605.29103](#).
- 4 *The arithmetic rank of nullcones of classical invariant rings*, with Manav Batavia, and Aryaman Maithani, 17 pp. [arXiv:2608.29445](#).

Honors and Awards

- UNL Chancellor's Fellowship, 2023–2025.
- IIT Madras Merit Scholarship, 2022–2023.

Mentoring

- Led a directed reading project with an undergraduate student at UNL on *representation theory of finite groups*, Spring 2026.

Teaching

University of Nebraska–Lincoln

Instructor of record

- Math 103 – College Algebra and Trigonometry: Fall 2025
- Math 102 – Trigonometry: Fall 2024, Spring 2025

Teaching assistant

- Math 208 – Calculus III: Spring 2026, Fall 2026
- Math 106 – Calculus I: Fall 2023, Summer 2024
- Math 107 – Calculus II: Spring 2024

Talks

Invited talks

- *The arithmetic rank of residual intersections of a complete intersection ideal.* AMS Spring (04/2026)
Central Sectional Meeting, North Dakota State University, Fargo, North Dakota
- *The arithmetic rank of residual intersections of a complete intersection ideal.* Graduate (04/2026)
Student Seminar, University of Tennessee, Knoxville, Tennessee
- *The arithmetic rank of residual intersections of a complete intersection ideal.* IIT Madras (12/2025)
Mathematics Special Seminar, Chennai, India
- *Lifting systems for finite length modules.* Purdue Student Algebra Seminar, virtual (11/2025)
- *The arithmetic rank of residual intersections of a complete intersection ideal.* Colegio de (10/2025)
Matemáticos del Perú, virtual

Seminar talks

- *On the annihilators of local cohomology modules.* UNL Commutative Algebra Reading (08/2026)
Seminar
- *Vanishing theorems in local cohomology.* UNL Commutative Algebra Reading Seminar (07/2026)
- *Differential operators on polynomial rings.* UNL Graduate Student Seminar (03/2026)
- *Regularity of modules over a Koszul algebra.* UNL RTG Learning Seminar (03/2026)
- *A topological approach to compute the arithmetic rank.* UNL Commutative Algebra Reading (03/2026)
Seminar
- *An introduction to Čech cohomology.* UNL Cohomology Club (12/2025)
- *Algebras with a Straightening Law.* UNL Graduate Student Seminar (10/2025)
- *The arithmetic rank of residual intersections of a complete intersection ideal.* UNL Com- (10/2025)
mutative Algebra Seminar
- *The derived category of a DG algebra.* Virtual Commutative Algebra and Algebraic Geometry (10/2025)
Seminar
- *A stratification by F -pure threshold.* UNL Commutative Algebra Reading Seminar (09/2025)
- *Measuring singularities with Frobenius.* UNL Commutative Algebra Reading Seminar (07/2025)
- *Arithmetic rank and cohomological dimension in commutative algebra.* UNL Commutative (05/2025)
Algebra Reading Seminar
- *DG algebra resolutions.* UNL Graduate Student Seminar (03/2025)
- *Direct summand conjecture in mixed characteristic.* UNL Big CMinar (03/2025)
- *Kähler differentials.* Virtual Commutative Algebra and Algebraic Geometry Seminar (Fall 2024)
- *A Zariski–Nagata theorem for smooth $\mathbb{Z}$ -algebras.* UNL Commutative Algebra Reading (07/2024)
Seminar
- *An introduction to symbolic powers.* UNL Commutative Algebra Reading Seminar (06/2024)
- *Powers of ideals.* UNL Graduate Student Seminar (04/2024)
- *Adams operations in commutative algebra.* UNL Commutative Algebra Reading Seminar (02/2024)
- *An introduction to Schur polynomials.* UNL Graduate Student Seminar (09/2023)
- *An introduction to homological algebra.* IIT Madras Commutative Algebra Student Seminar (06/2023)

Service and Organization

- Co-organizer, UNL Directed Reading Program, 2025–Present.
- Co-organizer, UNL Summer Commutative Algebra Reading Seminar, Summers 2024, 2025, and 2026.
- Co-organizer, Virtual Commutative Algebra and Algebraic Geometry Seminar, 2024–2026.
- Co-organizer, UNL Commutative Algebra and Adjacent Book-club Session, Spring 2026.
- Co-organizer, UNL Cohomology Club, Fall 2025.
- Co-organizer, UNL Commutative Algebra Reading Seminar, Spring 2024.
- Co-organizer, IIT Madras Commutative Algebra Student Seminar, June–July 2023.
- Co-organizer, FORAYS 2023, a school and undergraduate-student outreach program at IIT Madras, February 2023.

Conferences and Programs Attended

- URiCA (Upcoming Researchers in Commutative Algebra), Lincoln, Nebraska (08/2026)
- Singularities in Commutative Algebra through Cohomological Methods, SLMATH, Berkeley, California (07/2026)
- Pan-American School in Commutative Algebra 2.0, CIMAT, Guanajuato, Mexico (05/2026)
- A Celebration of Golod's Mathematical Legacy, Coventry, United Kingdom (04/2026)
- AMS Spring Central Sectional Meeting, North Dakota State University, Fargo, North Dakota (04/2026)
- CA+, Ames, Iowa (03/2026)
- PL – Commutative Algebra and Modular Representation Theory, Chennai, India (12/2025)
- KUMUNU, Columbia, Missouri (10/2025)
- AMS Fall Central Sectional Meeting, St. Louis, Missouri (10/2025)
- Summer CAMP 2.0 (Commutative Algebra Market Preparedness), Lincoln, Nebraska (08/2025)
- Singularities in Algebra and Geometry, Guanajuato, Mexico (06/2025)
- An Introduction to Recent Trends in Commutative Algebra, Toronto, Canada (06/2025)
- URiCA (Upcoming Researchers in Commutative Algebra), Lincoln, Nebraska (05/2025)
- Rayfest, Lincoln, Nebraska (04/2025)
- Commutative Algebra in Mixed Characteristic, Lincoln, Nebraska (03/2025)
- AIS – Cohomology of Commutative Algebras, Chennai, India (12/2024)
- KUMUNU, Columbia, Missouri (09/2024)
- BRIDGES, Salt Lake City, Utah (07/2024)
- URiCA (Upcoming Researchers in Commutative Algebra), Lincoln, Nebraska (05/2024)
- Recent Developments in Commutative Algebra, MSRI/SLMATH, Berkeley, California (04/2024)
- TAGS: Syzygies over Texas, College Station, Texas (04/2024)
- Introductory Workshop: Commutative Algebra, MSRI/SLMATH, Berkeley, California (01/2024)
- Connections Workshop: Commutative Algebra, MSRI/SLMATH, Berkeley, California (01/2024)
- GEMS, Minneapolis, Minnesota (11/2023)
- AMS Sectional Meeting, Omaha, Nebraska (10/2023)
- KUMUNU, Columbia, Missouri (09/2023)
- BrianFest, Lincoln, Nebraska (08/2023)
- Summer CAMP (Commutative Algebra Market Preparedness), Lincoln, Nebraska (08/2023)