

# Shahriyar (Shah) Roshan Zamir

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## EDUCATION

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<b>Mathematics Doctoral Candidate</b> University of Nebraska Lincoln (UNL)	August 2019 - present
<b>M.A. Pure Mathematics</b> University of Nebraska Lincoln	May 2021
<b>M.S. Applied and Computational Mathematics Graduate Minor in Liberal Studies</b> University of Minnesota Duluth (UMD) Duluth, MN, USA	August 2017 - May 2019
<b>B.S. Pure Mathematics</b> Georgia Gwinnett College Lawrenceville, GA, USA	August 2014 - May 2017
<b>Rochester Institute of Technology - Dubai Campus (Freshman year)</b> Dubai, United Arab Emirates	August 2013 - May 2014

## RESEARCH

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### Interests

- Commutative Algebra, Computational Algebra, Algebraic Geometry, Representation Theory, Finite Group Theory.

### Publication

- “*An Isomorphism Theorem for Arithmetic Complexes*”, Submitted.  
(with Luca Fiorindo, Ethan Reed, Hongmiao Yu.)
- “*Axial Constants and Sectional Regularity of Homogeneous Ideals*”  
(With M. DeBellevue, A. Lebovitz, Y.Li, M. Lotfi, S. Mohite, X. Pan, M.S. Pathak, A. Secoleanu, S.X Zhang.)  
*Proc. Amer. Math. Soc.* 151 (2023), no. 4, 1363 - 1378
- “*Subgroups of Groups of Units Modulo  $n$* ”  
(with Joe. Gallian.)  
Mathematics Magazine, October 2022.  
[Link to article.](#)
- “*On Uniform and Non-Uniform Magic Cubes*”  
In process of revision and resubmission for the *Australian Journal of Combinatorics*.

### Master’s Thesis

- Title: “*Subgroups of Groups of Units Modulo  $n$* ”  
[Link to Master’s Thesis](#)  
 I identified and gave a full classification of some new families of subgroups of groups of units mod  $n$ .

## RESEARCH PRESENTATIONS

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- “*Alexander-Hirschowitz theorem in the weighted projective space.*” May 2024  
 invited talk: AMS sectional-San Francisco
- “*Interpolation in the Weighted Projective Space*” December 2023  
 invited talk: Canadian Mathematical Society Winter Meeting-Montreal
- Poster Presented: “*Interpolation in the Weighted Projective Space*” May-November 2023  
 MSRI summer school in Commutative Algebra-Notre Dame, BrianFest, KUMUNU,  
 Western Algebraic Geometry Symposium (WAGS),
- Presented: “*Hilbert function of the defining ideal of orbits of  $D_6$  acting on  $\mathbb{P}^2$* ” October 2022  
 Commutative Algebra Reading Seminar (CARS)-UNL
- Presented: “*A simplified proof of Nagata’s Counter Example to Hilbert’s 14th Problem*” April 2022  
*Commutative Algebra Regional Expository Seminar - Online*  
[Link to talk’s recording](#)
- Presented: “*Nagata’s theorem on the ring of invariants*” March 2022  
 Second Comprehensive Exam - UNL  
 Successfully passed and qualified as a Ph.D. candidate.
- Presented: “*Hilbert’s Fourteenth’s Problem and Geometric Invariant Theory*” November 2021  
*Commutative Algebra Regional Expository Seminar - Online*  
[Link to talk’s recording](#)
- Presented: “*Geometric Invariant Theory-An Introduction*” October/November 2021  
 Commutative Algebra Reading Seminar - UNL  
 In a series of two talks I gave an introduction to Geometric Invariant Theory.
- Presented: “*Twisted Mathematics: Subtle Microaggressions in 21st Century Math Movies*” April 2019  
 GRAD Talk Series-University of Minnesota Duluth
- Presented: “*Subgroups of Groups of Units Modulo  $n$* ” January 2019  
 MAA General Session on Algebra - Joint Mathematics Meetings, Baltimore, MD
- Presented: “*Subgroups of Groups of Units Modulo  $n$* ” October 2018  
 MAA North Central Section Meeting - Southwest Minnesota State University
- Presented: “*Algebraic Structure of Labeled Graphs Joined by  $j$  Edges*” April 2017  
 Kappa Mu Epsilon National Convention - Evangel University, Springfield, MO

- Presented: “*Poster: Algebraic Structure of Labeled Graphs Joined by  $j$  Edges*” January 2017  
MAA Undergraduate Poster Session - Joint Mathematics Meetings, Atlanta, GA
- Presented: “*Normal Magic Cubes and Euler Cubes*” October 2015  
Kennesaw Mountain Undergraduate Mathematics Conference, Kennesaw, GA

## AWARDS AND HONORS

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- Emeritus Faculty Fellowships, Bill Leavitt Award Fall 2023
- Ben Carse Nolting Award Fall 2021  
“For efforts to create a department culture and climate that actively advances diversity, equity and inclusion in tangible and sustainable ways.”
- Parents’ Recognition Award - UNL Fall 2019
- Outstanding Graduate Teaching Assistant Award - UMD Spring 2019
- Graduate Student Service Award - UMD Spring 2019  
For numerous contributions to UMD math department’s graduate community and representing math grad students at departmental meetings.
- Bulldog Award - UMD Spring 2019  
For serving in co-curricular activities “ where their exemplary service and leadership qualities has positively affected the University community.”
- Recipient of Certificate: Thank a Teacher Project - UMD Spring 2019  
Presented by: Center For Educational Innovation - Nominated anonymously by students for “outstanding teaching and dedication to helping students learn.”
- UMD Mathematics and Statistics Department Summer Research Fellowship Summer 2018
- Georgia Gwinnett College Graduation Honor: Cum Laude
- Georgia Gwinnett College : President’s List Spring 2016
- Georgia Gwinnett College : Dean’s Honors List Fall/Spring 2015

## PROFESSIONAL ACTIVITY

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- Recent Developments in Commutative Algebra (MSRI), April 2024 April 2024
- Introductory Workshop in Commutative Algebra (MSRI) January 2024
- PRAGMATIC-Catania,Italy Summer 2023  
Promotion of Research in Algebraic Geometry for MAThematicians in Isolated Centres

- MSRI summer school in Commutative Algebra and Algebraic Geometry  
University of Notre Dame Summer 2023
- Referee for MAA's Mathematics Magazine Fall 2023-Present
- Pan-American School in Commutative Algebra, Guanajuato, Mexico. Summer 2022
- Organizer: Commutative Algebra Regional Expository Seminar-CARES  
*Link to Website* Spring 2022-Present
- PolyMath Jr. REU Graduate Student Mentor (*Link to Website*)  
Mentored 20 undergraduate students on research in commutative algebra. Summer 2021
- Directed Reading Program Mentor - UNL  
*Link to Programs Website* Spring 2020
- Assistant Latex Editor - 10th edition of Contemporary Abstract Algebra  
I helped Dr. Joe Gallian implement changes in the 10-th edition  
of his book Contemporary Abstract Algebra, a classic in undergraduate abstract algebra. Summer 2020
- Documentary Premiere: "*There Will Be An Answer*" (producer/co-director)  
Joint Mathematics Meetings, Denver, CO January 2020  
*Link to documentary*
- Site Coordinator at UNL - Triage Judge Spring 2020/2021  
Mathematical Contest in Modeling (MCM)/The Interdisciplinary Contest in Modeling (ICM)  
*Link to ICM/MCM website*
- Triage Judge-MCM/ICM Spring 2018/2019/2022
- Member of American Mathematical Association October 2017-present
- Member of Kappa Mu Epsilon - National Mathematics Honors Society June 2015-present

## TEACHING EXPERIENCE

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\* Denotes I taught the course as the *instructor of record* with full course responsibilities.

**Graduate Teaching Assistant - University of Nebraska Lincoln** September 2019 - Present

- **Geometry Matters** Fall 2023  
A geometry class for future elementary school teachers.
- **Associate Convener-Calculus II** Spring 2023  
Associate Convener duties: hold weekly meetings for all other GTAs,

observe and give teaching/classroom feedback to other GTAs,  
serve as a liaison between instructors and GTAs.

- **Differential Equations Recitation** Fall 2022
- **Associate Convener-College Algebra\*** Fall 2021-Spring 2022  
Associate Convener duties: writing the syllabus, parts of the course policy,  
quizzes/exams/rubrics for all 11 sections/400 students enrolled in the course.  
Observing and providing constructive pedagogical feedback to instructors.
- **College Algebra\* (*Thompson Scholars*)** Spring 2021  
Chosen by the department to teach a section dedicated to  
minority/first generation college students in the Thompson's Scholars program.
- **College Algebra\*** Fall 2020
- **Calculus III Recitation** Spring 2020
- **Calculus I Recitation** Fall 2019

#### **Upward Bound (UB) Program (*Link to UB's Website.*)**

- **ACT Prep Boot Camp for UB at University of Wisconsin-Superior\*** December 2020-March 2021  
An online course focused on ACT Mathematics/Science prep through active learning.
- **University of Wisconsin-Superior (UWS)\*** June - July 2020/2019  
Taught a variety of topics, through active learning, during three and a half hour sessions  
including: ACT prep, introductory combinatorics, Algebra II,  
basic logic, Pre-Calculus and Probability.
- **College of St. Scholastica\*** June 2020/2019  
Class time ran for three hours, topics similar to UWS.

#### **Graduate Teaching Assistant - University of Minnesota Duluth** August 2017 - May 2019

- **Calculus I Recitation** Spring 2019
- **Calculus II Recitation** Fall 2018
- **Math 103 - Pre-Algebra\*** Spring 2018
- **Discrete Math** Spring 2018  
Helped students, 30 total, with proof writing in an active learning format.  
Occasionally prepared worksheets and lectured for the class.

- **Securian Math Lab** Spring 2018
- **Calculus I Recitation** Fall 2017
- **Full time Mathematics Tutor - Gwinnett Technical College** January 2016 - July 2017
- **Volunteer Tutoring - RIT Dubai Tutoring Center** August 2013 - June 2014

## SERVICE

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- Treasurer, American Mathematical Society Student Chapter at UNL Fall 2022-Spring 2023
- Organizer: Upcoming Researchers in Commutative Algebra (URiCA aka KUMUNUjr) Spring 2023
- Presented: “REUs, What, Why and How” December 2022  
Undergraduate Math Club-UNL
- Nebraska Conference for Undergraduate Women in Mathematics Fall 2021/2022  
Organizing Committee Member, *Link to Conference’s Website.*
- Mentor to a first year mathematics graduate student at UNL 2021-2022, 2023-2024
- Presented: “*Subgroups of Groups of Units Modulo  $n$* ” November 2020  
Undergraduate Math Club - UNL  
Aimed at familiarizing undergraduate math majors with mathematics research.
- Presented: “*Workshop: Group Theory in Action*” November 2018  
Sonya Kovalevsky Day - College of St. Scholastica, Duluth, MN  
Sonya Kovalevsky Day is aimed at encouraging female high school students to pursue Math.
- Volunteer Judge January 2018  
Undergraduate Poster Session - Joint Mathematics Meetings, San Diego, CA
- Graduate Programs Committee - Elected Student Representative August 2018 - May 2019  
University of Minnesota-Duluth
- Graduate Student Representative to the Mathematics and Statistics Department August 2017 - May 2019  
University of Minnesota Duluth
- Invited Panelist - Sonya Kovalevsky Day November 2017
- President of Kappa Mu Epsilon National Mathematics Honors Society June 2015 - May 2017  
GA Zeta Chapter at Georgia Gwinnett College
- Vice President - Georgia Gwinnett College Math Club August 2015 - May 2017