ALLISON BEEMER

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Department of Mathematics ◇ University of Wisconsin-Eau Claire

RESEARCH INTERESTS

Error-correcting codes, secure and authentic communication, information privacy, graph-based codes and decoding algorithms, and applied discrete mathematics.

EDUCATION

University of Nebraska — Lincoln (UNL) *May 2018*
Lincoln, NE
Ph.D. in Mathematics
Minor in Electrical Engineering[†]
Advisor: Dr. Christine A. Kelley
Dissertation: *Design and Analysis of Graph-based Codes using Algebraic Lifts and Decoding Networks*

University of Nebraska — Lincoln *December 2015*
Lincoln, NE
M.S. in Mathematics

Whitman College *May 2012*
Walla Walla, WA
B.A. in Mathematics
Minor in French Language & Literature
Phi Beta Kappa, *magna cum laude*
Budapest Semesters in Mathematics (Spring 2011)

POSITIONS HELD

Assistant Professor *June 2020 -*
Eau Claire, WI
University of Wisconsin-Eau Claire (UWEC)
Department of Mathematics

Post Doctoral Research Associate *May 2019 - May 2020*
Newark, NJ
New Jersey Institute of Technology
Department of Electrical & Computer Engineering
Funded by the U.S. Army Research Laboratory

[†]Five courses at the graduate level.

Post-Doctoral Research Associate *May 2018 - May 2019*
Tempe, AZ
Arizona State University
School of Electrical, Computer and Energy Engineering
Funded by the U.S. Army Research Laboratory

GRANTS, HONORS, AND AWARDS

The Visiting Minority Scholars + Artists Program Grant *2023*
Internal grant awarded to bring a keynote speaker to campus for Sonia Kovalevsky Day in October 2023. Provided funding for speaker travel and honorarium ($1200).

Workshops + Special Projects Travel Award *2023*
Internal award to support international travel to the Society for Industrial and Applied Mathematics Conference on Applied Algebraic Geometry 2023 in order to meet with collaborators and give an invited talk ($1225).

Emerging Mentor in Research, Scholarship and Creative Activity Award *2023*
For an outstanding mentor who has demonstrated excellence in mentoring students in research and/or creative activity at UW-Eau Claire for 5 years or fewer. Nominations are solicited from students and alumni via an annual survey.

The Visiting Minority Scholars + Artists Program Grant *2023*
Internal grant awarded to bring a keynote speaker to campus for Sonia Kovalevsky Day in March 2023. Provided funding for speaker travel and honorarium ($1200).

UWEC 17th Annual Celebration of Scholarship *2022*
An annual celebration hosted by the UWEC Office of Research and Sponsored Programs highlighting recent successes in bringing scholarly work to publication or performance. Nominated to participate by department chair.

NSF CISE Collaborative Research Medium Award *2021-2025*
Co-PIs J. Kliewer and O. Kosut, "Do You Trust Me? Practical Approaches and Fundamental Limits for Keyless Authentication," ($300,000 UWEC; $1.2 million collaborative).

Emerging Mentor in Research, Scholarship and Creative Activity Award Finalist *2022*
Nominations are made by UWEC students and alumni, and finalists are selected by an interdisciplinary faculty committee. Each finalist is invited to submit materials for award recipient selection. Declined to submit materials for 2022 award.

Summer Research Experience for Undergraduates *2021*
Summer REU with UWEC student A. Liu funded by UWEC Student Blugold Commitment Differential Tuition, "Spear and Shield: Coding to Thwart Adversarial Aggression," ($5290).

MAA Project NExT (New Experiences in Teaching) Fellow *2020*
Professional development program for recent Ph.D.s in the mathematical sciences. Selected as a member of the Brown '20 cohort.

G.C. Young and W.H. Young Award ($1000) *2016*
Awarded annually to one or two UNL graduate students in mathematics for excellence in research.

GAANN Traineeship *AY 2014 - 2015*
Funded jointly by UNL and the U.S. Department of Education, providing a one-semester teaching release, as well as research and travel funding.

JOURNAL PUBLICATIONS

6. S. Habib, A. Beemer, J. Kliewer. RELDEC: reinforcement learning-based decoding of moderate length LDPC codes. *IEEE Transactions on Communications*, 2023.
5. A. Beemer, A.B. Kılıç, A. Ravagnani. Network decoding. *IEEE Transactions on Information Theory*, vol. 69, no. 6, pp. 3708-3730, 2023.
4. E. Graves, A. Beemer, J. Kliewer, O. Kosut, P. Yu. Keyless authentication for AWGN channels. *IEEE Transactions on Information Theory*, vol. 69, no. 1, pp. 496-519, 2022.
3. S. Habib, A. Beemer, J. Kliewer. Belief propagation decoding of short graph-based channel codes via reinforcement learning. *IEEE Journal on Selected Areas in Information Theory*, vol. 2, no. 2, pp. 627-640, 2021.
2. E. McMillon, A. Beemer, C.A. Kelley. Extremal absorbing sets in low-density parity-check codes. *Advances in Mathematics of Communications*, vol. 17, no. 2, pp. 465-483, 2021.
1. A. Beemer, K. Haymaker, C.A. Kelley. Absorbing sets of codes from finite geometries. *Cryptography and Communications*, vol. 11, no. 5, pp. 1115-1131, 2019.

CONFERENCE PROCEEDINGS PUBLICATIONS

The following publications are refereed unless noted with a †.

16. A. Beemer, A.B. Kılıç, A. Ravagnani. Network decoding against restricted adversaries. To appear in *Proceedings of the 25th Int'l Symposium on Mathematical Theory of Networks and Systems (MTNS)*. Bayreuth, Germany, September 2022.
15. A. Beemer, R. Kshirsagar, G.L. Matthews. Graph-based codes for hierarchical recovery. *Proceedings of the IEEE Int'l Symposium on Inf. Theory (ISIT)*, pp. 1554-1559. Espoo, Finland, June 2022.

†14. S. Habib, A. Beemer, J. Kliewer. Decoding of moderate length LDPC codes via learned clustered check node scheduling. *Proceedings of the 17th Int'l Symposium on Wireless Communication Systems (ISWCS)*, pp. 1-6. Virtual, September 2021. Invited.

13. S. Habib, A. Beemer, J. Kliewer. Learning to decode: reinforcement learning for decoding of sparse graph-based channel codes. *Advances in Neural Information Processing Systems (NeurIPS) 33*, 2020.

†12. A. Beemer, E. Graves, J. Kliewer, O. Kosut, P. Yu. Authentication and partial message correction over adversarial multiple-access channels. *Proceedings of the IEEE Int'l Workshop on Privacy and Security for Inf. Systems (WPS)*, pp. 1-6. Virtual, July 2020. Invited.

11. A. Beemer, E. Graves, J. Kliewer, O. Kosut, P. Yu. Authentication with mildly myopic adversaries. *Proceedings of the IEEE Int'l Symposium on Inf. Theory (ISIT)*, pp. 984-989. Virtual, June 2020.

10. E. McMillon, A. Beemer, C.A. Kelley. Analysis of absorbing sets using cosets and syndromes. *Proceedings of the IEEE Int'l Symposium on Inf. Theory (ISIT)*, pp. 367-372. June 2020.

9. S. Habib, A. Beemer, J. Kliewer. Learned scheduling of LDPC decoders based on multi-armed bandits. *Proceedings of the IEEE Int'l Symposium on Inf. Theory (ISIT)*, pp. 2789-2794. Virtual, June 2020.

8. E. Graves, A. Beemer. Modular design to transform codes for the wiretap channel of type I into codes for the wiretap channel of type II. *Proceedings of the IEEE Inf. Theory Workshop (ITW)*. Visby, Gotland, Sweden, August 2019.

7. A. Beemer, O. Kosut, J. Kliewer, E. Graves, P. Yu. Structured coding for authentication in the presence of a malicious adversary. *Proceedings of the IEEE Int'l Symposium on Inf. Theory (ISIT)*, pp. 617-621. Paris, France, July 2019.

†6. A. Beemer, O. Kosut, J. Kliewer, E. Graves, P. Yu. Authentication against a myopic adversary. *Proceedings of the IEEE Conference on Communications and Network Security (CNS)*, pp. 1-5. Washington, D.C., June 2019. Invited.

5. A. Beemer, R. Coatney, V. Guruswami, H.H. López, F. Piñero. Explicit optimal-length locally repairable codes of distance 5. *Proceedings of the 56th Annual Allerton Conference on Communication, Control, and Computing*, pp. 800-804. Monticello, IL, October 2018.

4. A. Beemer, S. Habib, C.A. Kelley, J. Kliewer. A generalized algebraic approach to optimizing SC-LDPC codes. *Proceedings of the 55th Annual Allerton Conference on Communication, Control, and Computing*, pp. 672-679. Monticello, IL, October 2017.

3. A. Beemer, C.A. Kelley. Multidimensional decoding networks for trapping set analysis. *Lecture Notes in Computer Science 10495*, Springer, pp. 11-20. Estonia, August 2017.

2. A. Beemer, C. Mayer, C.A. Kelley. Erasure correction and locality of hypergraph codes. *Lecture Notes in Computer Science 10495*, Springer, pp. 21-29. Estonia, August 2017.

1. A. Beemer, C.A. Kelley. Avoiding trapping sets in SC-LDPC codes under windowed decoding. *Proceedings of the IEEE Int'l Symposium on Inf. Theory and its Applications (ISITA)*, pp. 206-210. Monterey, CA, October 2016.

ACADEMIC VISITS

- Invited researcher at the U.S. Army Research Laboratory, Adelphi, Maryland, May - August 2018 and 2019.
- Invited academic guest to the Institute of Mathematics, University of Zürich, Switzerland, March - April 2017.

TALKS AND POSTERS

Invited and Conference Talks

Invited talks marked with a ⋆.

⋆37. AMS Spring Central Sectional Meeting, "Decoding Community Structure in Graphs," (20 minutes), Special Session on Algebraic methods in graph theory and applications, University of Wisconsin-Milwaukee, April 2024.

⋆36. AMS Spring Central Sectional Meeting, "Authenticated partial correction: capacity and coding," (20 minutes), Special Session on Mathematical aspects of cryptography and cybersecurity, University of Wisconsin-Milwaukee, April 2024.

⋆35. AMS Spring Eastern Sectional Meeting, "Authenticated partial correction: capacity and coding," (20 minutes), Special Session on Tensor Algebra & Networks, Howard University, April 2024.

⋆34. Joint Mathematics Meetings, "Authenticated Partial Correction over Adversarial MACs," (20 minutes), AMS Special Session on Advances in Coding Theory, San Francisco, CA, January 2024.

⋆33. Society for Industrial and Applied Mathematics (SIAM) Texas-Louisiana Sectional Meeting, "Transforming Adversarial MACs to Erasure Channels for Partial Correction" (20 minutes), Lafayette, LA, November 2023.

⋆32. SIAM Conference on Applied Algebraic Geometry, "Network Decoding, Part II" (20 minutes), Eindhoven, The Netherlands, July 2023.

⋆31. Baylor University Algebra and Combinatorics Seminar, "Network Decoding for Restricted Adversaries," (50 minutes), virtual, January 2023.

⋆30. Algebraic Coding and Cryptography on the East coast Seminar Series (ACCESS), "Networks with Restricted Adversaries," (50 minutes), virtual, April 2022.

⋆29. Joint Mathematics Meetings, "One-shot Capacity in Networks with Restricted Adversaries," (20 minutes), AMS Special Session on Advances in Coding Theory, virtual (formerly in Seattle, WA), April 2022.

⋆28. St. Olaf Math Research Seminar, "Coding for Reliable Communication," (50 minutes), St. Olaf College, March 2022.

⋆27. Bi-State Math Colloquium at UW-Platteville, "Encoding for Reliable Communication," (50 minutes), virtual, November 2021.

⋆26. AMS Sectional Meeting, "Authenticated partial correction in adversarial networks," (20 minutes), Special Session on Coding, Storage, and Related Applications, virtual (formerly at Creighton Univ.), October 2021.

⋆25. Mathematical Congress of the Americas, "The Curious Case of the Diamond Network," (20 minutes), Special Session on Theory and Applications of Coding Theory, virtual (formerly in Buenos Aires, Argentina), July 2021.

⋆24. Iowa State University Discrete Math Seminar, "When cut-sets don't cut it: bounds on adversarial network capacity," (50 minutes), virtual, April 2021.

⋆23. University of Nebraska – Lincoln Math Club, "Coding theory: shielding data from corruption," (50 minutes), virtual, March 2021.

⋆22. AMS Sectional Meeting, "Throwing out the bathwater: authentication over multiple-access channels," (20 minutes), Special Session on Coding Theory, Cryptography, and Number Theory, virtual (formerly at University of Tennessee at Chattanooga), October 2020.

21. IEEE International Workshop on Privacy and Security for Information Systems (WPS), "Authentication and partial message correction over adversarial multiple-access channels," (20 minutes), virtual, July 2020.

20. IEEE International Symposium on Information Theory (ISIT), "Authentication with mildly myopic adversaries," (20 minutes), virtual, June 2020.

⋆19. Joint Mathematics Meetings, "Longevity of user anonymity," (20 minutes), AMS-AWM Special Session on Mathematical and Computational Research in Data Science, Denver, CO, January 2020.

⋆18. Discrete Mathematics Seminar, "Authentication in adversarial environments: from theory to practice," (50 minutes), UNL, November 2019.

⋆17. Signal and Information Processing Seminar Series, "Authentication in the presence of a myopic adversary," (50 minutes), Rutgers University, New Brunswick, NJ, October 2019.

⋆16. Princeton University, "Authentication in the presence of a myopic adversary," (50 minutes), Princeton, NJ, October 2019.

15. IEEE Information Theory Workshop (ITW), "Transforming an arbitrary code for the wiretap channel of type I into a code for the wiretap channel of type II," (20 minutes), Visby, Gotland, Sweden, August 2019.

14. IEEE International Symposium on Information Theory (ISIT), "Structured coding for authentication in the presence of a malicious adversary," (20 minutes), Paris, France, July 2019.

⋆13. New Jersey Institute of Technology, "Structured coding for authentication in the presence of a malicious adversary," (20 minutes), Newark, NJ, January 2019.

⋆12. Joint Mathematics Meetings, "Coding to thwart adversarial interference," (20 minutes), AMS Special Session on Advances by Early Career Women in Discrete Mathematics, Baltimore, MD, January 2019.

11. The 56th Annual Allerton Conference on Communication, Control, and Computing, "Explicit optimal-length locally repairable codes of distance 5," (20 minutes), Allerton Park and Retreat Center, Monticello, IL, October 2018.

⋆10. AMS Sectional Meeting, "Permutations and the design of SC-LDPC codes," (20 minutes), Special Session on Algebraic Coding Theory and Applications, the Ohio State University, March 2018.

9. The 55th Annual Allerton Conference on Communication, Control, and Computing, "A generalized algebraic approach to optimizing SC-LDPC codes," (20 minutes), Allerton Park and Retreat Center, Monticello, IL, October 2017.

8. The 5th Int'l Castle Meeting on Coding Theory and Applications, "Multidimensional decoding networks for trapping set analysis," (20 minutes), Vihula Manor, Estonia, August 2017.

⋆7. University of Lund, "A Multidimensional Network Framework for Trapping Set Analysis," (30 minutes), Lund, Sweden, April 2017.

⋆6. IBM Research – Zürich, "Error Floor Analysis using Multidimensional Decoding Networks," (50 minutes), Zürich, Switzerland, April 2017.

⋆5. Seminar in Coding Theory and Cryptography, "A Multidimensional Network Framework for Trapping Set Analysis," (50 minutes), University of Zürich, March 2017.

4. The International Symposium on Information Theory and its Applications (ISITA), "Avoiding trapping sets in SC-LDPC codes under windowed decoding," (20 minutes), Monterey, CA, October 2016.

⋆3. AMS Sectional Meeting, "Trapping and Absorbing Sets in SC-LDPC Codes," (20 minutes), Special Session on Advances in Algebraic Coding Theory, Univ. of St. Thomas, October 2016.

2. Nebraska – SE South Dakota MAA Section Meeting, "Eliminating Trapping Sets in Spatially Coupled LDPC Codes," (15 minutes), Concordia University, April 2016.

1. MASS Fest at the Pennsylvania State University Summer REU, "Minimal Entropy of $\mathbb{Z}^2$ Actions," (30 minutes) with T. Morrison, S. Smith, and J.J. Zanazzi, PSU, August 2011.

Home Institution Talks

10. New Jersey Institute of Technology, "Authentication in the presence of a myopic adversary," (50 minutes), Newark, NJ, October 2019.

9. Discrete Math Seminar, "Absorbing Sets of Codes from Finite Geometries," (50 minutes), Arizona State University, October 2018.

8. Graduate Student Seminar, "'OMG you say the most random things!': why you don't, and why that's useful," (50 minutes), UNL, December 2017.

7. Discrete Mathematics Seminar, "Unraveling Harmful Substructures in Spatially-Coupled Codes," (50 minutes), UNL, October 2017.

6. Discrete Mathematics Seminar, "Identifying Trapping Sets of Graph-based Iterative Decoders," (50 minutes), UNL, April 2017.

5. Graduate Student Seminar, "Graph-based Decoding," (50 minutes), UNL, November 2016.
4. Discrete Mathematics Seminar, "Stopping Sets and Hypergraph Codes," (50 minutes), UNL, October 2015.
3. Discrete Mathematics Seminar, "Coding on Expander Graphs," (50 minutes), UNL, April 2015.
2. Groups, Semigroups, and Topology Seminar, "On Groups Whose Geodesic Growth is Polynomial," (50 minutes), UNL, September 2014.
1. Senior Project Presentation, "From Posets to Derangements: an Exploration of the Möbius Inversion Formula," (50 minutes), Whitman College, May 2012.

Posters

3. North American School of Information Theory, "Codes from Regular and Biregular Hypergraphs," Duke University, June 2016.
2. Whitman Undergraduate Conference, "Entropy of $\mathbb{Z}^2$ Actions," Whitman College, April 2012.
1. Nebraska Conference for Undergraduate Women in Mathematics (NCUWM), "Entropy of $\mathbb{Z}^2$ Actions," UNL, January 2012.

OTHER NOTABLE CONFERENCES AND WORKSHOPS

Women in Data Science and Mathematics
Research Collaboration Workshop July 2019
ICERM, Brown University *Providence, RI*
Selected participant for project *User Anonymity and Data Privacy*

Algebraic Coding Theory for Networks, Storage, and Security December 2018
Schloss Dagstuhl *Wadern, Germany*
Invited researcher; 49 participants

Early Career Research Workshop (ECRW) in
Coding Theory, Cryptography, and Number Theory June 2018
Clemson University *Clemson, SC*
Selected participant; NSF-supported workshop; one of 9 participants to receive funding

Coding Theory in the Time of Big Data August 2016
Schloss Dagstuhl *Wadern, Germany*
Invited researcher; 44 participants

TEACHING EXPERIENCE

Assistant Professor
University of Wisconsin-Eau Claire

· DS 710, Programming for Data Science (S24)
· Math 314, Discrete Mathematics (S24, S23, S22, F21, S21)
· Math 324, Linear Algebra (F23, F21)
· Math 111, A Short Course in Calculus (F23, S23)

· Math 109, Algebra for Calculus (F23)
· Math 215, Calculus II (F22, S22, S21, F20)
· Math 246, Elementary Statistics (F20)

Course Development
University of Wisconsin-Eau Claire

· Programming for Data Science (Summer 2020):
Contributed to a course redesign of DS 710 by developing Jupyter Notebooks to facilitate student practice with the Python programming language.

Instructor of Record
University of Nebraska – Lincoln

· Math 302, Math Modeling (Spring 2018)
· Math 300, Mathematics Matters (Fall 2017)
· Math 103, College Algebra and Trigonometry (Fall 2016)
· Math 101, College Algebra (Spring 2016, Fall 2015)
· Math 104, Applied Calculus (Summer 2014)

Course Development
University of Nebraska – Lincoln

· College Algebra and Trigonometry (Summer 2017, Summer 2016):
Rewrote significant portions of the course packets for the university's College Algebra and Trigonometry courses; wrote new WeBWorK problems and edited old problems to be used as online homework for Trigonometry courses.

Associate Course Convener
University of Nebraska – Lincoln

· Math 103, College Algebra and Trigonometry (Spring 2017, Fall 2016):
Oversaw 13 sections of the course in the fall semester, and 4 in the spring semester. Responsibilities included running pre-semester course meetings and weekly meetings throughout the semester, writing common quizzes, editing common exams, and making sure instructors had all materials necessary for effective instruction.

Teaching Assistant
University of Nebraska – Lincoln

· Nebraska Math & Sciences Summer Institutes 804P,
Problem Solving and Critical Thinking for the Elementary Classroom (Summer 2016):
A master's-level course for in-service elementary teachers. Responsibilities included assisting students during problem-solving sessions, and grading daily assignments and a final project.
· Math 106, Calculus 1 (Fall 2014; 2 sections)

Instructor of Record
University of Colorado at Boulder

· Math 1300, Calculus 1 (Fall 2013, Summer 2013)

Teaching Assistant
University of Colorado at Boulder

· Math 1310, Calculus, Stochastics, and Modeling (Spring 2014; 3 sections)
· Math 1300, Calculus I (Spring 2013; 3 sections)
· Math 1011, College Algebra (Fall 2012; 3 sections)

PEDAGOGICAL DEVELOPMENT

Teaching Academy 2 August 2022
University of Wisconsin-Eau Claire *Eau Claire, WI*

· A one-day workshop aimed at 2nd and 3rd year faculty. Topics included editing a previously-taught course and a refresher on campus resources available to support teaching and learning.

MAA MathFest August 2021
Virtual

· Brown '20 and Gold '21 Project NExT Fellows attended the conference and participated in breakout sessions and minicourses focused on professional development. Personal schedule included: *Alternatives to Exams and Grading*, *2. Adventures in Undergraduate Research*, *Best Practices in New Course Development/Open Educational Resources*, and *The Who, Why, and How of Undergraduate Research.*

Teaching Academy August 2020
University of Wisconsin-Eau Claire *Eau Claire, WI*

· A five-day orientation to teaching and learning on the UW-Eau Claire campus. Topics included best practices for remote instruction, inclusive pedagogy using Universal Design for Learning principles, formative and summative assessment, strategies for responding to microaggressions in the classroom, and campus-specific resources.

MAA Project NExT Workshop August 2020
Virtual

· A five-day virtual workshop for Project NExT Fellows in the Brown '20 and Silver '19 cohorts. Fellows participated in breakout sessions and minicourses focused on professional development. Personal schedule included: *Overcoming Math Anxiety in the Classroom*, *Creating a Vibrant & Inclusive Community*, *Teaching Using Tactile Visualization Techniques*, *Visualizing Multivariable Calculus using CalcPlot3D*, *Leading Math Circles*, *Active Learning with Active Calculus*, and *Teaching Introductory Statistics: Focus on Concepts and Data.*

Teaching & Learning Mathematics at the Post-Secondary Level AY 2015 - 2016
University of Nebraska – Lincoln *Lincoln, NE*

· This graduate-level course, offered by the UNL math department to facilitate pedagogical development, addressed day-to-day classroom concerns and sought to build the pedagogical background necessary for having informed conversations with educators and education researchers.

Implementing Inquiry-Oriented Curricula for Linear Algebra, Differential Equations, and Abstract Algebra January 2016
MAA Minicourse at the Joint Mathematics Meetings *Seattle, WA*

· The two-session minicourse focused on inquiry-oriented curricula for upper level undergraduate math courses. In particular, participants engaged in activities designed for inquiry-oriented courses in Linear Algebra, Differential Equations, and Abstract Algebra, and discussed ways in which an instructor might use the activities to facilitate productive student inquiry. Further discussion focused on effective teaching practices for implementing inquiry-oriented curricula more generally.

Humanistic Mathematics January 2015
MAA Minicourse at the Joint Mathematics Meetings *San Antonio, TX*

· The two-session minicourse highlighted the advantages of teaching mathematics from a humanistic perspective; that is, the advantages of placing emphasis on the way in which mathematics fits into a broader framework of human endeavor. Discussion ranged from the role of mathematics in a liberal arts education and how a humanistic approach may lead to deeper understanding for all students, to strategies for classroom implementation.

SELECTED SERVICE

UWEC Math Meet 2023-2024

· Volunteer at UWEC's annual Math Meet, a high school mathematics competition.

Joint Math Meetings Special Session Organizer January 2024
San Francisco, CA

· With Dr.s Hiram H. López and Rafael D'Oliveira, co-organizer of the 2024 JMM Special Session *Coding Theory for Modern Applications*. Responsibilities include collaborating on the session proposal and the list of invited speakers, communicating with invited speakers, and helping to facilitate the session.

UWEC Sonia Kovalevsky Day 2021-2023

A one-day event for middle and high school girls focused on exposing students to experiences and opportunities in STEM.

· Chair of organizing committee for event in October 2023.
· Co-chair of organizing committee with Dr. Carolyn Otto for event in March 2023.
· Member of organizing committee in March 2021 and March 2022.

Joint Math Meetings Special Session Organizer January 2023
Boston, MA

· With Dr.s Hiram H. López and Rafael D'Oliveira, co-organizer of the 2023 JMM Special Session *Coding Theory for Modern Applications*. Responsibilities include collaborating on the session proposal and the list of invited speakers, communicating with invited speakers, and helping to facilitate the session.

AWM Playing Cards Project Reviewer & Bio Contributor May 2020

· Volunteer referee for the Association for Women in Mathematics (AWM) Notable Women in Math playing cards project, and biography contributor. The project commemorates the 50th anniversary of the AWM.

Joint Math Meetings Special Session Organizer January 2020
Denver, CO

· With Ian F. Blake, Christine A. Kelley, and Felice Manganiello, co-organizer of the 2020 JMM Special Session *Coding Theory and Applications*. Responsibilities include collaborating on the session proposal and the list of invited speakers, communicating with invited speakers, and helping to facilitate the session.

NE Conference for Undergraduate Women in Mathematics Annually 2015 - 2018
University of Nebraska – Lincoln

· Volunteer at NCUWM, held annually by the UNL math department. The conference brings together undergraduate women from across the country to present undergraduate research, participate in networking events, and discuss graduate school and careers in mathematics.

Math Day Annually 2014 - 2017
University of Nebraska – Lincoln

· Volunteer at Math Day, a high school mathematics competition held annually by UNL. The event seeks to encourage interest in mathematics and math-based career paths among Nebraska high school students.

Panelist

· *Making the Most of Grad School* August 2017
Organized by UNL Dept. of Mathematics for incoming graduate students.

· *Landscapes Seminar Graduate Student Panel* January 2017
Organized by UNL Dept. of Mathematics for first-year graduate students.

· *Experienced Graduate Teaching Assistants (GTAs)* August 2016
Organized by UNL Dept. of Mathematics for incoming graduate students.

All Girls/All Math (AGAM) July 2017
University of Nebraska – Lincoln

· Taught a 2.5 hour mini-course on graph theory to AGAM participants. AGAM is a week-long summer camp run by UNL for girls in grades 10-12 that focuses on exposing high school girls to a variety of topics in mathematics, as well as to female professionals in the field.

MoSAIC Conference Local Organizing Committee September 2015 - November 2015
University of Nebraska – Lincoln

· "Mathematics of Science, Art, Industry, Culture," is a series of interdisciplinary conferences focused on showcasing the connections between mathematics and art. The conferences, which take place at colleges and universities, are funded by MSRI and implemented by the Bridges organization.

Introduction to Cryptology Workshop August 2015
Washington, D.C.

· Conducted a three-hour workshop on the history and applications of cryptology. The workshop was led jointly with another UNL graduate student, and took place during a UNL-run Intelligence Community Centers for Academic Excellence task-force style simulation for college students interested in joining the United States Intelligence Community.

AMS Student Chapter Treasurer October 2014 - October 2015
University of Nebraska – Lincoln

· Responsibilities included assisting with the preparation of an AMS funding request, organizing a Pi Day celebration, and co-organizing the annual AMS Student Chapter invited colloquium.

Departmental Diversity Committee September 2013 - May 2014
University of Colorado at Boulder

· Attended and participated in weekly meetings; assisted with the organization of "CHAT"s for graduate students – discussions focused on creating a welcoming environment for all students; attended the Field of Dreams Conference in Mesa, AZ, as a graduate representative for the department; assisted in editing a successful proposal for university funding of an educational workshop on nurturing departmental diversity; assisted with the organization of graduate student community-building events.

Referee for:

· Designs, Codes and Cryptography
· IEEE Transactions on Information Theory
· EURASIP Journal on Wireless Communications and Networking
· IEEE Global Communications Conference (GLOBECOM) 2022
· IEEE International Symposium on Information Theory (ISIT) 2019, 2020, 2021, 2022
· IEEE Journal on Selected Areas in Information Theory
· IEEE Information Theory Workshop 2021
· International Symposium on Topics in Coding 2021
· International Symposium on Wireless Communications Systems 2021
· IEEE Transactions on Communications
· IEEE International Workshop on Privacy and Security for Information Systems (WPS) 2020
· IEEE International Conference on Communications (ICC) 2019
· Workshop on Mathematics in Communications 2016