FALL **2022**

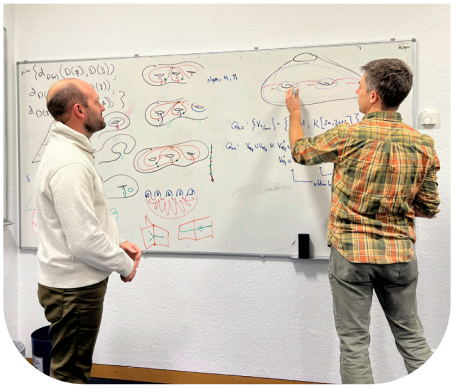
Math News

A PUBLICATION OF THE NEBRASKA DEPARTMENT OF MATHEMATICS

Greetings from Bonn

Simons Fellow pursues topology research at Max Planck Institute for Mathematics in Germany

Alex Zupan



As part of my faculty development fellowship during the 2022–23 academic year, I have had the wonderful opportunity to spend three months at the Max Planck Institute for Mathematics (MPIM) in Bonn, Germany. There are 81 Max Planck Institutes all over Germany (and five more elsewhere), but MPIM is unique in that it's the only one devoted entirely to pure mathematics.

The institute has a thriving guest program through which graduate students, postdocs, and faculty can apply to visit, for anywhere from a few weeks to several years. I applied to visit MPIM during the months of September, October, and November, and I couldn't have imagined a better or more productive way to spend my sabbatical so far.

Before the trip, however, there were a few logistical details to tackle, including how I would manage to convince my family to spend three months living abroad. Thankfully, my wife's employer graciously offered her a leave of absence, and the staff at Lincoln Public Schools were more than willing to work with us to provide instructional materials so that the kids could keep up with their studies. Finally, I was thrilled to learn that I had been selected as a Simons Fellow. The Simons Foundation offers a variety of distinctive opportunities for mathematicians and other scientists, including the Simons Fellowship program, which gives tenured faculty the resources to extend a half-year leave to a full-year leave (and even includes funding to support the travel of my family members).

But back to the mathematical aspects of the trip. MPIM is a terrific environment for carrying out research in low-dimensional topology. Professor Rob Schneidermann of CUNY was in residence as a prestigious Hirzebruch Chair, and I benefited from attending a mini-course led by Rob and MPIM director Peter Teichner. I presented my own work in the topology research

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{ VIEW FROM THE CHAIR }

Petronela Radu

Dear alumni and friends,

This summer I had the honor to start serving as the 16th chair in the history of the Department of Mathematics. I see this new role as an opportunity to give back to a wonderful department that has provided both a home and a solution to a "two-body problem."

My husband, Mikil Foss, and I are fortunate to be one of the many (over a dozen!) couples hired by the department, which has always recognized that many mathematicians love doing homework and discussing mathematics together, a concept that often leads to long-term partnerships. If you met your life partner in our graduate program and would like to share your story with me, or in a future newsletter, I invite you to email me at pradu@unl.edu.

The culture of our department encourages diversity (of which I can attest as an immigrant woman), supports faculty with young families, and promotes inclusiveness. Research efforts to recruit and retain a more diverse student body to STEM fields have been recognized by external funding—see Research Professor Wendy Smith's PRISMATIC conference grant and learn more about her successes on page 8.

This year we saw the retirements of faculty members Steve Cohn, Mohammad Rammaha, and Nathan Wakefield, who are up to new endeavors and enjoying their retirements (see pages 16 and 17). Staff member Tom Danaher accepted a new position on campus this fall, and Marilyn Johnson is preparing for her retirement in the spring. We are grateful to all of them for their many years of service, which have impacted students and faculty, and in the end, the larger community of Nebraska.

I want to recognize the honors earned by our staff this year. Tom Danaher, Rachelle Jensen, and Marilyn Johnson were all nominated for and awarded Applause Awards by the College of Arts and Sciences. The Applause program recognizes consistently outstanding performance and service.

The efforts and passion of our faculty transpire from the stories of many of our current students and alumni; you can see in our newsletter the rich paths these students and graduates have taken and the inspiring careers that they have built after earning undergraduate or graduate degrees from our department. Where are they now? NASA, Berkshire Hathaway, a fellow to the legislative branch in DC, integral to the founding of companies like Ocuvera and SumerSports, just to name a few.

I am excited to announce a new major for students who will join us in Fall 2023. A degree in Data Science was designed in collaboration with the School of Computing and the Department of Statistics. Learn about the huge potential of this new field on page 11, and spread the word to your community. Also, there are many ways to give back to the department; one of them is by making a donation to the Emeritus Faculty Fellowship Fund, which was started by Jim Lewis and has been instrumental in supporting many fellowships and awards for outstanding graduate students.

Let me end by expressing my gratitude to Tom Marley, who tirelessly led the department for six years, sailing through a pandemic, budget cuts, and other difficulties, while also gathering quite a few remarkable successes. Tom and the department's leadership and staff have been extremely generous with their time, in preparing me for this position. It proves one more time the wonderful community spirit that has inhabited our department and which is part of the good life of Nebraska.

MARK YOUR CALENDARS FOR A DEPARTMENT CELEBRATION: APRIL 28-29, 2023

CAREERS OUTSIDE ACADEMIA:
Where are they now?

Paula Egging, Ph.D. '22

Data Scientist at Bryan Health, Lincoln

WHAT I DO: I leverage data collected in the hospital to identify opportunities and solve critical challenges for the organization and improve patient care and experience. This could be anything from predicting patient deterioration to minimizing emergency room wait times to avoiding insurance claim denials. With projects that tackle some of Bryan's most complex challenges, I talk daily to a range of people, from executives to the IT department to clinical nurses on the floor.

MY IMPACT: Using math to understand the data allows us to tell the story of what is actually happening in the organization, which in turn allows us to improve patient care and experience. Helping to provide better patient care is the most meaningful part of the job for me, knowing that each patient is somebody's loved one who has a better chance of recovery because of our work.

MY ADVICE TO STUDENTS: While the hard skills, such as programming or learning all the hospital lingo, are nice, a lot of these can be learned on the job. The soft skills, such as how to think critically, lead a project, and communicate results, are just as important, if not more important, so one might look for creative ways to develop these skills in preparation for such a career.

MY FONDEST MEMORY OF UNL: Definitely intramural flag football! We were not great, but the Mathletes knew how to have fun despite the score!

Lucas Sabalka, B.S. '02

Chief Data and Analytics Officer at Ocuvera, Lincoln

WHAT I DO: I help customers measure reductions in their patients' fall rates from using the Ocuvera system. I also work to take the large amounts of data collected by and for Ocuvera and make it useful and easy to understand. I started as a computer vision specialist and transitioned into data and analytics.

MY IMPACT: Using the Ocuvera system saves lives. At site after site that I've analyzed, we see reductions in targeted fall rates. That means: fewer injuries and deaths, faster and better results for patients, happier patients, less stress on nurses, and lower healthcare costs for everyone.

MY ADVICE TO STUDENTS: Taking mathematics courses is good: Mathematics teaches problem solving—and learning how to think about solving a problem is useful in every field. Thinking about how to communicate concisely and clearly is also valuable; good communicators are needed in many fields. Getting some experience, either with independent projects or internships or class activities, will help you stand out and give you a good idea of what you would like and wouldn't like in a career.

MY FONDEST MEMORY OF UNL: The support and encouragement I received from the math department. I still have connections with friends I made there, among students, faculty, and staff. I chose to go to UNL over four other prestigious universities because of the people in the math department.

Ethan Romary B.S., '18

Financial Analyst at Berkshire Hathaway Homestate Co., Omaha

WHAT I DO: My job duties are three-fold. One portion of my job includes reporting financial/statistical data to state governments and rating bureaus. I also aid the accounting department with quarterly financial reporting. Lastly, I work closely with the CFO and other executives (and their respective departments) on projects/reports that aid them in their decision making.

MY IMPACT: One exciting and rewarding thing I do regularly—that I was not expecting—is how closely I work with our CFO and other executives and how the reports I provide them help them to make more informed decisions. For example, I have performed several cost-benefit analyses for the IT and Claims departments, and have been able to see how my work has helped them get projects approved, which in turn will benefit the business and provide those we insure with a better experience.

MY ADVICE TO STUDENTS: To pursue a similar career, I would recommend a strong background in ...

OUTSIDE ACADEMIA { PAGE 4 }

OUTSIDE ACADEMIA { FROM PAGE 3 }

... logic (if you're a mathematics major, you probably already have this one covered), and I would recommend skills in SQL and Excel, or any other data manipulation software. For my particular position, some finance and/or accounting background would be useful. With that being said, nearly everyone on my team has either a mathematics or data science background, and have learned the insurance portion on the job.

MY FONDEST MEMORY OF UNL: Sitting around a table in the commons of someone's dorm to study for Dr. Petronela Radu's Honors Calc 2 and 3 classes my freshman year—just tossing out ideas and giving/receiving feedback until everyone was confident that we had the right answer and everyone understood why. This is a tactic that I used all throughout undergraduate and graduate school—and still in my current position.

Laura White, Ph.D. '18

Aerospace Engineer at NASA Langley Research Center

WHAT I DO: I am currently serving in a deputy lead role for Commercial Supersonic Technology in the Aeronautics Systems Analysis Branch (ASAB) at NASA Langley Research Center. For this work, I lead a team of multidisciplinary engineers to quantify statistical uncertainty metrics for the supersonic experimental aircraft X-59 being built by Lockheed Martin that is set to have its first flight next year.

MY IMPACT: My theoretical mathematical research was in nonlocal equations, which focused on areas where discontinuities arise, such as the particles in the mixing of oil and water. This research was the focus of my dissertation. Since that work, my current focus has been trying to develop methodologies to statistically quantify uncertainties for complex systems. Uncertainty can lead to a huge impact on aerodynamic flights and have compounding effects that can lead to expensive failures. It's crucial for the future of aerospace to be able to understand, quantify, and visualize how uncertainties in experimental testing, modeling, and flight can occur throughout the design process to build effective, robust, and cost-efficient aircrafts. The art of mathematics comes into this work by helping create an efficient and mathematically sound way to quantify these uncertainties and defining the metrics, which will be used to gauge how well the design process has been implemented.

MY ADVICE TO STUDENTS: I strongly encourage looking into internships and taking a programming class, as these can be instrumental to your success at an industry or government job.

MY FONDEST MEMORY OF UNL: The wonderful community of intelligent and kind women I was surrounded by. STEM has a long way to go in terms of skewing the distribution of underrepresented communities, but the UNL mathematics graduate program was great at bringing in women. It is something I aspire to get to within my organization.

FROM FOOTBALL TO MATH AND BACK

American football teams are increasingly using modern statistical tools to give themselves an edge, utilizing mathematicians in the arena of football analytics. Eric Eager, vice president of research and development at SumerSports, a startup aimed at helping football teams optimize their decision-making processes, spent a week in Nebraska in October 2022, discussing his career of linking football and mathematics with students.

Eager earned his Ph.D. in mathematical biology from the University of Nebraska–Lincoln. He previously worked at Pro Football Focus, where he built an industry-leading analytics group. Before making the move to industry, Eager was a professor at the University of Wisconsin-La Crosse, publishing 25 papers in math, biology, and

the scholarship of teaching and learning.

"While at Pro Football Focus, I built simulation models to help teams predict player performances for their particular scheme and usage profiles," Eager said. "Later on, the NFL put RFID chips in the shoulder pads of players, and that tracking data is able to tell us player movement traits that we previously had to discern from event data. For example, how do linebackers balance the interplay between not biting on play action passes while still being able to stop the run? [Eager published a paper on this; see: go.unl.edu/eager-paper.] After years of building player evaluation tools to help teams, media members, and gamblers, I am excited to apply what I've learned to building the best teams the salary cap can buy."

Enhanced by mathematical approaches to understanding the game, the practice of football analytics has coincided with an increase in not only popularity for the game but also in gaming offering for fans, Eager said. Using these mathematical models, SumerSports aims to make NFL teams more efficient in their roster-building decisions.

Eager's talk was co-sponsored by the National Science Foundation's STEM CONNECT grant and the Simons Foundation.

Watch Eager's talk:
go.unl.edu/eager-talk

Learn more about SumerSports:
go.unl.edu/sumersports

AAAS SCIENCE & TECHNOLOGY POLICY FELLOW: Courtney Gibbons

Each year, the American Association for the Advancement of Science (AAAS) places fellows in the executive, judicial, and legislative branches of the federal government where they can use their STEM training to work on policy development and implementation. This year 300 fellows—scientists, mathematicians, and engineers with a wide array of expertise, from rare genetic diseases to energy resiliency—have been assigned to the three branches.

Hamilton College Associate Professor of Mathematics Courtney Gibbons was selected as one of only two Science and Technology Policy Legislative Branch Fellows funded by the AAAS this year. Gibbons earned her Ph.D. in mathematics in 2013 from the University of Nebraska–Lincoln.

She began her new role working with the Senate Homeland Security and Governmental Affairs Committee in September. Twenty-nine additional congressional fellows are funded through other societies.

Fellows learn about policymaking while directly applying their technical skills in service of the greater good. A legislative branch fellow might meet with constituents, write policy briefs, or draft and negotiate legislation. Gibbons hopes to use her mathematical training to assist in tackling problems of interest to her host office.

"I've been contributing to the office by being another set of eyes on quantitative analyses," Gibbons said. "One of my responsibilities is bringing ideas to the table, so I'm primarily learning what the committee's jurisdiction is, how everything functions, and where my expertise and interests will be most valuable."

In applying for the position, Gibbons wrote that she had been planning on pursuing the Science and Technology Policy Fellowship (STPF) since her time as a grad student at Nebraska. But her interest in policy started much earlier, when as a child

NANCY L. FORD PHOTOGRAPHY

Courtney Gibbons was selected as one of only two Science and Technology Policy Legislative Branch Fellows funded by the AAAS this year. She began her new role working with the Senate Homeland Security and Governmental Affairs Committee in September.

she wrote to the President George H. W. Bush to express disapproval for his public shaming of broccoli. She even offered the president a tasty broccoli recipe along with an explanation of its nutritional value.

In a more serious vein, she wrote, "In all aspects of my career—research, service, and especially teaching—I enjoy the challenge of communicating technical information to others, even when it requires making (metaphorical) broccoli more palatable to those who need it. The AAAS STPF program is an extension of my career development: using my skills as an educator and technical researcher together to reach audiences beyond my students and academic peers."

At Hamilton, Gibbons enjoys helping students understand tricky math concepts. The goal, she said, is to engage students and encourage them to think independently.

"I was the kind of student where you could tell me 20 times but until I figured out how to say it for myself, I just didn't get it," she said.

Gibbons's willingness to connect with students made her a natural fit at Hamilton College, according to Richard Bedient, a former chair of the school's math department. With an enrollment of about 2,000 students, the college maintains a closely knit community.

Gibbons's interests also led her to the Association for Women in Mathematics, where she served on the policy and advocacy committee and the executive committee. Her advocacy work also includes working at a college program for incarcerated men and AGAM, a high school cryptography camp for high school students in Nebraska. Now as a AAAS Congressional Science & Engineering Fellow, she said she's most excited about learning the inner workings of policymaking.

Her adventurous fellowship year has been made even more so by her status as a brand-new mother to baby Ben, who arrived unexpectedly early during the annual two-week STPF orientation in September.

As a newcomer to Washington, Gibbons said she's immensely grateful for the community of fellows: "We just moved here and we have a baby and it already feels like we've got a support network—that's just really amazing."

– Elyse DeFranco, AAAS; Eileen Foote, Hamilton College; and Austin Mirmina, New Haven Register

SEND US YOUR NEWS FOR CLASS NOTES!

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CLASS NOTES

Lara Ismert (Ph.D. '19) of Embry-Riddle Aeronautical University was awarded an AAUW fellowship, the American Postdoctoral Research Leave Fellowship. The purpose of the fellowship is to allow untenured women (in all areas in science) time to pursue research.

Zsuzsanna Szaniszlo (Ph.D. '96), was named the new director for the Dolciani Mathematics Enrichment Grant (DMEG) program by the Mathematical Association of America. Szaniszlo will succeed Nancy Neudauer, who has served as the DMEG director since 2013. Szaniszlo is a professor at Valparaiso University and has been active in high school outreach for over 25 years. Szaniszlo earned her Ph.D. in mathematics from UNL with Jamie Radcliffe as her advisor.

Joyce Yen (B.S. '95) was one of 15 recipients of the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM)in February 2022. Dr. Yen is the director of the University of Washington's ADVANCE Center for Institutional Change, a program that works to eliminate underrepresentation of women faculty in STEM. Established in 1995, PAESMEM recognizes the critical roles mentors play outside the traditional classroom in the academic and professional development of the future STEM workforce. "This award not only validates the importance of mentoring, but it also elevates the intersection of excellence and diversity and those pushing the STEM ecosystem to be better," Yen said. "I truly love the work I do fostering communities and cultures in STEM that support and advance inclusion and belonging."

MAA ALDER AWARD: Lauren Keough

The Mathematical Association of America (MAA) named Lauren Keough, an assistant professor of mathematics at Grand Valley State University in Allendale, Michigan, as one of three recipients of the Henry L. Alder Award. Keough earned her Ph.D. in 2015 in mathematics from the University of Nebraska–Lincoln.

The Henry L. Alder Award for Distinguished Teaching honors beginning college or university faculty whose teaching has been extraordinarily successful and whose effectiveness in teaching undergraduate mathematics is shown to have influence beyond their own classrooms.

"I am honored to be among the incredible teachers and mentors who have won the Alder Award. I am thankful to the MAA for creating environments through MAA MathFest and Project NExT for us to learn from one another," Keough said. "My teaching is a product of the million little things and several big things I have learned from everyone I've ever met. Thank you to all of the people who took a chance on me mathematically, including my teachers at Hofstra University and at the University of Nebraska–Lincoln."

During the five years since her arrival at Grand Valley State University, Keough has taught 11 different courses at all levels in the curriculum and mentored 42 undergraduate students with research. Keough uses standards-based grading and ungrading principles (also centered in research) in order to focus her students on persistence, growth, development, curiosity, and understanding. By holding office hours in a public space where many of the mathematics majors work and collaborate, Keough makes herself accessible not only to her own students but to those in other courses.

Lauren Keough

Keough started a math circle with an MAA Tensor grant with co-PI's Feryal Alayont and Meghan VanderMale, and mentored many undergraduates in research experiences. In 2018, she received a Center for Undergraduate Research Mathematics grant with co-PI Dr. Austin Mohr and was awarded an NSA REU grant for Summer 2022 with co-PI Dr. Michael Santana.

Her favorite activities as a child in Rhode Island were those that allowed room for creativity. In fact, she thought she was cheating when she used her creativity to find patterns to do timed multiplication tests. Her love for math developed as an undergraduate at Hofstra University where she learned she could be creative in her math courses. Keough completed her Ph.D. under the supervision of Professor Jamie Radcliffe. Her research is in graph theory, and she especially loves areas where she can involve undergraduates. After graduate school, Keough spent a year at Davidson College as a visiting assistant professor before moving to GVSU in 2016.

"To me, this award comes with a lot of responsibility. I must continue to be a reflective teacher, continue to share with and learn from the community, and do my best to fight for equitable math classrooms so that every person gets to experience the joy of doing mathematics," Keough said.

The other Alder award winners in 2022 were Vinodh Kumar Chellamuthu and Brittany Stephenson.

– Ginny Greenberg of Hofstra contributed to this report from the MAA

Fellowship aids with tuition for teachers in northeast Lincoln

The Center for Science, Mathematics and Computer Education and the University of Nebraska Foundation are pleased to announce a new scholarship fund for secondary mathematics teachers. The fund was created thanks to a gift from Ken Jones and Signe Kim Lauridsen-Jones, both proud University of Nebraska alumni.

The Kenneth E. Jones and Signe Kim Lauridsen-Jones Teachers Scholarship Fund, which was established in the summer of 2022, provides scholarships to teachers taking courses in mathematics and mathematics education from the Department of Mathematics in the College of Arts and Sciences and the Department of Teaching, Learning and Teacher Education in the College of Education and Human Sciences at the University of Nebraska–Lincoln.

Teachers of mathematics must be employed by Lincoln Northeast High School, Culler Middle School, Dawes Middle School, or Mickle Middle School. Scholarships cover the full cost of resident tuition and fees for up to 18 credit hours, which must be focused on teaching mathematics. The fund also provides a $500 stipend to each teacher at the end of each completed 3-credit-hour course.

"As a first-year teacher with student loans, who still wants to excel and take graduate classes, I was helped immensely by this donation," said Whitney James, a math teacher at Lincoln Northeast. "I wouldn't have been able to take these courses to further my education without the support and encouragement from Ken Jones. I'm very grateful for the opportunity to continue my education and become the best math educator possible."

The Foundation sat down with Ken Jones, who grew up in the Havelock area of Lincoln and is a graduate of Northeast High School, to ask him more about why he and Kim established this fund for teachers in Lincoln.

From whom did you learn about philanthropy?

A good friend of mine shared how he was investing in his own high school. He grew up under the same circumstances. I used that thought to design this program for Northeast.

What are your goals with this gift?

To get more high school students interested in engineering. I think their high school and middle school teachers are key. There is a major need for all types of technical talent; however, many students are afraid of the mathematics involved. I have interviewed several high school teachers, and they talked about a program back in the 1980s that was successful. Ultimately, I want to help teachers learn how to teach mathematics at high school with more efficiency and effectiveness. And, in turn, give them a master's degree.

COURTESY PHOTO

Ken Jones (second from right) and Signe Kim Lauridsen-Jones have established a scholarship fund for mathematics teachers at Lincoln Northeast High School, Culler Middle School, Dawes Middle School, and Mickle Middle School. Scholarships cover the full cost of resident tuition and fees for up to 18 credit hours.

When did you start re-engaging with Northeast?

Twenty years ago. I believe that engagement has sparked something, because at Northeast they now have an engineering club and great student enthusiasm for robotics. If we can garner interest and success at the high school and middle school level, that translates to more success in college.

What else has kept you connected?

I learned a lot both during high school and then at UNL, both of which contributed to my successful career. Education is the key to most of our long-term problems in this country. Education elevates everyone to a higher standard of living, and that's key to all of our success.

Why are you making this investment?

Because I am driven to give back to the community that I grew up in and gave so much to me.

– Lindsay Augustyn and the University of Nebraska Foundation

Smith's four NSF grants examine how to lead institutional change

Wendy Smith, research professor in the Department of Mathematics and the director of the Center for Science, Mathematics and Computer Education (CSMCE), received four collaborative research grants from the National Science Foundation in 2022, totaling $7.55 million—of which $3.8 million goes to the University of Nebraska–Lincoln.

Smith began serving as the CSMCE director in August 2022. Smith studies PK–20 mathematics, science, and computer science education and teacher change; institutional change and active learning; education leadership, teacher professional development, and professional networks; and teacher professional learning effects on student achievement.

These four grants will conduct research that is aimed at:

- *filling a critical gap in the national understanding of what it takes to* ***help college transfer students succeed;***
- *identifying the mechanisms and structures that best support mathematics stakeholders to* ***make data-informed decisions to promote diversity, equity, and inclusion*** *and critically transform introductory college mathematics courses and programs;*
- *providing guidance for how to* ***conduct ethical and responsible research with LGBTQIA+ individuals*** *in science, technology, engineering and mathematics fields in higher education; and*
- *examining how within secondary mathematics teacher preparation programs that a collaborative structure of* ***networked improvement communities can support, accelerate, and sustain transformation efforts.***

ACT UP: Achieving Critical Transformation in Undergraduate Programs of Mathematics

In partnership with: California State University East Bay, Clemson University, Colorado State University, Duke University, and Kennesaw State University

The disparities in achievement and access for marginalized students are well documented, but there remains a lack of attention to what to do with this knowledge and how to measure the impact of improvement efforts beyond pass rates and demographics. While many university mathematics departments value providing diverse, equitable, and inclusive (DEI) student experiences, the faculty often do not have the professional training to engage with DEI work or measure its progress, which can lead to disengagement from these initiatives. ACT UP ($1.5 million, of which $550,000 goes to UNL) aims to conduct foundational research to identify the mechanisms and structures that best support mathematics stakeholders in making data-informed decisions to promote DEI and critically transform introductory mathematics courses and programs. This project builds on the strength of two prior national studies of introductory mathematics programs, Progress through Calculus and Student Engagement in Mathematics through an Institutional Network for Active Learning (SEMINAL). Three undergraduate mathematics department teams will work in partnership with educational researchers to analyze their local data, in comparison to the national sample.

PRISMATIC: Propagating Research Ethics around Sexual Marginalization and Transgender Issues Conference

In partnership with: Clemson University and University of North Carolina at Charlotte

PRISMATIC ($50,000 conference award) aims to provide guidance for conducting ethical and responsible research with LGBTQIA+ individuals in STEM fields in higher education. All research that involves human participants necessarily includes people with minoritized identities of gender and/or sexuality; however, STEM researchers typically have little to no training related to ethical and responsible research involving LGBTQIA+ participants. The goals of PRISMATIC are to identify best practices and considerations for conceptualizing, designing, conducting, and disseminating higher education research involving LGBTQIA+ participants, and then create and share a prioritized research agenda related to the major ethical issues. PRISMATIC will bring together subject-matter experts to discuss research ethics, create resources, and draft a national agenda for research involving LGBTQIA+ participants.

A virtual workshop series will be held in Spring 2023, and a hybrid workshop will be hosted in Nebraska in Summer 2023. Shaping this research agenda will include efforts to help the field advance from risk mitigation and harm reduction to affirmation, inclusion, and empowerment for LGBTQIA+ people.

CRAIG CHANDLER | UNIVERSITY COMMUNICATION

Husker researchers Leen-Kiat Soh (from left), Wendy Smith, Mindi Searls and Brittany Duncan are spearheading PROSPECT, a new five-year, $3 million project funded by the National Science Foundation.

S-STEM PROSPECT Hub

In partnership with: Clemson University, University of Missouri-Kansas City, Michigan State University and University of Texas at Arlington, plus 17 other two- and four-year colleges

For students at a two-year college, making the jump to a four-year institution can be daunting. The transition often entails leaving tight-knit communities, smaller classes and daily interactions with instructors for full lecture halls, farther-removed teachers and a larger, more affluent student body. Figuring out financial aid, planning course loads and navigating an ingrained social hierarchy add to the pressure.

UNL is leading a 22-institution research collaboration aimed at smoothing this transition by building strong partnerships between two- and four-year colleges. With a five-year, $3 million grant from the NSF, the team will conduct research aimed at filling a critical gap in the national understanding of what it takes to help transfer students succeed. Nebraska, whose share of the award is $1.4 million, will headquarter the new research hub.

"Something we're trying to address overtly is that there are definitely historical power imbalances," Smith said. "There's an implicit idea that four-year colleges are better than two-year colleges. We want to agree on best practices as part of a true partnership, and not one with a power imbalance, with one side telling the other side what to do."

It is one of the first four research hubs funded through a new NSF program that builds on the agency's longstanding Scholarships in STEM program, or S-STEM, which funds scholarships and institutional support systems for low-income STEM students. Through the research hubs, NSF aims to identify what's working — and what's not — at S-STEM sites using mixed-methods research. Each hub has a different focus, with the overall goal of pinpointing the conditions that facilitate success for the STEM students.

Smith will tap into the infrastructure and resources of the CSMCE to lead the research hub, which comprises a geographically diverse group of institutions with similarly focused S-STEM programs.

The researchers will form topic-based professional learning communities at each S-STEM site, uniting faculty and other professionals to discuss issues in a given area, such as student advising, financial aid or teaching specific introductory STEM courses in ways that foster students' sense of belonging. The team also will conduct visits to approximately 25 S-STEM sites over the grant period, interviewing program leaders to identify the practices that bolster student success.

NIC-Transform SCALE UP: Using Networked Improvement Communities to Scale Up Program Transformation for Secondary Mathematics Teacher Preparation

In partnership with: Auburn University

Also known as Mathematics Teacher Education Partnership 2.0, this $3 million project ($1.8 million to UNL) aims to serve the national interest by studying a networked improvement community (NIC) that is working to transform secondary mathematics teacher programs at universities, in alignment with national recommendations for mathematics teacher preparation. The U.S. faces a significant shortage of well-prepared secondary mathematics teachers, particularly in the highest-need districts. Beginning with 43 secondary mathematics teacher preparation programs, NIC-Transform Scale Up will engage and study 65 programs in the MTEP network, including 11 under-resourced institutions and/or minority-serving institutions, by 2025, to increase the number of well-prepared beginning mathematics teachers, while foregrounding issues of equity and access.

The goals of Scale Up are to examine how a collaborative structure of NICs support, accelerate, and sustain secondary mathematics teacher preparation program transformation efforts as well as the variations in existing structures related to roles of individuals, the culture for change, and the decision-making processes for leadership. This research will aim to identify which supports within the collaborative structure of NICs enable change agents to effectively facilitate transformation efforts.

(From left) Executive Vice Chancellor of Academic Affairs Kathy Ankerson, Professor of Mathematics Tom Marley, Professor and Chair of Mathematics Petronela Radu, and former graduate student and lecturer Alyssa Whittemore receive the Chancellor's Award for Outstanding Contributions to Women from the University of Nebraska–Lincoln.

UNIVERSITY OF NEBRASKA-LINCOLN

Dept honored with women's award

In the spring of 2022 the Department of Mathematics was pleased to learn that it was awarded the annual Chancellor's Award for Outstanding Contributions to Women from the University of Nebraska–Lincoln. This award recognizes the outstanding faculty, staff, and student efforts that create a supportive climate for women in the department and which encourage women to succeed in mathematics. This is the third time the Department or individual math faculty members from have received this honor. Previous individual winners of this award were Professor Jim Lewis (1996) and Professor Emerita Sylvia Wiegand (2000).

The citation for the award recognized the Department's decades-long efforts in mentoring women students and faculty. In particular, the Department was recognized for its sustained success in mentoring women graduate students to the Ph.D. degree. The Department has now awarded over 100 Ph.Ds. to women in its history (its first Ph.D. was awarded in 1898), while that number was only six prior to 1991. Fifty-two of those Ph.Ds. have come since 2010, and over the 15-year period 2006–20, the Department ranked first among Ph.D.-granting mathematics departments of similar or larger size in the percentage of Ph.Ds. awarded to women (42.6%). By comparison, the national average is 26%. As one Ph.D. alum expressed it, "Being a woman in [UNL's math] graduate program felt not exceptional, but normal."

The Department also was cited for its development and mentoring of women faculty. Many of the current senior women faculty have received national recognition as fellows of the American Mathematical Society and/or hold prestigious university professorships. Several also have taken on important leadership positions in the Department, university and in the profession, including Susan Hermiller (former graduate chair and former member of the AMS Council); Petronela Radu (current chair and former undergraduate chair); and Judy Walker (current associate vice chancellor, former chair, and member of the AMS Board of Trustees).

Meanwhile, our junior women faculty have been enormously successful obtaining highly competitive external grants and earning campus research and teaching awards.

Outreach efforts also were cited by the award, including NCUWM (see page 12), AGAM cryptography camp, the Women's Undergraduate Math Network, and the student chapter of the Association for Women in Mathematics.

DATA SCIENCE: New major on its way

The Department of Mathematics and the University of Nebraska–Lincoln are pleased to announce the creation of a new Data Science undergraduate major starting in Fall 2023.

This new data science program is a collaboration between Mathematics, the Department of Statistics, and the School of Computing, and each discipline will be represented in the program's core major requirements. This marks the first time that three colleges at the university will share an undergraduate major program: the College of Agricultural Sciences and Natural Resources (Statistics), the College of Arts and Sciences (Mathematics), and the College of Engineering (Computer Science).

New and existing students will have the option to pursue one of four different degrees with a major in Data Science, and it is hoped that students been able to follow their interests toward the wide range of careers in data science.

Data Science majors will work through a foundational set of courses that includes three courses from Computer Science, three from Mathematics, and two from Statistics. This foundation will give Data Science majors access to coursework in eight different focus areas representing various aspects of data science:

- Applied Computing: Journalism & Humanities;
- Applied Computing: Natural Resources;
- Applied Computing: Sociology;
- Artificial Intelligence;
- Data Pipeline;
- Mathematical Modeling;
- Software Development; and
- Statistical Modeling.

The specific requirements will include courses from at least two focus areas, but the overall number of focus area courses will vary between the three colleges' degrees. Finally, Data Science majors will complete their major with a capstone requirement that provides professional and collaborative experiences. Each college will have a slightly different capstone experience, and Mathematics plans to use its Math in the City course, which already has been engaging students in collaborative data-focused projects using skills in mathematical modeling.

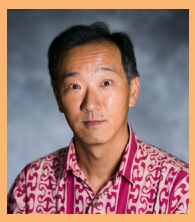
Students completing a degree in Data Science will achieve the following four learning outcomes:

- foundational knowledge and expertise in the analysis of large-scale data sources from the interdisciplinary perspectives of applied computer science, data modeling, mathematics, and statistics;
- foundational knowledge and expertise in the application of computing, informatics, and modeling to solve multidisciplinary problems;
- abilities and professional skills to solve multidisciplinary data science problems as a member of an interdisciplinary team; and
- familiarity with ethical challenges in data science, including ethical collection of data, responsible use of data, and algorithmic bias.

The learning outcomes in the new Data Science major and degree program will prepare graduates for current and emerging career pathways that deal with data across a variety of industries. This new major will provide interdisciplinary skills that cannot be obtained by earning a degree in just one field, and employers are looking for graduates who have these skills. The expectation is that UNL students will have their choice of a large of number of internship and career opportunities.

If you have any questions about the new Data Science major in the College of Arts and Sciences or our undergraduate program in Mathematics, please do not hesitate to contact Doug Pellatz, senior academic advisor, at dpellatz@unl.edu or 402-472-4319. You can also contact Dr. Xavier Pérez Giménez, undergraduate faculty advisor for mathematics, at xperez@unl.edu.

ONO HOSTS PI MU EPSILON LECTURE ONLINE



Ken Ono presented "What is the Riemann hypothesis, and why does it matter?" on April 13, 2022, at the virtual Pi Mu Epsilon Lecture.

The UNL Department of Mathematics had seven new PME inductees: Turner Blick, Philip Chohon, Hunter DeBoer, Kaitlin Keleher, Layla Montemayor, Danie Oberpriller, and Kolton O'Neal.

Ono is a Thomas Jefferson Professor of Mathematics at the University of Virginia and is chair of the Mathematics Section in the American Association for the Advancement of Science. From 2018 to 2021, he was a vice president of the American Mathematical Society. Previously, Ono held positions at the University of Wisconsin–Madison and Emory University.

Ono is a world expert in number theory with more than 200 papers. He is famous for solving Ramanujan's partition congruences and proving the umbral moonshine conjecture. He also has extensive experience working with undergraduates in various REU programs.

Besides mathematics, Ono enjoys surfing and SCUBA diving, and he has competed in World Triathlon Cross Championships events while representing the United States. Ono is the son of prominent mathematician Takashi Ono, who emigrated from Japan to the United States after World War II, and his older brothers Momoro and Santa Ono are a famous piano artist and the president of the University of Michigan, respectively.

NCUWM celebrates 25th annual event

The Nebraska Conference for Undergraduate Women in Mathematics (NCUWM) is celebrating its 25th annual event in January 2023 in Lincoln. Original co-founder Judy Walker, professor of mathematics and associate vice chancellor for faculty and academic affairs at the University of Nebraska–Lincoln, will be one of the three distinguished plenary speakers commemorating this milestone year.

Made possible with generous support from the National Science Foundation and the National Security Agency since 1999, the NCUWM has grown from 53 undergraduate participants to about 260 each year, impacting nearly 5,000 undergraduates total. This conference, hosted by the Department of Mathematics, provides undergraduate students with role models, insider knowledge, and the opportunity to present their undergraduate research amid a growing community of peers who are interested in creating a supportive environment for women in mathematics.

After holding two virtual conferences, the NCUWM is returning to an in-person format for 2023 (**https://math.unl.edu/ncuwm**). The conference is also inviting back several Nebraska mathematics alumnae as panelists.

"Just like it did for me, NCUWM gives its participants the opportunity to be inspired by the uniqueness of others' stories and the potential of their own future story as a woman in mathematics," said 2023 invited guest panelist Jessica De Silva, assistant professor of mathematics at California State University, Stanislaus, who earned her Ph.D. at UNL in 2014.

Along with UNL's Walker, the other plenary speakers for 2023 are Deanna Haunsperger, professor of mathematics at Carleton College, and Talithia Williams, associate professor of mathematics at Harvey Mudd College.

Allison Cruikshank, who presented at the NCUWM as a UNL undergraduate student, is now a mathematics graduate student at Duke University, and will be an invited graduate student representing Duke in 2023.

"As a presenter and participant at NCUWM in undergrad, I was exposed to different areas of mathematical research that I had no idea existed," Cruikshank said. "Being able to share experiences with other women undergraduates was special and gave me the confidence I needed to apply to graduate school. I am excited to return this coming year to share my story and hopefully give women undergraduates the confidence they need to exceed."

Other alumnae who have been invited back to speak as panelists are: Dr. Samantha Erwin of Pacific Northwest National Laboratory, Dr. Angelica Gonzalez of McGraw Hill; Dr. Raegan Higgins of Texas Tech University; Emily Price of Singularity 6; and Dr. Amelia Taylor of Shopify.

"I enjoy interacting with undergraduate students, telling them all about the opportunities available to them and contributing to the supportive environment that this conference is known for," said Ashley Weatherwax Johnson, an associate professor of mathematics at the University of North Alabama who has attended the NCUWM as an undergraduate, a UNL graduate student volunteer, and now as a faculty member.

– Lindsay Augustyn and Christine Kelley

MATH DAY: New format with return to campus

For the first time since 1995, Omaha Central High School took first place in the top class of the bowl competition at Nebraska Math Day 2022, which returned to the University of Nebraska–Lincoln campus after being hosted online for two years.

Fifty-nine Nebraska high schools and nearly 500 students participated in the 33rd annual Math Day on Nov. 17, which consisted of an exam, the fast-paced Math Bowl Swiss-system team competition, and interactive challenges and activities. For results, see **https://go.unl.edu/md2022results**.

Math Day is designed to spark high school students' interest in math, to encourage them to pursue a career in mathematics or the mathematical sciences, and to recognize outstanding mathematical ability.

New to the event were activities designed primarily by faculty and graduate students in Mathematics. Some of the challenges included a trophy for the winning team.

"Math Day has been a staple event for the Department of Mathematics for over three decades, and this year we welcomed students with new activities to engage them and show them that mathematics is in all aspects of our lives, big and small," said Petronela Radu, professor and chair of Mathematics. "Our human minds are constantly optimizing, scheduling, solving problems without us being aware of it. Stopping for a day to 'do mathematics' means allowing us to be present in the moment of discovery that is needed to build the tower that overhangs the furthest without collapsing or find how tall a building is by just using string and mathematics."

Nearly 900 students took the first PROBE (Problems Requiring Original and Brilliant Effort) exam concurrently at their respective school classrooms in late October. Forty students came to campus on Nov. 17 to take the PROBE II exam and compete for scholarships.

Shiv Lele of Millard North High School won first place and an $8,000 scholarship. Viet Lai of Scott Middle School in Lincoln earned second, and Calum Heldt of Scottsbluff High School finished third.

KUMUNU: Two events held in 2022

Two KUMUNU algebra conferences were held during 2022: one on May 7-8 and another on Oct. 8-9. These conferences, which were funded by a grant from the National Science Foundation, were held after being postponed in 2020 and 2021 because of the COVID-19 pandemic.

KUMUNU is an annual conference of algebra faculty, postdocs, and students from across the Midwest and beyond, and rotates every three to four years among the campuses of the University of Kansas (KU), the University of Missouri (MU), and the University of Nebraska (NU).

The May conference drew over 60 participants, while the October conference drew close to 100. Each of the conferences featured six plenary talks from senior researchers as well as early career faculty and postdocs. Both conferences included a poster session to showcase the work of graduate students.

The conferences were organized by Tom Marley and Mark Walker, with help from staff members Marilyn Johnson and Rachelle Jensen. The next KUMUNU conference will be held in the fall of 2023 at the University of Missouri.

STAFF NEWS

Tom Danaher, who was the administrative assistant to the department chair for 15 years, accepted a position as a grants specialist in UNL's HAPPI Business Center on East Campus in December 2022.

Marilyn Johnson, research and graduate programs coordinator for the Department of Mathematics is preparing for her retirement in March of 2023, after 22 years with the department. We invite former graduate students to submit comments that will be given to Marilyn at her retirement reception at **go.unl.edu/mathcareerprofile**.

The department wishes the both of them much success and enjoyment in their new endeavors. They will be sorely missed.

COOKIES WITH THE DEAN

The Department of Mathematics has revived its Cookie and Tea Time tradition the Fall 2022 semester, recognizing the need and desire for togetherness and sharing a slow moment with colleagues and a cup of tea in the afternoon. Each week, faculty, staff, and students meet on Monday and Wednesday from 3 p.m. to 4 p.m. in the Avery 348 lounge, and we enjoy treats together, sponsored by an individual or a group. In September, Dean Mark Button and Terri Pieper, marketing and communications director, of the College of Arts and Sciences stopped by and had a chance to talk with our faculty, staff, and graduate students about our classes, upcoming events and initiatives in the department. If you happen to be around Avery Hall on Monday and Wednesday afternoons, we welcome you to stop by for a cookie or to discuss the week's news or math puzzles.

PHOTOS BY TERRI PIEPER | COLLEGE OF ARTS AND SCIENCES

Dean Mark Button (far left, on couch) talks with Department of Mathematics graduate students, staff, and faculty at the Cookie and Tea Time in Avery Hall in September 2022.

AAAS FELLOW: Judy Walker

Judy Walker, Aaron Douglas Professor of mathematics, has been named a Fellow of the American Association for the Advancement of Science, the world's largest multidisciplinary scientific society. Fellows are selected by their peers for scientifically or socially distinguished achievements that advance science or its application.

Walker was also elected a Trustee of the American Mathematical Society in 2022, for the term of 2023 to 2028.

Walker is a leading researcher in algebraic coding theory, with a focus on codes on graphs, algebraic geometry codes, codes over rings and neural codes. She was selected for her distinguished contributions to algebraic coding theory, and substantial and lasting achievements in advancing educational and career opportunities for women in mathematics.

Nebraska's associate vice chancellor for faculty and academic affairs, Walker has authored or edited nearly 40 publications in these areas, including the short book "Codes and Curves," which is considered a go-to resource for mathematicians interested in learning about algebraic geometry codes. More recently, she co-edited a volume titled "Algebraic Geometry for Coding Theory and Cryptography," which grew out of a workshop she co-organized at the Institute for Pure and Applied Mathematics.

Walker, who chaired the mathematics department from 2012 to 2016, has delivered about 100 invited lectures, including international talks on several continents.

Her research and outreach efforts have secured about $8.5 million in external funding, including support from the National Science Foundation, the U.S. Department of Education and the National Security Agency. One notable NSF award, totaling nearly $5 million, supported the Nebraska Mentoring through Critical Transition Points program, which provided mentorship for mathematicians as they transitioned from the undergraduate to the graduate level, and the advanced graduate level to academia. Walker was principal investigator for the project's first five years.

Walker's work has led to numerous accolades during her career. In 2006, she received the Haimo Award from the Mathematical Association of America, which recognizes university teachers who are extraordinarily successful and influential beyond their home institution. From 2009 to 2011, she was an MAA George Pólya Lecturer, a role enabling her to speak to various sections of the MAA. In 2021, she received the Outstanding Alumni Achievement Award from the University of Illinois at Urbana-Champaign's Department of Mathematics.

She has served on numerous committees, boards and councils throughout her career.

Walker has been at the forefront of efforts to help women advance in the mathematical sciences. In 1999, she co-launched the Nebraska Conference for Undergraduate Women in Mathematics (see page 12), an ongoing program aimed at encouraging college women to pursue graduate study and mathematical careers. She also co-developed the All Girls/All Math Summer Camp, now known as AGAM: Nebraska Cryptography Camp, in which nearly 800 high school students have participated since 1997.

Between 2016 and 2019, Walker led a National Science Foundation-funded project whose goal was to increase the number of women in mathematics, particularly at the doctoral level.

Walker, already a fellow of the Association for Women in Mathematics and the American Mathematical Society, said she is excited to join another prestigious group: "It's an honor to be among the accomplished people on this campus and nationally who are already AAAS fellows."

Sociologist Julia McQuillan, Willa Cather Professor of sociology at UNL, was also named a AAAS Fellow in 2022. McQuillan is an internationally recognized researcher focused on psychosocial dimensions of infertility and fertility, barriers to equity in STEM fields and ways to increase public understanding of science. McQuillan and Walker are among 564 members who were elected Fellows this year.

NEW GRANTS

Amy Bennett, CAS Strategic Priorities Grant, UNL

Allan Donsig, Student Success Initiatives, UNL

Huijing Du, CAS Interdisciplinary Research Team Grant, UNL

Mikil Foss and **Yu Jin,** AGAM: Nebraska Cryptography Camp, American Mathematical Society and Nebraska EPSCoR/National Science Foundation

Adam Larios, Data Assimilation for Turbulent Flows, NSF

Xavier Perez Gimenez, Spanning Structures in Random Graphs, NSF

Wendy Smith, ACT UP, NIC Transform Scale Up, PRISMATIC, PROSPECT S-STEM, NSF (see pages 8-9)

Mark Walker, Multiplicities of Modules and Complexes, NSF

Alexander Zupan, 3- and 4-Dimensional Topology, Simons Foundation

ALEX ZUPAN

Alex Zupan and his family traveled to Regensburg, in Bavaria, Germany, where Zupan was invited to give a seminar. ***Photos on page 1:*** *(clockwise from top left) Minimal surfaces display in Regensburg; Zupan gives a seminar at MPIM; Zupan (left) collaborates with Jeffrey Meier at MPIM; and the Zupans go sightseeing at Schloss Drachenburg, south of Bonn.*

ZUPAN
{ FROM PAGE 1 }

seminar, and after interacting with Professor Stefan Friedl from the University of Regensburg, I was invited to give a seminar in Regensburg as well. For this seminar, my family and I traveled to Bavaria to stay in a city steeped in history—our apartment was inside a beautiful 14th-century building. Ana Wright, whom I co-advise with Professor Mark Brittenham, also visited MPIM as a guest for two months while I was here, during which she finished and posted a preprint about some of her dissertation research.

But the most productive aspect of my sabbatical thus far has been sharing an office with my good friend and longtime collaborator, Professor Jeffrey Meier from Western Washington University. As part of my planning, I encouraged Jeffrey to apply to the guest program, too, and we have spent the past three months in Bonn together. Jeffrey and I have been working tirelessly to understand the relationship between the 4-dimensional sphere and a family of group presentations; in addition, we have continued a program to adapt techniques from dimension three to dimension four via a type of decomposition known as a "trisection."

Our work together has generated beautiful pictures and lovely mathematics, and we intend to write at least one paper based on our discussions in Bonn. A surprising aspect of our results is that a starting point was the data and theorems generated by undergraduate students Hanna Hoffman, Kenji Nakagawa, Rilee Potter, and Ethan Romary, who worked with me at UNL on projects over the course of several summers, funded by the UCARE program and the National Science Foundation.

Jeffrey and I also used our time together to wrap up an ongoing project with two others related to the types of solids that can be bounded in 4-dimensional space by embedded surfaces. In addition, I finished a years-long solo project involving deep connections between the topology, geometry, combinatorics, and algebra of a special type of surface in complex projective space. I also used my time to write and submit several grant proposals: one to the NSF to fund my research, another to the NSF with collaborators to fund a workshop in 4-manifold trisections next summer, and a third with my UNL colleagues to the National Security Agency to maintain funding for NCUWM. I can only hope that I'll be able to carry this momentum into the remaining months of my sabbatical after I return home.

My family has enjoyed the experience, too. Between exploring the ins and outs of Bonn and taking trips to Cologne, Heidelberg, Salzburg, and Paris, we've been plenty busy. But as we near the end of our adventure in Germany, my wife looks forward to returning to work, and my kids are excited to see their friends and teachers. I'd likely be happy to stay for three more months, but as the Germans say, "Alles hat ein Ende, nur die Wurst hat zwei." (Everything has an end; only the sausage has two.)

POSTDOCS

Emmanuel Barton-Odro is a postdoctoral faculty in the Center for Science, Mathematics and Computer Education. He earned his Ph.D. in mathematics from Montana State University in 2021 under the supervision of Elizabeth Burroughs and Derek Williams. His research focuses on how to engage all students in the undergraduate mathematics classroom and he is interested in increasing individuals' access to STEM disciplines.

Javier Cueto García obtained his mathematics degree and master's degree from the University of Granada, Spain, in 2015 and 2016, respectively. He earned his Ph.D. from the University of Castilla-La Mancha, Spain, in 2021, under the supervision of José Carlos Bellido (UCLM) and Carlos Mora-Corral (UAM). His research interests are mainly motivated by applications related to mechanics engineering. He works on applied analysis related to Calculus of Variations, nonlocal problems and PDEs, studying more general frameworks for mechanics, inspired by peridynamics.

Levi Heath earned his Ph.D. in mathematics from Colorado State University in 2022 under the supervision of Mark Shoemaker. In Fall 2022 he convened Math 102: Trigonometry and is teaching Math 314: Linear Algebra and Math 435: Math in the City. His research interests include algebraic geometry and Gromov-Witten theory.

MORE POSTDOCS { PAGE 16 }

POSTDOCS

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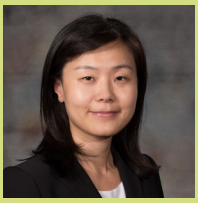
Zach Norwood graduated with a B.A. in mathematics from UNL in 2011 before leaving to study Part III Maths in Cambridge on a Gates Cambridge Scholarship. After a year at Cambridge, he earned a Ph.D. in math at UCLA in 2018 under the supervision of Itay Neeman. He then spent one year as a visitor at Cornell and three years as a postdoc at Michigan before returning to UNL as a postdoc. His research interests are broad, centering on Ramsey-theoretic questions in combinatorics, particularly infinitary combinatorics, and their implications for definability.

AWARDS

Allan Donsig, professor and vice chair, received the Hazel R. McClymont Distinguished Teaching Fellow Award from the College of Arts and Sciences for exemplary teaching.



Huijing Du, associate professor, earned a College Distinguished Teaching Award for a record of consistently excellent teaching.

Mark Walker, professor, earned a College Outstanding Research and Creativity (ORCA) Award for significant research and creative accomplishments in the last five years.

RETIREMENT: Mohammad Rammaha

After a 37-year career at the University of Nebraska–Lincoln, Professor of Mathematics Mohammad Rammaha retired at the end of the 2021–22 academic year. Mohammad earned a bachelor's degree in mathematics at the University of Jordan in Amman, and subsequently completed a master's degree at the University of Dundee in Scotland. He continued his education in the United States, earning a Ph.D. in mathematics at Indiana University under the supervision of Robert Glassey. Upon completion of his Ph.D. studies in 1985, Mohammad joined the mathematics faculty at UNL, where he embarked on a long and successful career in research, teaching, and service. Mohammad's research work dealt with partial differential equations (PDEs), particularly the very competitive field of nonlinear wave equations and qualitative properties of such dynamics. In the course of undertaking his research program, which included the publication of many articles, he became internationally recognized as an authority in PDEs. Consequently, Mohammad was invited to give many conference and seminar talks over the course of his career. Moreover, his expertise was sought out by editorial boards to assess the quality of many manuscripts submitted for publication. During his time at UNL, Mohammad advised nine Ph.D. Students.

In addition to his attainments in PDE research, he was incredibly successful in contributing to the teaching mission of the Department, at both the undergraduate and graduate levels. For his accomplishments in teaching, and generally impacting the students in his charge, Mohammad was awarded the College Distinguished Teaching Award (in Spring 2003) and the Recognition Award for Contribution to Students (many times), from the UNL Parents Association and the Teaching Council.

– George Avalos

Rogge's retirement update

Retirement! What is it supposed to be? What is it really? In my case, it has been doing what I want to do when I want to do it.

I still do all the things I used to do when I was working, but at a more leisurely pace. I still golf once or twice a week, swim two to three times a week and play tuba in the Lincoln Community Concert Band during the school year. My wife and I attend many of the Lied Center and Lincoln Symphony presentations during the school year as well the Lincoln Municipal Band Concerts at Antelope Park in the summer.

I also work math problems from a calendar, "Mathematics Your Daily Epsilon of Math" by Rebecca Rapoport and Dean Chung. This fall I have been tutoring Calculus students at UNL because I have missed working with students.

During the summer of 2021 we didn't travel because of COVID-19, but we were able to begin our traveling in October 2021 when we visited relatives in Abilene and Plano, Texas.

Starting in the spring of 2022, we made up for lost time, using our camper. In April we went to Abilene, Texas, to spend time with my brother, where we celebrated our April birthdays together for the first time in over 60 years and stopped in Andover, Kansas, to see our oldest daughter. In June we took my youngest daughter, Megan, and her sons to Smith Falls, the Badlands, and Custer State Park in South Dakota. In July we took my older daughter, Jennifer, and her two kids to Estes Park, Colorado. In late September, Beth and I camped for three days at Platte River State Park.

One thing I like about retirement is not having to get up in the morning until I wake up (most of the time anyway)!

– Bill Rogge

RETIREMENT: Nathan Wakefield

Nathan Wakefield played a leading role in the department's transformation of its first-year courses when he joined the department in 2014. Recently, Nathan has taken up a call to ministry, completing a seminary program at Dallas Theological Seminary. In the summer of 2022, he left the Department of Mathematics to take a full-time position as senior pastor at Southview Baptist Church in Lincoln. He is still involved in the department, as he is co-supervising his second doctoral student, Brittany Johnson, who will graduate in Spring 2023.

Nathan joined the department as its first professor of practice and its first director of first year mathematics programs. Not only did he organize pre-semester orientations for new and returning GTAs, but he also designed (and refined over many years) a robust curriculum for the graduate pedagogy course, a major department investment in providing high-quality instruction. He mentored many instructors and his positive, engaging approach to instruction has extended our department's commitment to teaching and learning for all students.

Nathan led the transformation of Math 106 recitations to active learning, which helped increase student success in this course. Nathan oversaw the creation of free online textbooks for our precalculus courses and for Math 106. He was also a key leader in the transition to a free-for-students online homework system and oversaw the writing of course packets for many of our first-year courses, which support students and instructors in using active learning. Nathan also has been active nationally, part of a research team looking into how other mathematics departments can make similar transformations to widespread use of active learning in introductory courses.

The department recently underwent a major seven-year Academic Program Review, and the review team noted that the department's first-year program is highly regarded nationally–an accolade that would not have been possible without Nathan's vision and drive.

– Josh Brummer and Allan Donsig

RETIREMENT: Steve Cohn

Associate Professor of Mathematics Steve Cohn retired at the conclusion of the 2021–22 academic year, thereby concluding a 31-year career at the University of Nebraska–Lincoln. Steve Cohn obtained his bachelor's degree in mathematics at the University of Chicago. Thereafter, he earned a master's degree and Ph.D. from the Courant Institute at New York University, under the supervision of Jonathan Bernard Goodman. In 1989, he joined the mathematics faculty at UNL where he has been in continuous residence. Steve's research interests were generally in the areas of applied mathematics and partial differential equations. Steve was also interested in aspects of probability, and in fact held departmental seminars in probability at various points during his tenure, and moreover critically helped to teach some of the Department's probability courses. During his time at UNL, Steve cheerfully imparted his extensive knowledge in applied mathematics to undergraduates and graduates alike, having conducted independent study courses and supervised honors projects in various topics. In the course of his career, Steve advised or co-advised two Ph.D. students and many undergraduate students. He also has contributed to the development of the options for the math major, in particular, the Mathematics of Physical Phenomena and Financial Mathematics options.

Steve continues to enjoy his hobbies, learning foreign languages, reading, and caring for the environment.

DEI IMPACT AWARD: Kaitlin Tademy

Kaitlin Tademy, graduate student in mathematics, received a Promising Leader Award at the second annual Nebraska Diversity, Equity, and Inclusion (DEI) Impact Awards on April 13.

The award recognizes Tademy for her efforts to actively advance diversity, equity, and inclusion in transformative and sustainable ways at the University of Nebraska–Lincoln. Tademy was nominated by Allan Donsig, professor of mathematics and vice chair, and Michelle Homp, associate professor of practice in mathematics. Tademy also received the College of Arts and Sciences Inclusive Excellence and Diversity Award for the 2021–22 academic year.

"Her dedication to improving the experiences of students from all walks of life will have a lasting impact on mathematics classrooms at UNL," Homp said. "During all these years, I believe that Kaitlin has done more to promote inclusive excellence in the Department of Mathematics than any other graduate student in our program."

As follows is an interview with Tademy, by LeAnne Bugay of University Communication and Marketing. Read more of this interview at **math.unl.edu/friends**, and more about Tademy's report on recommendations for inclusive classrooms in the 2021 newsletter.

LOREN RYE | PIXEL LAB, UNL

Kaitlin Tademy, graduate student in mathematics, accepts the Promising Leader Award at the second annual Nebraska Diversity, Equity and Inclusion Impact Awards on April 13.

How did you develop your passion for advancing DEI?

I guess this has always been a passion of mine, but I did not always have the sense of efficacy about it that I do now. In my position as a graduate teaching assistant and as a young member of the math community, I have a voice that I did not always believe I had. As a Black woman in mathematics and the first in my family to pursue graduate education, I've learned quite a bit about what it means to show up for myself and advocate for myself. And I think that in the process of learning how to do this for myself, I learned that I could do it for others. I feel empowered to empower others.

How do you create an inclusive atmosphere in the classroom?

How we create an inclusive atmosphere in our classrooms depends on quite a bit: the number of students in the course, the physical setup of the classroom, the personality of the instructor, the topic of the course... so many things. I don't think there is a precise answer to this question without considering all of these variables. But what I do think characterizes a lot of what I personally do to create and maintain an inclusive atmosphere in my classroom is that I always want to make space and make connections. To me, this means making space for students to be their authentic selves; making space for students to be human; making space for students to have power in the classroom; making connections with students; providing opportunities for students to connect with each other; and connecting course content to our day-to-day lives. And this means doing all these things continually, not just once at the beginning of the semester, and not every once in a while. It is also important to remember that we are not creating an inclusive atmosphere for our students, but we are creating it with them.

What do you hope to accomplish in the future?

I hope to keep using the voice that I now know that I have to empower people within the math community. This means people in the math community, as well as people the math community serves. Math is a much more human field than we have been taught our whole lives. It is unfortunate that there is currently only a tiny population of people who get to see the artistry, fluidity, and joy that mathematics and mathematicians bring to the world. I hope to radically change the culture of mathematics by challenging perceptions of what math is, what it means to be good at math, and who is allowed to participate.

What is your advice to other students, staff, or faculty looking to advance DEI on campus?

My advice to students, faculty, and staff is to examine your power. I believe that the purpose of power is to empower—to empower the people around us and to empower ourselves. Knowing where and how you have power means knowing where and how you can empower.

Concussions ice Cathcart's hockey path, not in math

Alex Cathcart's 15-year pursuit of a professional hockey career ended with a home skate in California.

"I was 20 years old and I got another concussion—my fifth," said Cathcart, who graduated from the University of Nebraska–Lincoln in May 2022 with a bachelor's degree in mathematics. "It ended up being really pretty bad, with like 18 months of constant migraines and lots of light sensitivity.

"I knew I was going to be OK eventually, but it was time to make a decision—either I could keep playing, risking further injury with no guarantees that I would recover, or it was time to quit playing and go to college."

As a goalie, Cathcart's skills had advanced over his teen years, playing for the Los Angeles Selects team. By the age of 16, he moved to Omaha to stay with a host family and play AAA hockey—the highest level of the games minor leagues and home to the nation's best players between the ages of 9 and 18.

But during his time with the game, Cathcart discovered a secondary passion for mathematics—a subject he disliked in high school. "When I started playing in the junior leagues, they started showing me analytics of the game, breaking down our playing style and habits into numbers," Cathcart said. "Ultimately, their work helped us be more confident and make better decisions while in games."

While recovering from the concussion, Cathcart factored in the pluses and minuses of his options—ultimately deciding it was time to hang up his skates. He applied to universities and landed at UNL, earning a Regents Scholarship, joining the University Honors Program, and selecting mathematics as a major, with a focus on finance.

"My hockey experience allowed me to see that math can be used to tell a story," Cathcart said. "I found that fascinating and wanted to learn all I could about it. It was challenging, and it probably made me lose more hair than another major would have, but I loved every second of it."

UNIVERSITY COMMUNICATION

Alex Cathcart came to Nebraska to pursue a hockey career, but he scored with a mathematics degree, graduating in May 2022.

During his time on campus, Cathcart served three years as an intern for Chancellor Ronnie Green; was a student representative on the university's COVID-19 Task Force; was active in the Honors Program; joined Sigma Chi, including serving a year as the fraternity's recruitment chair; and, inspired by social distancing during COVID-19, helped launched "The Human Connection" project.

Cathcart also worked for the Lincoln Stars as director of hockey operations. The job included breaking down play real-time to help coaches make decisions as individual games progressed. His work there led to developing a statistic-based formula aimed at predicting the outcome of hockey games that was featured in his Honors Program senior project.

"The project challenged me intellectually and was fulfilling as the formula showed a 90% success rate in predicting game winners," Cathcart said. "It was an incredible opportunity to combine my passions for hockey and math and it gave me the confidence to use what I learned here at Nebraska in creative ways to make original discoveries."

– Troy Fedderson, UNL Communication

GET TO KNOW UNDERGRADUATE:

LAYLA MONTEMAYOR

Where are you from? The Colony, Texas

What excites you about math? Mathematics is an endless field with so much to explore. I used to find it very intimidating, but I've grown to love exploring all the variety that math offers; it's comforting knowing that there is always more to learn.

What has been your favorite math class at UNL? I took Math 208H my freshman year, and I was really impressed by the professor, Dr. Mark Walker, and the TA, Andrew Haar. They made an intimidating course accessible and really solidified my choice in major.

What organizations are you involved in at UNL? I'm involved in Association for Women in Mathematics, Lied Center Student Council, CAS Ambassadors and the ambassador leadership team, Pi Mu Epsilon, OASIS, UCARE, and I have an on-campus job. Being involved on campus has allowed me to meet some amazing people and take advantage of a variety of opportunities, both academic and personal!

What is a goal you have accomplished as a Husker? Going outside of my comfort zone. Coming to college, I knew I wanted to be involved and try new things that would help me grow as a student and a person. Getting involved in different organizations has improved my public speaking and has given me more confidence.

What are you excited about doing after graduation? Between industry, grad school, deciding between a master's or a Ph.D., I have a lot of options! Seeing where I end up, as daunting as it may seem right now, is ultimately something I look forward to.

STEM CONNECT SCHOLARS 2022

The following students recently joined STEM CONNECT (hometown is in Nebraska unless otherwise noted):

University of Nebraska–Lincoln

Kendry Arrazcaeta Duray, Madison
Kaleb Buck, Columbus
John Delfosse, Lincoln
Grace Farson, Papillion
Alex Ventura, Omaha
Midia Yousif, Lincoln

Southeast Community College

Kegan Akins, Lincoln
Crishley DeLeon Herrera, Lincoln
Dante Diaz-Lamas, Lincoln
Stacy Gallegos Garcia, Lincoln
Steven Harwood, Fremont
Isaac Johnson, Lincoln
Mark Martinez, Ponca City, Oklahoma
Nathan McGregor
Hannah Miller, Wymore
Peter Morales, Riverside, California
Dylan Peters, Humphrey
Long Pham, Lincoln
Nyamuoch Puok, Lincoln
Kaleb Reiser, Seward
Jon Ryan, Lincoln
Kevin Schlosser, Crete
Andrew Soliz, Clay Center
Julianna Yachimowicz, Reisterstown, Maryland

Western Nebraska Community College

Rachel Conner, Tampa City, Florida
Bill Edwards, Douglas, Wyoming
Jace Heimerman, Scottsbluff
Rebekah Holtmeier, Hay Springs
Shayla Ramirez, Mitchell
Nicolas Smith, Scottsbluff

Read their student profiles at **https://scimath.unl.edu/stem-connect-profiles**

Experiential learning in STEM CONNECT

National Strategic Research Institute internship

Grace Farson

In 2021, undergraduate mathematics major and STEM CONNECT Scholar Grace Farson helped U.S. Strategic Command update an online nuclear conflict wargame during her stint as an intern with the National Strategic Research Institute.

She was immersed in knowledge about national security and real-world, mission-related policy and technical challenges. Farson spent hours researching, writing, and coding with six peers. The group then briefed U.S. Strategic Command leaders, including deputy commander Lt. Gen. Thomas Bussiere.

"This experience has influenced my future education and career path greatly," Farson told the Nebraska Alumni Association. "(The Institute) has helped educate me on various national security topics and provided me with connections and experiences that have enhanced my knowledge base and led me to finding my future career path."

These experiences—called "experiential learning"—give students a way to apply coursework to real world activities, problems, and organizations, and reflect upon those connections. It might be through an internship, assisting in a lab or field, volunteering, engaging in a student organization, or studying and serving outside of the United States.

The STEM CONNECT grant from the National Science Foundaton provides scholarships and academic support for academically gifted, low-income students and includes partnerships with Southeast Community College and Western Nebraska Community College. The program assists students with finding experiential learning opportunities.

Professor Tomas Helikar's lab

STEM CONNECT Scholars Ronit Gandhi and Dennis Startsev of UNL have been working with UNL biochemistry professor Tom Helikar in his lab. Gandhi is working on developing mathematical models of the effects of drugs on experimental cell lines.

Gandhi is also an Institutional Development Award Program (IDeA) Networks of Biomedical Research Excellence (INBRE) Scholar through the University of Nebraska Medical Center and has conducted research through the INBRE program. Gandhi is also working with Bo Deng of Mathematics and Clay Cressler in the School of Biological Sciences on his honors thesis, which focuses on Markov Chains. He also participated in the math graduate-student-led Directed Reading Program.

Ronit Gandhi

Dennis Startsev

Startsev works with Helikar on mathematical models, involving boolean algebra, data mining techniques, computational biology, and network analysis.

‘Being open’ drives Sanders’ success

As part of a weekly student conversation series highlighted as part of Black History Month on the University of Nebraska–Lincoln’s Medium page, Michael Sanders was featured in 2022 as a student who is making an impact on campus.

Sanders is a computer science major with a minor in mathematics from North Omaha and is a STEM CONNECT Scholar. In life, he commits to “being open, not in a box,” and that mantra drives his experiences, from serving as president of Brother2Brother to growing through STEM CONNECT.

Through STEM CONNECT, you work closely with faculty, peer mentors, and other students. What has been your favorite part of that experience? Is there anything you’ll take away from it?

STEM CONNECT is a true blessing and the support they give to me and my cohorts in all facades of the college experience. I enjoy having the resources to be able to connect with people that will be in the same industry as me. As a person who loves to try to make the most out of the wonderful opportunity for networking in college, I fall short very often in doing so. STEM CONNECT gives the blueprint on how important that community is and how beneficial it can be for everyone involved.

You’re also the president of Brother2Brother. What is the goal of this organization and how has it impacted your college experience?

I am the president of Brother2Brother, and we have a spring symposium every spring semester covering the topics of what we at B2B like to call M³: Masculinity, Mental Health, Money. This is our flagship event and through events like this and others, our plan is to connect the minority men on campus and cultivate an environment where we can come together and get out of the habit of isolation at an institution that is predominantly white.

Talk a little about your focus of “being open, not being in a box.”

When I describe myself as being open and refusing to be in a box, it’s just my mantra of sorts. I always want to be able to grow as a human and gain the best knowledge, perspective, ideas, habits, etc., from any and every person that I encounter. I am open. Open to be wrong and be corrected. Open to criticism. Open to change. When I say open, I use it as an umbrella term, rightfully so. Being open in your mind body and opinions simply makes you a better person.

COURTESY PHOTO

Nebraska junior Michael Sanders serves as president of Brother2Brother and is a part of the STEM CONNECT Scholars program.

What is your advice to other students looking to make an impact?

If you want to make an impact, just start. In any way shape or form that feels morally right to you. There isn’t a one-size-fits-all knowledge cap that I can give. There are many ways to make an impact and create change and not every route is suited for everyone. So just start. People will find you and you should try to find others with the same drive. Gaining relationships with faculty is also an important factor in helping. Wisdom is key, forever and always, and getting that knowledge from someone who’s seen and made things happen over the years is vital.

GET TO KNOW
GRADUATE STUDENT:

SHAHRIYAR ROSHAN ZAMIR

Where are you from?
I am an Iranian born dual citizen. Prior to Nebraska, I lived in Dubai, Georgia (the state!) and Minnesota.

What is your research area of interest?
As my base I like commutative algebra, toppings include algebraic geometry, computational algebra and invariant theory. More specifically I study numerical invariants of ideals that arise from group actions.

What is the best advice you have been given regarding graduate school or your career?
This quote by Sophia Loren sums it up: “Getting ahead in a difficult profession requires avid faith in yourself. You must be able to sustain yourself against staggering blows. That is why some people with mediocre talent, but with great inner drive, go so much further than people with vastly superior talent.”

What is a goal you have accomplished as a Husker?
I’ve attended two football games in four years! In all seriousness, I am proud of making time for working out and therapy since day one of my Ph.D. program.

What types of jobs are you interested in pursuing after graduation?
That’s the million-dollar question. I am undecided. Ideally, I’d like a good academic job but those are hard to get. I think anything that challenges me intellectually and doesn’t crush my soul would work.

What do you hope to cross off your “bucket list” in the next few years?
Finishing my dissertation is on top of the list. It’d be nice to do that while making a difference in my student’s educational journey. As a personal goal, I’d like to go to the Zoo Bar more and make more (non) mathematical connections.

Undergraduate awards

Chair's Prize
Awarded to an outstanding senior mathematics major
Michael Pieper and Ana Podariu

Chancellor's Scholars
Samantha Bannister, May 2022
Jackson Goddard, May 2022
Elizabeth Griggs, December 2021
Robyn MacDonald, December 2021
Anthony Palmesano, May 2022

Senior Honors Thesis and Graduated with Distinction (directed by):
Gabriel Adams (Alex Zupan and Mark Brittenham, Mathematics) – May 2022

Michael Pieper (Mikil Foss and Petronela Radu, Mathematics) – May 2022

Sawyer Smith (Josh Brummer and Amy Bennett, Mathematics) – May 2022

Special Scholarships Awards
Note: 59 scholarships were awarded for the 2022–23 academic year.

Dean H and Floreen G Eastman Memorial Scholars
For Nebraska high school graduates
Lawand Anwer, Alyssa Betterton, Nataliya Brana, Eylon Caplan, Anh Hao Dao, Grace Farson, Ronit Gandhi, Anjaneshwar Ganesan, Josha Gromowsky, Kaitlin Keleher, Simon Kerr, Samuel Kirchner, Gillian Kohl, Emily Kokesh, Benjamin Lohrman, Helen Martinez, Aleah Miller, Shivani Mudhelli, Caitlin Murphy, Matthew Naumann, Kolton O'Neal, Lily Rippeteau, Darin Schlautman, Spencer Schmidt, Margaret Scott, Tyson Shields, Erica Steiner, Sara Vance, Nicholas White, Cleve Young

Sylvia and Hans Jeans Mathematics Scholarship
Cole Johnson, Garrett Mayer, Yashaswi Mehra, Layla Montemayor, Tram Nguyen, Keegan Oldani, Liam Seper, Jacob Snider, Tatiana Startseva, Xiangyuan Su, Sarah Van Hare

Joel Stebbins Fund Scholarship
Eylon Caplan

Drusilla Winchester Scholarship
Angeline Luther

Ruby Matzke Wittemore Scholarship
Layla Montemayor

Irwin Dubinsky Memorial Scholars
Ritvik Handa

Renneman/Luebbers Scholarship
Morgan Brockner, William Hammann, Abraham Schaecher, Elizabeth Weber

Dr. Hubert Schneider Memorial Scholarship
Angeline Luther

Linda Bors Mathematics Scholarship
Alyssa Betterton

Bachelor's degrees

August 2021: Lixin Cao, Hoong Kai Cheong, Calista Humphrey, Cameron Ramsey, Yihan Xiao, Xiaoyang Li

December 2021: Mallak Al Mamari, Alexander Batelaan, Dinesh Budhathoki, Bryan Chavez, Clay Christenson, Elizabeth Griggs, Utkarsh Hardia, Laila Hasan, Yuwen Jin, Joseph Koetting, Ryan Lampe, Bowen Luo, Robyn MacDonald, Bhabishya Neupane, Josh Stallbaumer, Ran Ye, Emily Zimmerman

May 2022: Gabriel Adams, John Hsian Chao Ang, Michael Bania, Samantha Bannister, Wencheng Bao, Tomo Bessho, Charlie Bonk, Ben Buckwalter, Jack Bydalek, Daryn Capps, Shelby Castle, Alexander Cathcart, Collin Dougherty, Mackenzie Doyle, Stanley Drvol, Katie Gerot, Jackson Goddard, Hunter Godina, Colton Gronewold, Michael Hackett, Aaron Hall, Riley Hayes, Gregory Hubbard, Ray Huck, Asmita Jayswal, Zachary Kerkman, Natalia Koval, Jadyn Larsen, Xavier Layman, Mohammad Majid, Stephanie Marsh, Vishnu Menon, Drew Merritt, Anthony Palmesano, Michael Pieper, Ana Podariu, Margaret Pollard, Jordan Pond, Jordan Rodriguez, Emma Rose, Spencer Salem, David Scalzo, Aleka Schlake, Daniel Schlautman, Ben Schweigert, Jarod Schwinck, Steven Silgado, Sawyer Smith, Kevin Snyder, Chaofan Song, Jackson Speer, Luke Van Drie, Tai Vo, WenTao Wang, Andrew Wiedenmann, Sonya Wu, Haodi Xu, Ashley Zugay

Doctoral degrees

Awadalla, Laila *Level and Gorenstein projective dimension*, advised by Tom Marley

Buczkowski, Nicole *Continuous Dependence of Solutions to Nonlocal Systems with Heterogeneous Kernels of Interaction,* advised by Mikil Foss and Petronela Radu

DeBellevue, Michael *Bigraded Deviations, Rigidity, and the Koszul Property,* advised by Alexandra Seceleanu and Mark Walker

Egging, Paula *A Mixed Variational Formulation for the Wellposedness and Numerical Approximation of a PDE Model Arising in a 2-D Fluid-Fluid Interaction*, advised by George Avalos

McMillon, Emily *Theory and Design of Graph-Based Codes for Improved Iterative and Windowed Decoding*, advised by Christine Kelley

Olson, Hayley *Mathematical Analysis for nonlocal nonlinear diffusion models*, advised by Mikil Foss and Petronela Radu

Volk, Adam *Extremal Problems in Graph Saturation and Covering*, advised by Jamie Radcliffe

Master's degrees

MS/MA (through May): Ellyn Collier, Jordan Crawford, Johan Cristobal, Juliann Geraci, Audrey Goodnight, Timothy Guice, Alex Heitzman, Tyler Lowery, Susanna Rempel, Tessa Stevens, Carlie Triplitt, Maia Van Bonn

MAT (Dec. 2021-May 2022): Stacy Andrews, Renetta Birdsall, David Christensen, Kelsea Hournbuckle, Jenna McCleary, Sarah Murmann, An Nguyen, Gemma Nguyen, Tyler Nordbrock, Rebecca Pitts, Terri Rech, Syed Reza, Clint Ryan, Schyler Scott, Lyn Stennett, Benjamin Weyeneth, Kristin Will, Angela Zarnowski

Graduate program awards & fellowships

Don Miller Award for Outstanding Teaching by a Graduate Student
Emily McMillon

Grace Chisholm Young and William Henry Young Award
Nikola Kuzmanovski

Outstanding Qualifying Exam
Charles Chen

Walter Mientka Teaching Award
Johan Cristobal

AWARDS { PAGE 23 }

Chair's Circle
(donors above $5,000)

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Dr. Wendy M. and Mr. Eric M. Smith
Ms. Mary E. Sommermeyer
Mr. and Mrs. Ray A. and Karen Stevens, Jr.
Drs. Judy L. and Mark E. Walker
Mr. Brian J. Wickman
Drs. Roger A. and Sylvia M. Wiegand
Dr. Alexander M. and Mrs. Raychal N. Zupan

AWARDS
{ FROM PAGE 22 }

Amy Bouska GTA Leadership Award
Matthew Bachmann

Outstanding First-Year Student Award
Jordan Crawford and Maia Wichman

Bill Leavitt Award
Valerie Morris

Lloyd Jackson Award
Frank Zimmitti

Linda Bors Fellowships
Laila Awadalla, Rachel Funk, Jake Kettinger

Ben Carse Nolting Award
Shah Roshan Zamir

2021–2022 Steven Haataja Award for Outstanding Exposition by a Graduate Student
Sara McKnight

College of Arts and Sciences Inclusive Excellence and Diversity Award; Office of Diversity and Inclusion Promising Leader Award
Kaitlin Tademy

Internships and summer schools

Dylan McKnight, MSRI Recent Topics in Well-Posedness, Taipei, Taiwan, summer 2022

Sara McKnight, Goddard Space Flight Center, summer 2022 (virtual)

Emily McMillon, MSRI Topological Methods for the Discrete Mathematician; Algebraic Coding Theory Summer School in Zurich, Switzerland, summer 2022

Hayley Olson, MSGI Program at Sandia National Lab, summer 2021

Isabel Safarik, Los Alamos National Labs, Parallel Computing Summer Research Internship, summer 2022

Jason Vander Woude, Sandia National Lab, summer 2021

Kathryn Van Etten, BRIDGES (Building Relationships for an Inclusive and Diverse Group of Emerging Students) Program at University of Utah; EDGE (Enhancing Diversity in Graduate Education) Program Mentor at Oxford University, summer 2022

Collin Victor, MSRI Recent Topics in Well-Posedness, Taipei, Taiwan, summer 2022

Anh Vo, MSRI Integral Equations and Applications, summer 2022

Dan Welchons, Algebraic Coding Theory Summer School in Zurich, Switzerland, summer 2022

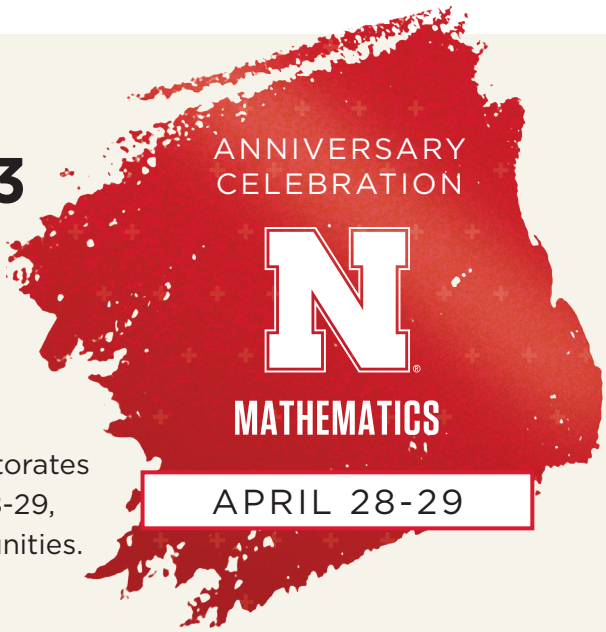
DEPARTMENT OF MATHEMATICS

203 Avery Hall
Lincoln, NE 68588-0130

Save the Date:

ANNIVERSARY EVENT 2023

Mark your calendars for next year's spring event on campus in April, celebrating the 125th anniversary of the first Ph.D. awarded in the Department of Mathematics, the 25th annual Nebraska Conference for Undergraduate Women in Mathematics, and 35 years of Math Day, as well as milestones in 2021: 50 years of service for Jim Lewis and reaching 100 doctorates awarded to women. The 125th anniversary event will be April 28-29, 2023, and will include virtual and in-person networking opportunities. Watch for more information at **math.unl.edu/friends**.



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