

Zachary Nason

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EDUCATION

B.S., Mathematics 2020
University of Kansas, Lawrence, KS

M.S., Mathematics 2023
University of Nebraska-Lincoln, Lincoln, NE

Ph.D., Mathematics Expected May 2026
University of Nebraska-Lincoln, Lincoln, NE
Advisor: Thomas Marley

POSITIONS HELD

Graduate Teaching Assistant August 2021 - Present
Mathematics Department, University of Nebraska-Lincoln

Research Training Group in the Mathematical Sciences (RTG) Graduate Trainee Fall 2024
Mathematics Department, University of Nebraska-Lincoln

AWARDS

Emeritus Faculty Fellowship - Lloyd Jackson Award 2025
This award is given by the UNL Mathematics Department to graduate students to recognize notable scholarship and to promote future mathematical research. This award is named after UNL emeritus professor Lloyd Jackson

Outstanding Qualifying Exam 2022
This award is given by the UNL Mathematics Department to two graduate students who have achieved the highest scores on the Ph.D. qualifying exams for that year.

PUBLICATIONS/PREPRINTS

- [1] Paulo Martins, Victor D. Mendoza Rubio, and Zachary Nason, *Finiteness of complete intersection dimensions of $R\text{Hom}$ and Ext modules*, Accessible at <https://arxiv.org/abs/2601.07811>, January 2026.
- [2] Zachary Nason, *Level inequalities for complexes*, Accessible at <https://arxiv.org/abs/2510.15230>.
Currently under review at Proceedings of the American Mathematical Society, October 2025.
- [3] ———, *Maximal Cohen-Macaulay DG-complexes*, Accessible at <https://arxiv.org/abs/2503.23117>.
Accepted in January 2026 at Journal of Pure and Applied Algebra, April 2025.

TALKS AND PRESENTATIONS

NON-UNL PRESENTATIONS

- 2. **Level Inequalities for Complexes** (50 min) January 30, 2026
Syracuse University, Algebra Seminar

1. **Maximal Cohen-Macaulay DG-Complexes and a Derived Improved New Intersection Theorem** (20 min) March 29, 2025
University of Kansas, AMS Spring Central Sectional 2025
Special Session on Topics in Commutative Algebra

- Invited to give seminar presentations at University of Texas-Rio Grande and Texas Tech University in Spring 2026

UNL PRESENTATIONS

10. **Level Inequalities for Complexes** (50 min) December 3, 2025
University of Nebraska-Lincoln, Commutative Algebra Seminar
9. **Journeying towards Jensen's Theorem** (3 talks, 50 min each) July 21, 23, and 25, 2025
University of Nebraska-Lincoln, Summer Commutative Algebra Reading Seminar
8. **Maximal Cohen-Macaulay DG-Modules** (50 min) November 20, 2024
University of Nebraska-Lincoln, Commutative Algebra Seminar
7. **Maximal Cohen-Macaulay Complexes and an Extension to Differential Graded Rings** (50 min) September 25, 2024
University of Nebraska-Lincoln, Commutative Algebra Reading Seminar
6. **Constructing the Derived Category** (3 talks, 50 min each) July 29, 31, and August 2, 2024
University of Nebraska-Lincoln, Summer Commutative Algebra Reading Seminar
5. **Cohen-Macaulay Differential Graded Algebras** (50 min) May 1, 2024
University of Nebraska-Lincoln, Commutative Algebra Reading Seminar
4. **Gorenstein Differential Graded Algebras** (50 min) October 19, 2023
University of Nebraska-Lincoln, Commutative Algebra Reading Seminar
3. **Characterizing Gorenstein Local Rings Using the Frobenius Map** (50 min) April 19, 2023
University of Nebraska-Lincoln, Commutative Algebra Reading Seminar
2. **Symbolic Powers and Monomial Ideals** (50 min) November 16, 2022
University of Nebraska-Lincoln, Commutative Algebra Reading Seminar
1. **A Counterexample Concerning the Existence of Height One Prime Ideals in the Intersection of Height Two Prime Ideals** (50 min) February 9, 2022
University of Nebraska-Lincoln, Commutative Algebra Reading Seminar

CONFERENCES ATTENDED

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- KUMUNU October 2025
University of Missouri
 - AMS Fall 2025 Southeastern Sectional Meeting October 2025
Tulane University
 - Summer CAMP August 2025
University of Nebraska-Lincoln
 - Modules and Rings: Recent Developments in Commutative Algebra June 2025
University of Genova
 - URiCA May 2025
University of Nebraska-Lincoln

- RayFest
University of Nebraska-Lincoln April 2025
- AMS Spring 2025 Central Sectional Meeting
University of Kansas March 2025
- Commutative Algebra in Mixed Characteristic
University of Nebraska-Lincoln March 2025
- CA+ 2025
Iowa State University March 2025
- KUMUNU
University of Missouri September 2024
- URiCA
University of Nebraska-Lincoln May 2024
- KUMUNU
University of Missouri October 2023
- AMS Fall 2023 Central Sectional Meeting
Creighton University September 2023
- BrianFest
University of Nebraska-Lincoln August 2023
- URiCA
University of Nebraska-Lincoln May 2023
- Morgantown Algebra Days
West Virginia University April 2023
- Math 125
University of Nebraska-Lincoln April 2023
- KUMUNU
University of Nebraska-Lincoln October 2022

TEACHING

- Recitation Instructor** Spring 2026 (2 sections)
MATH 221: *Differential Equations*
- Instructor of Record** Fall 2025
MATH 103: *College Algebra and Trigonometry*
- Instructor of Record** Spring 2025
MATH 107WHT: *Calculus II - William H. Thompson Scholars Section*
- Instructor of Record** Summer 2024
MATH 208: *Calculus III*
- Instructor of Record** Spring 2024
MATH 104: *Applied Calculus*
- Instructor of Record** Fall 2023
MATH 103: *College Algebra and Trigonometry*
- Grading Assignment** Fall 2023
MATH 825: *Mathematical Analysis I*

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| Instructor of Record MATH 107: <i>Calculus II</i> | Summer 2023 |
| Algebra Qualifying Exam Review Session Organizer Organized and led the review session for UNL's algebra qualifying exam. | Summer 2023 |
| Recitation Instructor MATH 208: <i>Calculus III</i> | Spring 2023 (3 sections) |
| Instructor of Record MATH 101: <i>College Algebra</i> | Fall 2022 |
| Recitation Instructor MATH 107: <i>Calculus II</i> | Spring 2022 (2 sections), Summer 2022 (1 section) |
| Recitation Instructor MATH 106: <i>Calculus I</i> | Fall 2021 |
| Tutoring Drop-in math tutoring center for UNL first-year undergraduates. Tutored for two hours per week, one semester per year. | Fall 2021-Present |

SERVICE

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| Commutative Algebra Reading Seminar Co-Organizer <i>University of Nebraska-Lincoln</i> Organized and led a weekly graduate student seminar in commutative algebra along with two other graduate students. | 2025-Present |
| UNL DRP Mentor <i>University of Nebraska-Lincoln</i> Mentored an advanced undergraduate student in basic commutative algebra and planar algebraic geometry, with the eventual goal of proving Bezout's Theorem for projective curves in projective 2-space | 2024-2025 |
| UNL Graduate Mentor <i>University of Nebraska-Lincoln</i> Mentored a beginning mathematics graduate student during his first year of graduate school. Advised and helped the first-year graduate students with navigating academic life and with adjusting to Lincoln. | 2023-2024 |
| UNL Math Day Volunteer <i>University of Nebraska-Lincoln</i> The mathematics department at the University of Nebraska-Lincoln holds an annual math day for high school students in Nebraska. Students compete in a math bowl and participate in mathematical activities and puzzle-solving. | 2021-Present |

COMPUTER SKILLS

Languages: Java, Python, C++
 Software: L^AT_EX, Macaulay2, MATLAB, Microsoft Office, Google Workspace