ASSOCIATION FOR WOMEN IN MATHEMATICS

Newsletter

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The purpose of the Association for Women in Mathematics is to create a community in which women and girls can thrive in their mathematical endeavors, and to promote equitable opportunity and treatment of women and others of marginalized genders and gender identities across the mathematical sciences.

IN THIS ISSUE

PRESIDENT'S REPORT

As president, celebrating and highlighting the achievements of others brings me the most joy. At the summer MAA MathFest held in Tampa, Florida, we recognized Tatiana Toro as the 2023 AWM-MAA Etta Zuber Falconer Lecturer. Toro shared her research work in geometric measure theory and her commitment to keeping doors open for all in mathematics. I am thankful for her work as the Director of the Simons Laufer Mathematical Sciences Institute (SLMath, formerly MSRI) and for being a "driving force" of the Latinxs in the Mathematical Sciences (LATMATH) Conference.

At MAA MathFest, we honored AWM Student Chapters by recognizing their innovative ways to provide meaningful opportunities for students to engage in mathematics. On a Friday evening, I invited chapter members to stand in front of a lively room of young mathematical scholars where we all gave rounds of applause to the chapter award winners at Western Ontario University (Community Outreach), University of Texas at Austin (Fundraising/Sustainability), Rutgers University (Professional Development) and the University of Pittsburgh (Scientific Excellence). Recognizing and encouraging these scholars who bring copious amounts of mathematical enthusiasm is essential.

In my first days as president-elect, I was asked to orchestrate the AWM Research Symposium at my institution, Clark Atlanta University (CAU). Due to the pandemic, we have not had many larger-scale conferences on our campus. To my delight, the local organizing committee—Brian Bentley, Eboni Dotson, Lakeshia Legette Jones, and Shanise Walker—stepped up and crafted a wide selection of mathematical topics via the sessions and speakers, incorporating yoga breaks. Having the Symposium on the campus of CAU, a Historically Black University located in Atlanta, Georgia, known as the "LGBTQ+ capital of the South," brought a refreshing atmosphere to share mathematics and develop new networks.

At the Symposium, panelists on the "Research Collaboration Conferences and Networks" noted the struggle with kindness towards underrepresented groups in their activities. The commitment to enhance openness and kindness resonated clearly at the Symposium. I personally struggled during Nicole Joseph's plenary lecture on "Making Black Girls Count in Mathematics Education." As Joseph shared the struggles that black girls encounter in the mathematics classroom, the pain I experienced from K–12 to graduate school to the workplace came back to me in an overwhelming way. I did not have my intellect valued, I was being compared to and labeled as "strictly less than," and I was an outcast in a system that should be responsible for providing me access to education. I appreciate her work, and I am reassured by her insights and courage in telling the "hidden" stories.

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ASSOCIATION FOR WOMEN IN MATHEMATICS

AWM was founded in 1971 at the Joint Meetings in Atlantic City.

The *Newsletter* is published bi-monthly. Articles, letters to the editor, and announcements are welcome.

Opinions expressed in *AWM Newsletter* articles are those of the authors and do not necessarily reflect opinions of the editors or policies of the Association for Women in Mathematics. Authors sign consent to publish forms.

Circulation: 3500.

PRESIDENT'S REPORT *continued from page 1*

Cultivating an atmosphere that fosters mathematical curiosity and achievements resonates clearly in the AWM. With a deeply committed Executive Committee and dedicated committee volunteers and supporters, this work is the work of us all that does indeed build us all. While the tasks can be complicated at times, I am thankful for the thoughtfulness of past-president Kathryn Leonard and the strategic guidance of Darla Kremer. As we embark on crafting out development to support our work, I am excited about how together, we all expand the work to encourage and support more women and girls in the mathematical sciences. Thank you for being with us.

Talitha Washington

Talitha Washington
October 1, 2023
Atlanta, GA

AWM Election

This year, we are electing a President-Elect, a Treasurer, and four Members-at-Large of the Executive Committee. The Member-at-Large positions are contested, so we encourage you to vote. Statements, biographical data, and photos provided by the candidates follow. Those elected will take office on February 1, 2024.

On or about November 10, 2023, you will receive an email inviting you to vote. At that time the electronic ballot link (awm-math.org/ballot.htm) will be activated. You will be asked to provide your membership number when you vote; this number will be included in the email that you receive. Also, a ballot is included on page 11 of this issue, for those who prefer to vote the old-fashioned way. A validating signature is required on the envelope if you vote via paper ballot. Institutional, affiliate, and corporate memberships do not carry voting privileges. Electronic ballots must be cast by **December 1, 2023**, which is also the due date for paper ballots.

PRESIDENT-ELECT

Raegan Higgins, Texas Tech University

Statement: My engagement with the Association for Women in Mathematics (AWM) began early in my career when I presented my research at a JMM in the AWM workshop for women graduate students and recent PhDs. This experience connected me to other women in mathematics and helped to anchor me in the broader mathematical community. Hearing and learning from women

at various career and life stages was empowering, and I recall believing, "Perhaps I can survive in mathematics with this support."

AWM must continue supporting women in their educational and professional journeys. While having a full schedule as a faculty member and administrator, I volunteer weekly in my children's mathematics classes. I see the need to encourage and validate K–12 girls in mathematics. Our support begins with this group. To increase and sustain interest in the field, we must find ways to inspire curiosity and passion for mathematics in young girls. After all, women and girls in math equals better math. We bring diversity to research and teaching by expanding the pool of professionals and providing fresh perspectives that benefit the field.

Raegan Higgins. Photo credit: Texas Tech Athletics

AWM must be innovative as it develops and implements new initiatives that assess and address the barriers to entry and advancement in mathematics. Dismantling these barriers will enhance our ability to engage girls in math and other women with marginalized identities. As a professional organization that values teaching, research, and service equally, AWM is equipped to break down these barriers and do its part in repairing the leaky pipeline and creating a truly inclusive community for all women.

Join me in continuing our work to empower women mathematicians by celebrating their accomplishments, amplifying their voices, and recognizing their invaluable contributions. Join me in improving our community to support, inspire, and equip women to excel in their mathematical pursuits. Join me in debunking stereotypes that hinder women and girls from participating in our field. With your help, we will continue AWM's mission to "create a community in which women and girls can thrive in their mathematical endeavors and to promote equitable opportunity and treatment of women and others of marginalized genders and gender identities across the mathematical sciences."

Biographical information: A Louisiana native, Higgins earned her bachelor's degree in mathematics from Xavier University of Louisiana and her master's and doctoral degrees from the University of Nebraska–Lincoln. She is a professor of mathematics at Texas Tech University, where she has been a faculty member since 2008. Her primary research focuses on oscillation criteria for dynamic equations on time scales (nonempty subsets of the real numbers). Recently, Higgins began studying applications of time scales to prostate cancer.

Because of her experiences pursuing a STEM graduate degree at a PWI, Higgins understands the importance of creating supportive environments where underrepresented students can thrive. As a result, she continues to build STEM pipelines for young people through teaching and mentoring. At Texas Tech, Higgins is the lead PI of the Louis Stokes Alliance for Minority Participation (LSAMP) of Bridges Across Texas, a two-million-dollar National Science Foundation grant focusing on increasing the number of underrepresented minorities who earn associate and baccalaureate STEM degrees at the five alliance institutions.

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Membership Dues
Membership runs from Oct. 1 to Sept. 30
Individual: $70/$100 **Family:** $40
Contributing: $160/$190
New member, affiliate and reciprocal members, retired, part-time: $30/$35/$40
Student: $25 **Unemployed:** $20
Outreach: $10
AWM is a 501(c)(3) organization.

Institutional Membership Levels
AWM offers a tiered pricing structure for institutional memberships in six categories. Higher levels are:
Supporting Institutions: $750+ and
Sponsoring Institutions: $3000+
See awm-math.org for details.

Executive Sponsorship Levels
$5000+
$2500–$4999
$1000–$2499
See awm-math.org for details.

Print Subscriptions and Back Orders—Regular and contributing members living in the US may elect to receive a print version of the *Newsletter.* Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for $75/year. Back orders are $20/issue plus shipping/handling ($5 minimum).

Payment—Payment is by check (drawn on a bank with a US branch), US money order, or international postal order. Visa and MasterCard are also accepted.

Newsletter Ads—AWM will accept ads for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership, and other appropriate subjects. The Managing Director, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the* Newsletter *must be Affirmative Action/Equal Opportunity designated.* Institutional members receive discounts on ads; see the AWM website for details. For non-members, the rate is $130 for a basic four-line ad. Additional lines are $16 each. See the AWM website for *Newsletter* display ad rates.

Newsletter Deadlines
Editorial: 24th of January, March, May, July, September, November
Ads: Feb. 1 for March–April, April 1 for May–June, June 1 for July–Aug., Aug. 1 for Sept.–Oct., Oct. 1 for Nov.–Dec., Dec. 1 for Jan.–Feb.

Addresses
Send all queries and all *Newsletter* material except ads and queries/material for columns to Anne Leggett, amcdona@luc.edu. Send all book review queries/material to Marge Bayer, bayer@ku.edu. Send all education column queries/material to Jackie Dewar, jdewar@lmu.edu. Send all media column queries/material to Sarah Greenwald, appalachianawm@appstate.edu and Alice Silverberg, asilverb@math.uci.edu. Send all student chapter corner queries/material to Malena Español, student-chapters@awm-math.org. Send everything else, including ads and address changes, to AWM, awm@awm-math.org.

At Texas Tech, she is an Integrated Scholar and a member of the Teaching Academy. Additionally, Higgins is an Associate Vice Provost of Faculty Success. In her role, Higgins develops initiatives, programs, and opportunities specific to inclusion and equity, mentorship, and professional development, and she helps implement reviews of and changes to current policies and procedures that faculty have identified as barriers to advancement.

Nationally, she is a co-director of the Enhancing Diversity in Graduate Education (EDGE) Program, a 2018 Presidential Award for STEM Mentoring recipient, and a 2007 AMS Mathematics Programs that Make a Difference recipient. She participated in the EDGE Summer Session in 2002 as a student and later served as a workshop facilitator for several years before moving into her current role. Additionally, Higgins is a co-founder and co-creator of the website Mathematically Gifted and Black, which highlights the contributions and lives of Black mathematicians who have significantly contributed to research, mentoring, and teaching in the mathematical sciences.

Higgins is an AWM Fellow, a recipient of the AWM Gweneth Humphreys Award for Mentoring, a recipient of the AWM Service Award, an associate editor of *La Matematica*, and a recipient of the Texas Section of the Mathematical Association of America Ron Barnes Distinguished Service to Students Award.

TREASURER

Mary Shepherd, retired, Northwest Missouri State University

Statement: It is once again an honor and a privilege to be considered for the position of Treasurer of the AWM. It has been very rewarding to serve as Treasurer of the AWM for the past 4 years. I have enjoyed putting to use the accounting degree and my previous work as an accountant since retiring from teaching mathematics. I have been a member of AWM since receiving my PhD in mathematics. I chose to be a member to support other women in mathematics in general and those particularly who might follow in a less traditional career trajectory in mathematics, as I have. As Treasurer for the past 4 years, it has given me an opportunity to work for the financial health of the organization and help continue the good work that has been started in its 50+ year history. I look forward to continuing this support and looking after the financial well-being of AWM.

Mary Shepherd. Photo credit: Kathleen Tripp

Biographical information: Mary Shepherd retired in 2021 from Northwest Missouri State University where she was a professor. She is living the retired life now in Mesa, Arizona. Her research interests started in differential geometry and continued into undergraduate mathematics education, particularly in reading mathematics where she has had several publications. She has also worked

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AWM ONLINE

The *AWM Newsletter* is freely available online.

Online Ads Info: Classified and job link ads may be placed at the AWM website.

Website: https://awm-math.org
Updates: webmaster@awm-math.org

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AWM DEADLINES

AWM Workshop at SIAM:
November 15, 2023

Proposals for 2025 AWM Research Symposium: December 15, 2023

AWM Essay Contest: February 1, 2024

RCCW Proposals: February 1 and July 1, 2024

AWM Mentoring Travel Grant:
February 15, 2024

AWM Travel Grants: February 15 and May 15, 2024

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in mathematics as created or expressed in needlework where she has chapters in three books, and since retirement an article published in the *Journal of Mathematics and the Arts*. She earned an undergraduate degree in music performance (clarinet) from Missouri State University in 1976, a Master of Accountancy from the University of Oklahoma in 1987 and a masters and PhD in mathematics from Washington University in St. Louis in 1996. She initially taught at SUNY–Potsdam from 1996 to 2001. She is a Project NExT fellow (Peach Dot–1997) and helped found the Missouri Section NExT program. She has been Secretary/Treasurer, Chair, and Governor/Section Representative of the Missouri Section of the MAA. She has also served on the EC of the MAA as the Budget and Audit member (2008–2010) and after reorganization of the MAA EC, continued to serve as the appointed person on the Audit Committee of the Board of Governors until 2018. Mary served as a member of the MAA Committee on Teaching of Undergraduate Mathematics and was involved with the writing and publication of the *Instructional Practices Guide of the MAA*. She is currently a member of the Joint Data Committee as the MAA representative and has just been appointed to a second 3-year term. Prior to returning to school to pursue mathematics, she was an accountant at various private companies, the last one being Hertz Rent-A-Car which she left in 1990 to pursue her PhD in mathematics. She passed the CPA exam in 1987. She is currently also treasurer for her church.

MEMBER-AT-LARGE

Julie Bergner, University of Virginia

Statement: I have benefited from many of the AWM's programs since first becoming a member as a graduate student, and I would be honored to serve on its Executive Committee. Making our community more inclusive is one of my priorities; for example, I have been using active learning and specifications grading to make a less competitive classroom environment, and as Director of Graduate Studies I have been actively working to recruit and retain a more diverse student population. I have also sought to build bridges between different communities in mathematics, for example by organizing workshops that bring together researchers in different but related fields, and by serving as an editor at the *American Mathematical Monthly* as well as at more specialized journals. I believe that both of these goals fit well with working with the AWM.

In the last decade, I've been privileged to be a part of the Women in Topology (WIT) network and collaborative workshops, both as a team leader and an organizer, and to witness the dramatic effect it has had on the retention and continued success of women in my field. Especially with recent challenges to funding such programs, I am interested in navigating the best ways to continue to create effective spaces for women and members of other underrepresented groups to be successful mathematicians.

Julie Bergner. Photo credit: Molly Jordan Angevine, UVA College of Arts and Sciences

Biographical information: Julie Bergner is a professor at University of Virginia. She received her PhD at University of Notre Dame and her undergraduate degree at Gonzaga University. She has previously held positions at Kansas State University and University of California, Riverside, as well as visiting positions at MSRI, Cornell University, the Hausdorff Institute, and the Newton Institute. Her research is in homotopy theory, and she is currently on the Steering Committee for the Women in Topology Network. She has previously served on the AWM-MAA Liaison Committee.

Monica Jackson, American University

Statement: I am honored to be considered for election to the AWM Executive Committee! I first joined AWM as a graduate student at the University of Maryland. As a young mathematician, I benefited greatly from the mentorship and support AWM provided me to attend conferences. I am honored now to work beside one of the founding members of AWM, Mary Gray, who has served as my mentor at American University for the last 18 years. AWM's priority of increasing representation of women in STEM is a passion of mine and shown by all my work in this area. At American University, I served as the College of Arts and Sciences first diversity officer where I focused on supporting

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Monica Jackson. Photo credit: American University

women and underrepresented minorities in STEM. My work centered around students and faculty. I also have served as the director of the award-winning research experience for undergraduates titled SPIRAL (Summer Program in Research and Learning) for seven years. This REU is aimed at improving the pipeline of women and underrepresented groups in STEM careers. Currently, as Deputy Provost and Dean of Faculty, I use my decades of experience as a faculty member to facilitate activities such as promotion and inclusive hiring at my campus. These are only a few of my activities that support women in mathematics. I hope to expand my work on a much broader scale to assist AWM with the goal of advancing careers and improving representation of women mathematicians.

Biographical information: Monica Jackson is the Deputy Provost and Dean of Faculty at American University in Washington, DC. She is also a professor of mathematics and statistics. Jackson has been at American since 2005. She established AU's first Summer Program in Research and Learning, where undergraduate students and faculty from across the country conduct scientific research at AU. She has served as associate dean of undergraduate studies in the College of Arts and Sciences, as CAS's first diversity, equity, and inclusion officer. She is also a principal investigator for AU's ADVANCE grant, analyzing gender and racial data and working to increase equity in these areas among STEM faculty.

Her current research interest is in the areas of spatial statistics and disease surveillance with applications to developing, investigating methods for detecting cancer clusters, global clustering patterns, and developing simulation algorithms for spatially correlated data. Jackson has spent sabbaticals at the National Cancer Institute, the Institute for Pure and Applied Mathematics at UCLA, and the Statistical and Applied Mathematical Sciences Institute, where she worked on applying her spatial techniques to a wide variety of medical problems. She has won numerous awards for her scholarship and service. Those include the Frederick Douglass Distinguished Scholars Faculty Fellow, the Delta Kappa Gamma International Educational Society Most Valuable Member, and the Morton Bender Prize for outstanding research. Prior to coming to AU, Jackson was a postdoctoral researcher at Emory University and an instructor at the University of Maryland. She has a BS and MS from Clark Atlanta University, and a PhD in applied mathematics and scientific computation from the University of Maryland.

Gizem Karaali. Photo credit: Pomona College

Gizem Karaali, Department of Mathematics & Statistics, Pomona College

Statement: I am honored to be nominated to run to serve as a member-at-large for the AWM Executive Committee. At each stage of my career, I have had help and support from many people, and a disproportionate number of those people were women, despite their relative scarcity within the mathematical sciences. At this point, I believe it is my turn to dedicate my time and resources to help and support others, and I would like to join the AWM Executive Committee to add my energy to its efforts of uplifting the voices of women mathematicians and more generally increasing the presence and visibility of women and other genders that have traditionally been underrepresented in the mathematical sciences.

Mathematics is a decidedly human endeavor, and even as the world changes, and artificial intelligences surround us, we cannot forget that humans are its most important component. Unfortunately, mathematics has through the years been used and abused to discriminate against and eliminate diverse voices from positions of power and influence. Today more and more mathematicians are aware of these connections of our discipline with power dynamics and structures, and we are more than ever willing to do something to change the status quo. I see AWM as a perfect platform for this kind of change.

Through the years, AWM has been a home for many of us, and I appreciated the solidarity it afforded me. However, there have always been some who felt left out. Today AWM can extend its reach even further, and I would like to be a part of that new thrust.

Biographical information: Gizem Karaali is professor of mathematics at Pomona College. She is a founding editor of *Journal of Humanistic Mathematics* and a senior editor of *Numeracy*, the journal of the National Numeracy Network. Karaali has published over a hundred articles as well as four edited volumes; most recently she edited, with Lily Khadjavi, the 2021 MAA Press book *Mathematics and Social Justice: Focusing on Quantitative Reasoning and Statistics*, which followed a 2019 book titled *Mathematics and Social Justice: Resources for the College Classroom*. In the last decade, Karaali received federal grants for her research and teaching (from the National Security Agency and the National Endowment for the Humanities).

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CALL FOR PROPOSALS

Host the 2025 AWM Research Symposium!

The Association for Women in Mathematics is seeking proposals from mathematics departments, institutes and other appropriate venues interested in hosting the 2025 AWM Research Symposium.

An AWM Symposium Organizing Committee—to include local coordinators—will be in charge of planning and scheduling the events, selecting speakers, session organizers and panelists. Proposals should contain the following information:

- Name of a local organizer: a mathematician with ties to the institution that will host the symposium. This person will become a member of the AWM Symposium Organizing Committee.
- The location and proposed dates.
- A written endorsement from the person who has the authority to provide the space and resources needed for the symposium.
- A description of the space available. The basic requirements are approximately as follows:
  - one large lecture room with a capacity of at least 350
  - 15 to 20 classrooms for special sessions and other gatherings (should each accommodate 30 participants) available throughout the meeting
  - space for poster sessions (should accommodate around 20 posters)
  - space for exhibits
  - space for registration, coffee breaks
- A description of the banquet facilities available (should accommodate 250–300 guests)
- A description of hotel space available within walking distance from the venue (or a plan for transportation to and from the hotel space)
- A list of support activities that will be provided by local staff (working with the AWM office and the Organizing Committee)
- AWM events adhere to the AWM Welcoming Environment and Diversity and Inclusion Policy (see https://awm-math.org/policy-advocacy/welcoming-environment/). Please describe steps you as local organizers will take and characteristics of your facilities that will ensure a welcoming environment for all participants.

Submit your proposal to the AWM Executive Director at ed.admin@awm-math.org before **December 15, 2023**. Feel free to contact us with questions and concerns before submission.

Christine Kelley, University of Nebraska–Lincoln

Statement: I am honored to be considered for the AWM executive committee. Throughout my career I have been passionate about mentoring and fostering inclusion and community in the mathematical sciences. This aligns with the AWM mission to promote equitable opportunity and treatment of women and other marginalized genders, and to encourage and promote the success of marginalized groups in mathematics. Small intentional changes eventually lead to long-term change. I am excited to bring my experiences from various roles to serve AWM and its mission, and to help continue its positive impact towards a better culture.

Biographical information: Christine Kelley is a professor of mathematics at the University of Nebraska–Lincoln (UNL). She received her BS degree in mathematics from the University of Puget Sound and her MS and PhD degrees in mathematics from the University of Notre Dame. Before joining UNL, she held postdoctoral fellow positions at the Fields Institute in Toronto and The Ohio State University. Kelley is currently serving as the MAA's Director of Project NExT (New Experiences in Teaching), a professional development program for junior faculty in mathematics. She is also in the current cohort of Big Ten Academic Alliance Leadership Program fellows.

Christine Kelley. Photo credit: Kevin Snyder Photography

Kelley's research is in error-correcting codes and applications, specifically graph-based codes and iterative decoding algorithms. To date she has graduated four PhD students (all women) and is currently supervising four doctoral students and one postdoc. In addition to mentoring graduate students and junior faculty, much of her service focuses on diversity and inclusion. She co-chairs the annual Nebraska Conference for Undergraduate Women in Mathematics, and she has served on its organizing committee for 17 years. She has chaired and continues to serve on UNL's College of Arts & Sciences' Inclusion Diversity Equity and Access (IDEA) committee, has served on the UNL math department's Diversity Committee, and has organized and served on numerous panels relating to creating a more inclusive community.

Emille Davie Lawrence

Emille Davie Lawrence, University of San Francisco

Statement: I am running for AWM Executive Committee Member at Large. I have held leadership and decision-making positions at my university and for national organizations, such as department chair and MAA Officer at Large. I am currently Senior Director for a university-wide initiative at the University of San Francisco. I am forward-thinking and outcome driven, while remaining patient, curious, and receptive to new ways of thinking.

Biographical information: Emille Davie Lawrence is Senior Director for the Black Achievement Success and Engagement initiative and associate professor at the University of San Francisco. She earned her BS in mathematics

from Spelman College and her PhD in mathematics from the University of Georgia. She has also been a postdoctoral fellow at the University of California, Santa Barbara and an assistant professor at California State Polytechnic University, Pomona. Her research focuses on topological properties of spatial graphs. She has been recognized for her work in the mathematics community including as the 2021 Association for Women in Mathematics Service Award winner, as a recipient of the 2021 Karen EDGE Fellowship for mid-career mathematicians, and also as a 2022 MAA Euler Book Prize winner.

Rosa C. Orellana, Dartmouth College

Statement: I am honored to be nominated to serve as a member at large in the AWM Executive Committee. I am deeply committed to the mission of the AWM of creating a community that encourages, creates opportunities, and promotes women in mathematics. In addition to organizing an annual Sonia Kovalevsky Math Day at Dartmouth, I have co-organized three workshops for women in algebraic combinatorics at BIRS at Banff and ICERM. I also co-edited a book for the AWM Springer series. If elected, I will work hard to continue the mission of the AWM.

***Biographical information*:** Rosa Orellana is a professor of mathematics at Dartmouth College, where she was awarded the John M. Manley Huntington Award for research, teaching, and mentoring. She was a first-generation college student with a dream of becoming a teacher. With the support of many mentors and advisors, she received her PhD from the University of California at San Diego. Before coming to Dartmouth, she was a President's Postdoctoral Fellow at the University of California. Her research is in algebraic combinatorics, in particular combinatorial representation theory. Her research work is supported by the National Science Foundation.

Rosa C. Orellana

Orellana loves mathematics and believes in supporting and encouraging everybody to discover its beauty. At Dartmouth she mentors and supervises graduate students, postdocs and undergraduate students. In particular, she enjoys introducing undergraduates to the joys of research and has mentored many undergraduate students. In 2013, she was the research director for MSRI-UP REU, leading 18 undergraduates in research projects. Orellana first became interested in mathematics in seventh grade; therefore, she started an annual Sonia Kovalevsky Math Day at Dartmouth to encourage middle and high school girls to discover math beyond the classroom.

Giving back to the community is something that Orellana finds very rewarding. Most recently, she was elected to the AMS council as a member-at-large and served until 2023. Currently, she serves on several committees at the AMS and MAA.

Katrin Wehrheim, UC Berkeley

Statement: I am very grateful for the invitation to get more involved with the AWM—for I am in need of new spaces in which I can feel a sense of belonging while doing serious work on bending the arc of the moral universe towards justice—within math, education, academia, the US, and the world. What I can—and in fact need to—contribute:

- deeply rooted counter-oppressive values and practices: I was born an antifascist in West Germany and have worked in some form of justice organizing for most of my life.
- creative, persistent, and sharp problem-solving skills: I have solved problems that "the experts" had declared unsolvable—such as building connections between symplectic and low-dimensional geometry by directly degenerating PDEs, or providing emergency housing for sick unhoused folks at the beginning of the pandemic.
- a position of immense privilege: I am tenured at UC Berkeley—after prior positions at MIT, IAS, Princeton University, and ETH Zürich—and I'm not shy to leverage the resources, platform, and time flexibility for good.
- lived experience of oppression that helps me comprehend other struggles: I have been the first or only female-presenting/nonbinary/queer/openly anti-racist/… person in most of the math spaces that I've traversed and

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*Katrin Wehrheim. Photo credit: Jim Wilson/*The New York Times

have directly experienced—or been the first responder to—most of the horrors that under-marginalized folks often can't believe to even be possible.

I also come as a package with high expectations and radical transparency—which in the past have often led me to choose individual pursuits over the slow work of building collective power. When I came to the US in 2003, I didn't find belonging in women-in-math spaces (seeing in particular some explicit exclusion of trans women)—so I built my own, more radically inclusive, micro-networks. When I served on the AWM Policy & Advocacy Committee 2014–16, I wasn't satisfied with the impact—so I dedicated myself to justice work outside of academia for the next five years. Then 2020 gave me the space to recombine my math and justice identities by flipping my teaching approach into counter-oppressive inquiry learning. Now 2023 has confronted me with immense institutional resistance and the insight that I am up against problems that will require collective action—which caused me to reconsider involvement with professional organizations such as the AWM. And I was glad to see how far the AWM has come towards radical inclusivity. Now I'm eager to contribute towards increasing its impact!

I know that I cannot expect full agreement on goals or values in such a diverse organization, but what I'm hoping for—and will personally ground in—is the solidarity approach of finding the common ground on which we can build, and focusing on making the change that is within our reach and common interest. Si se puede—yes we can.

Biographical information: Katrin Wehrheim is an associate professor of mathematics at UC Berkeley. Before starting that position in 2013—apparently as the first woman hired with tenure—they received a physics diploma from Imperial College and a mathematics PhD from ETH Zürich, held a postdoc position at Princeton University and a tenure-track position at MIT, and were a member at IAS Princeton several times. They received a Presidential Early Career (PECASE) Award in 2010 and have been generously funded by the NSF for most of their two decades in geometric analysis. Since 2020 their professional focus has been on math education to counter oppression.

Emily Witt. © 2016 KU Marketing

Emily Witt, University of Kansas

Statement: If we, as a society, want to expand the frontier of mathematics, we must include diverse perspectives. The AWM plays a crucial role in supporting women mathematicians, and I am excited by the opportunity to serve on its Executive Committee, where I think I can make a difference! As a Member-at-Large, I would aim to talk to lots of people, and consider different viewpoints. I would think critically about what's been done, help build on the many successes of the AWM, and work toward reform when necessary.

It is hard to put into words how grateful I am to the generous mentors I've had throughout my life—both research mentors and those who've helped guide me in other ways. Their impact on me has, in turn, inspired me to support others, and brings two major components of the AWM—its mentoring initiatives and the AWM Research Networks—close to my heart. If elected, I am especially interested in expanding and strengthening these types of programs.

My involvement in the Women in Commutative Algebra (WICA) Research Network and the AWM Mentor

Network give me experience that could prove valuable in these efforts. I co-organized the first WICA collaboration conference, hosted by BIRS in 2017, and I currently serve as a member of the AWM Research Networks Committee, supporting networks in other research areas. I've also made long-lasting relationships through the AWM Mentor Network. One of my mentees, who was matched with me when she entered graduate school, has since transferred schools, earned her PhD, and recently found a permanent job that she is very happy with!

One of my first memories of experiencing joy as a mentor was as an undergraduate at the University of Chicago, working in the SESAME program serving Chicago Public Schools teachers. Since then, I've become an informal mentor for many junior scientists, who often happen to be women and/or those from other underrepresented groups. I've also consistently been involved in formal mentoring and training programs, including ones outside of the AWM. For instance, I recently co-directed a series of REU training programs serving students from underrepresented groups, including those who don't have the prerequisites for many traditional REU programs.

Biographical information: Emily Witt is an associate professor of mathematics at the University of Kansas, where she is also a faculty member in the Institute for Information Sciences. Witt earned her PhD at the University of Michigan in 2011 and held postdoctoral positions at the University of Minnesota, the University of Utah, and MSRI. Her research is centered in commutative algebra, but has intimate connections with algebraic geometry, topology, and representation theory.

Witt was awarded the 2022–2023 Ruth I. Michler Memorial Prize from the AWM and Cornell University. Her research is currently supported by an NSF CAREER Award, and she will hold a Research Professorship at SLMath/MSRI next spring. She was recently honored at her home institution with the Don and Pat Morrison Foundation Award for Excellence in Teaching and the student-nominated J. Michael Young Academic Advisor Award.

Witt grew up in Kalamazoo, Michigan, which is halfway between Chicago and Detroit. She worked through college at the University of Chicago, first as a hospital bed factory worker and coffee shop manager, before finding her passion for mentoring in initiatives such as the SESAME Program. Witt is a dedicated environmentalist. She enjoys group fitness classes and running with her husband, fellow mathematician Daniel Hernández, and their dog, Lucky.

AWM Ballot

You will receive an email inviting you to vote electronically (or see awm-math.org/ballot.htm); those who prefer may mail this ballot or a copy thereof to AWM, Attn: Samantha Faria, 201 Charles Street, Providence, RI 02904, to be received by **December 1, 2023**. You must validate a mail ballot by signing your name on the envelope, or your vote will not be counted.

President-Elect (vote for one):
- ❑ Raegan Higgins
- ❑ _____

Treasurer (vote for one):
- ❑ Mary Shepherd
- ❑ _____

Member-at-Large (vote for up to four):
- ❑ Julie Bergner
- ❑ Monica Jackson
- ❑ Gizem Karaali
- ❑ Christine Kelley
- ❑ Emille Davie Lawrence
- ❑ Rosa C. Orellana
- ❑ Katrin Wehrheim
- ❑ Emily Witt
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____

2024 Class of AWM Fellows

The AWM Executive Committee established the Fellows Program to recognize members who have demonstrated a sustained commitment to the support and advancement of women in the mathematical sciences, consistent with the AWM mission: "to create a community in which women and girls can thrive in their mathematical endeavors, and to promote equitable opportunity and treatment of women and others of marginalized genders and gender identities across the mathematical sciences." AWM has named twelve mathematicians as 2024 AWM Fellows.

Erika Tatiana Camacho, University of Texas at San Antonio

For her leadership in the advancement, mentoring, and support of women and underrepresented groups at all levels through the creation of opportunities, collaborative research, and impactful service. Her work brings sustained systemic change, diversity, equity, and inclusion in mathematics, and more broadly in STEM.

Ellen Eischen, University of Oregon

For her energetic support for women in mathematics, particularly through her work in the Women in Numbers network; for connecting marginalized students to the mathematics community and making mathematics accessible to all students; and for creating opportunities for women mathematicians to flourish.

Kathryn Hess Bellwald, École polytechnique fédérale de Lausanne

For her support of women in mathematics via innovative and impactful programs, including her role in founding and sustaining the Women in Topology program; for her exceptional mentoring; and for her commitment to gender diversity throughout her many leadership roles in the mathematics profession.

Michael Hill, University of California, Los Angeles

For being a consistent and vocal ally for women and nonbinary researchers; for his commitment to inclusion as part of the founding board of Spectra (the association for LGBT mathematicians); for being a founding editor of *La Matematica* and for his ongoing service to the AWM Mentor Network; and for working to make mathematics a welcoming and joyful place for all of us.

Christine Kelley, University of Nebraska–Lincoln

For initiating and continuing impactful efforts to encourage young women to pursue mathematics, including her instrumental leadership within the Nebraska Conference for Undergraduate Women in Mathematics; and for her long record of mentoring, advising, and supervising women in mathematics.

Matilde Lalín, Université de Montréal

For her ongoing contributions to the AWM, most notably her leadership role in the Women in Numbers

NSF-AWM Travel Grants for Women

Mathematics Travel Grants. The objective of the NSF-AWM Travel Grants is to enable women mathematicians to attend conferences in their fields, which provides them a valuable opportunity to advance their research activities and their visibility in the research community. Having more women attend such meetings also increases the size of the pool from which speakers at subsequent meetings may be drawn and thus addresses the persistent problem of the absence of women speakers at some research conferences. The Mathematics Travel Grants provide full or partial support for travel and subsistence for a meeting or conference in the applicant's field of specialization.

Selection Procedure. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM. A maximum of $2300 for domestic travel and of $3500 for foreign travel will be funded. For foreign travel, US air carriers must be used (exceptions only per federal grants regulations; prior AWM approval required).

Eligibility and Applications. Please see the website (https://awm-math.org/awards/awm-grants/travel-grants/) for details on eligibility and do not hesitate to contact awm@awm-math.org or 401-455-4042 for guidance. Applications from members of underrepresented minorities are especially welcome.

Deadlines. There are three award periods per year. Applications are due **February 15**, **May 15**, and **October 1**.

Network and considerable contributions in its growth; for her service to the International Mathematics Union Committee for Women; and for her ardent efforts towards making conferences more welcoming and accessible for researchers by actively advocating for childcare resources.

Emille Davie Lawrence, Black Achievement Success & Engagement, University of San Francisco

For her commitment to sharing her love of mathematics with girls, women, and underrepresented groups; for creating the blog "Math Mamas" and editing the book *Living Proof* whose goal is "to provide support and inspiration for mathematics students experiencing struggle and despair"; and for her extensive service to AWM, especially during its 50th Anniversary celebration.

Katharine A. Ott, Bates College

For immense dedication to outreach to girls and women, including directing GirlsGetMath at ICERM; for supporting AWM through committees, grant-writing, the newsletter, and AWM's USA Science and Engineering Festival booth; and for leading award-winning tutoring and volunteering initiatives in Maine.

Margaret Maher Robinson, Mount Holyoke College

For her support and empowerment of several generations of women in mathematics; for her mentoring within the Hudson River Undergraduate Mathematics Conference and the Carleton Summer Math Program; and for seeing the spark in each individual under her guidance and supporting them in the fulfillment of rewarding careers in mathematics.

Karen Saxe, Macalester College, American Mathematical Society

For her long-standing efforts with professional societies advocating for policies—notably at the federal level—to reduce barriers and further support women and others who have had limited access to STEM careers; for mentoring women at all career stages; and for program-building to recruit and retain women in the math research ecosystem.

Christina Sormani, Lehman College and CUNY Graduate Center

For utilizing every opportunity to open pathways to mathematics for more women and students by creating and maintaining online access to advice, mathematical resources, and information about women mathematicians; for organizing the "Inspiring Talks by Mathematicians" lecture series featuring underrepresented speakers; and for her dedicated and active contributions to the AWM.

Suzanne L. Weekes, Society for Industrial and Applied Mathematics, Worcester Polytechnic Institute

For her consistent and outstanding support for broadening the participation of women and girls as well as others that are underrepresented in mathematics; for her award-winning teaching and mentoring; and for her vision and success in co-creating and co-directing innovative programs that have improved and diversified the mathematics community.

NSF-AWM Mentoring Travel Grants for Women

Mathematics Mentoring Grants. The objective of the NSF-AWM Mathematics Mentoring Travel Grants is to help junior women to develop long-term working and mentoring relationships with senior mathematicians. This relationship should help the junior mathematicians to establish their research programs and eventually receive tenure. Each grant funds travel, accommodations, and other required expenses for an untenured woman mathematician to travel to an institute or a department to do research with a specified individual for one month. The applicant's and mentor's research must be in a field which is supported by the Division of Mathematical Sciences of the National Science Foundation.

Selection Procedure. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM. A maximum of $5000 per award will be funded.

Eligibility and Applications. Please see the website (https://awm-math.org/awards/awm-grants/travel-grants/) for details on eligibility and do not hesitate to contact us at awm@awm-math.org or 401-455-4042 for guidance. Applications from members of underrepresented minorities are especially welcome.

Deadline. There is one award period per year. Applications are due **February 15**.

Cristina Villalobos Wins 2024 Humphreys Award

AWM is pleased to announce that the 2024 M. Gweneth Humphreys Award will be presented at the JMM to **Cristina Villalobos**, Myles and Sylvia Aaronson Endowed Professor, School of Mathematical and Statistical Sciences, University of Texas Rio Grande Valley (UTRGV), for her exceptional success in mentoring and its subsequent impact on the mathematical profession as a whole.

Citation: The effect that Cristina Villalobos has had on mathematics through her various mentorship roles is hard to describe in a single citation; she is responsible, as her nominating letter says, "for hundreds of successful student careers." Her individual work with students is amplified considerably by the University's Center for Excellence in STEM Education, which she founded in 2011 through a grant awarded her from the Department of Defense. The Center's work ranges from outreach to secondary schools through sponsoring hundreds of events that bring mathematics to local high schools, to creating a sense of community among STEM students at UTRGV, to leading mathematical science students into REUs and graduate programs, to guiding her mentees in their eventual job searches and professional careers. In recognizing the importance of her work, the Center for Minorities and People with Disabilities in Information Technology awarded her with the 2019 Richard A. Tapia Achievement Award for Scientific Scholarship, Civic Science and Diversifying Computing. In addition, she received a 2020 U.S. Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring. Villalobos also serves as the Associate Dean for Strategic Initiatives and Institutional Effectiveness at the College of Sciences. Additionally, Villalobos served as Interim Director of the School of Mathematical and Statistical Sciences from 2015–2017, transitioning the school through the first two years of UTRGV and increasing the numbers of Latino and women faculty along with leading the development and implementation of many initiatives which continue presently.

Villalobos' students have gone on to work in the mathematical sciences at a variety of positions. Many have gone on to graduate programs and are teaching at secondary school and university levels; others have gone on to working in industries of multiple types. Her mentorship is not limited to undergraduates and graduate students but extends to faculty in her department with whom she has worked to promote more student involvement through innovative pedagogy, including flipped classrooms and inquiry-based learning methods. Her efforts have led to increased enrollments and retention, as well as to better student outcomes in the department's courses.

Cristina Villalobos

Villalobos has an impressive research record of her own in her field of applied mathematics, and a substantial number of her publications and conference presentations are of work she has done with students. Both students and colleagues are effusive in their praise for the boost her support has given them in enlarging their mathematical horizons. One student says, "Dr. Villalobos saw in me the ability to further my education and pursue a graduate degree in mathematics. It was through her belief in me, words of encouragement, the knowledge that she had grown up and come from the same small town as me, and was now serving as a respected leader at the university and in her community, that I decided to pursue a Master of Science." From a colleague we hear, "Most of the ideas I implement to improve student success, increase diversity, and truly serve our student population, were initiated or discussed first with Dr. Villalobos." Perhaps the following comment best sums up her cumulative effect on her students and, hence, on the mathematical profession itself: "The impact Dr. Villalobos had on me and numerous others through her mentorship and guidance has not only influenced our lives directly, but also has and will continue to influence many others through the connections we each make throughout our careers for many years to come."

The AWM is very pleased to honor Villalobos for her exceptional success in mentoring and her subsequent impact on the mathematical profession as a whole.

Response from Villalobos: I am very honored to have received the award whose focus is on the mentorship of women undergraduate students. Mentorship requires genuine interest, commitment, and intentionality over the years to provide guidance and opportunities for students and their career trajectories. I am proud of the success of these women who now serve as colleagues and collaborators in grant projects, in research, and in teaching effectiveness. Most importantly, they serve as role models and mentors in preparing the next generation of mathematicians and STEM professionals. In reality, my students' success is my success. Thank you for the honor—muchas gracias por el honor.

This award is named for M. Gweneth Humphreys (1911–2006). Professor Humphreys earned her master's degree from Smith College and her PhD at age 23 from the University of Chicago in 1935. She taught mathematics to women for her entire career, at Mount St. Scholastica College, Sophie Newcomb College, and finally for over thirty years at Randolph-Macon Woman's College. This award, funded by contributions from her former students and colleagues at Randolph-Macon, recognizes her commitment to and her profound influence on undergraduate students of mathematics. It will be presented at the Joint Mathematics Meetings, scheduled for January 3–6, 2024 in San Francisco, CA.

AWM Workshop at the SIAM Annual Meeting

Application deadline for graduate students: **November 15, 2023**

For many years, the Association for Women in Mathematics has held a series of workshops in conjunction with major mathematics meetings. The AWM Workshops serve as follow-up workshops to Research Collaboration Conferences for Women (RCCW), featuring speakers from one of the AWM Research Networks. An AWM Workshop is scheduled to be held in conjunction with the 2024 SIAM Annual Meeting happening in Spokane, Washington, July 8–12, 2024.

FORMAT: The workshop will consist of two research minisymposia focused on **Complex and Nonlinear Systems** organized by Heather Zinn Brooks, Nancy Rodriguez, and Alexandria Volkening, a **poster session**, and a **professional development session**. The research minisymposia will feature selected junior and senior mathematicians from the Research Network Women in Complex and Nonlinear Systems (WiCNS). This workshop follows the RCCW that took place in September 2022 at the Banff International Research Station for Mathematical Innovation and Discovery.

POSTER SESSION: The poster session is open to **all areas of research**; graduate students working in areas related to complex systems are especially encouraged to apply. Poster presenters will be selected through an application process to present at the workshop reception and poster session. With funding from NSF, AWM will offer partial support for travel and hotel accommodations for the selected graduate students. The workshop will include a luncheon and a mentoring session where workshop participants will have the opportunity to meet with other women and non-binary mathematicians at all stages of their careers. In particular, graduate students working in areas related to complex and nonlinear systems will have the opportunity to connect with the WiCNS Research Network.

ELIGIBILITY: To be eligible for selection and funding, a graduate student must have made substantial progress towards their thesis. Women and non-binary mathematicians with other sources of support are also welcome to apply.

All applications should be submitted on mathprograms.org and include:

- a title of the proposed poster
- an abstract (75 words or less) of the proposed poster
- a curriculum vitae
- a letter of recommendation.

Applications must be completed electronically by **November 15, 2023**. See https://awm-math.org/meetings/awm-siam/ for details.

MENTORS: We seek volunteers to act as mentors for graduate students as part of the workshop. If you are interested in volunteering, please contact the AWM office at awm@awm-math.org by May 15, 2024.

Mathematicians of all genders are invited to attend the talks and poster presentations. Departments are urged to help graduate students and junior faculty who are not selected for the workshop obtain institutional support to attend the presentations.

Trena Wilkerson Wins 2024 Hay Award

AWM is pleased to announce that the 2024 Louise Hay Award for Contributions to Mathematics Education will be presented to **Trena Wilkerson**, Professor and Interim Chair in the Department of Curriculum & Instruction in the School of Education at Baylor University, for her leadership at the national, state, and local levels in mathematics education, her transformational teaching and mentorship, and her global initiatives and programs.

Citation: Dr. Wilkerson is an accomplished researcher in mathematics education and mathematics teacher education with expertise in algebra teacher efficacy, student understanding of rational numbers, and professional development. As a teacher educator, she prepares future teachers and teacher leaders of tomorrow. As a career teacher herself, she stands out for her genuine, sincere commitment not only to her profession but to those her profession serves—students.

One prominent nationally influential contribution from Wilkerson is her service as the President of the National Council of Teachers of Mathematics (NCTM), the largest and most significant organization of math teachers and math education researchers in this country. She was President of NCTM from 2020–2022, during the challenging years at the height of the global pandemic, and she is currently serving as Past-President. She met the formidable challenges presented by a global pandemic with poise and purpose as she led the organization in making difficult business and financial decisions. As president, she initiated and led collaborations with other national organizations to provide teachers in immediate need of support and direction during an educational crisis that upended almost everything they had learned from experience. Through unprecedented challenges, she ensured that NCTM as an organization kept equity foremost in the minds of its leaders and decision makers.

Wilkerson contributed to and spoke nationally about the NCTM Catalyzing Change Initiative. The initiative has three publications (focused on the elementary, middle, and high school level), webinars, and additional resources to engage mathematics teachers, mathematics education and teacher education researchers in critical conversations about policies, practices, and issues and to help create positive change. She has also served on national committees, such as the Association of Mathematics Teacher Educators (AMTE) and the School Science and Mathematics Association (SSMA).

Trena Wilkerson. Photo credit: Baylor School of Education

Her nominators highlighted that Wilkerson is a talented, valued, and conscientious educator, both for preservice teachers and for graduate students training to become teacher educators. They noted that Wilkerson has an outstanding legacy of transformational education and mentorship. She works diligently to stay current on all issues related to mathematics teacher education with the intent of using this information to prepare the next generation of teachers.

Wilkerson's exceptional contributions to the field have not gone unnoticed. She was a recipient of the Prakken Professional Cooperation Award from International Technology and Engineering Educators Association (ITEEA) in 2019, the Mississippi College Department of Mathematics Distinguished Alumna of the Year Award in 2019, the Award for Excellence in Integrating Science and Mathematics from the SSMA, and the 2016 Texas Council of Teachers of Mathematics' E. Glenadine Gibb Achievement Award for her contribution to the improvement of mathematics education at the state and national level.

Response from Wilkerson: It is such an honor to be recognized by the Association for Women in Mathematics with the 2024 Louise Hay Award for contributions to mathematics education. AWM's focus on a community where women and girls can "thrive in their mathematical endeavors" as noted on their website is a powerful connection

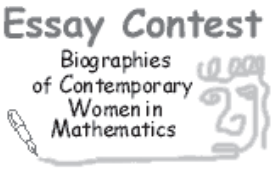
to the work in supporting equitable opportunities for all but in particular "marginalized genders and identities across the mathematical sciences." Over the years as a high school mathematics teacher and now as a mathematics teacher educator and researcher, I have had the opportunity to learn from so many. In particular, as 2020–2022 NCTM President, I had the privilege of serving alongside and working with so many outstanding mathematics educators and organizations to advocate for mathematics for each and every student during a challenging time in our history. There were many unprecedented events that we all faced in mathematics education, but our collective purpose was to ensure that each and every student had access to high-quality mathematics and that each and every teacher of mathematics was supported. This is central to the work of equity. As noted in the NCTM *Catalyzing Change* 2018 and 2020 publications, it is of paramount importance that all see themselves in mathematics and are supported in developing and sustaining a positive mathematics identity.

It was humbling to see the list of past recipients of this award as they have made so many powerful contributions to mathematics education over the years and have been role models for me in many ways. They paved the way for women and girls in mathematics. In particular it was a special moment when I saw that in 1991 Shirley Frye, NCTM President 1988–1990, was honored with the Louise Hay award. Her time as NCTM president was also a pivotal moment in the history of mathematics education with a major focus on curriculum standards in mathematics to provide important mathematics opportunities for all students.

I look to the future with hope as I work with our future teachers of mathematics and future mathematics educators and researchers. I continue to learn so much from them and know they will continue to lead the way so that all, and in particular those that are often marginalized, have access to and opportunities to engage in high-quality mathematics.

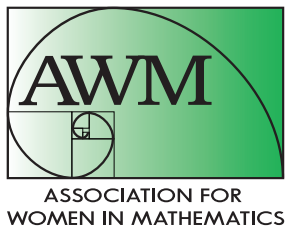
Thank you to the AWM award committee for recognizing my work but also the work of so many others who have mentored me. I am grateful and honored to be selected as the 2024 Louise Hay Award recipient.

Established in 1991, the Hay Award recognizes outstanding achievements in any area of mathematics education. Louise Hay was widely recognized for her contributions to mathematical logic, for her strong leadership as Head of the Department of Mathematics, Statistics, and Computer Science at the University of Illinois at Chicago, for her devotion to students, and for her lifelong commitment to nurturing the talent of young women and men. The annual presentation of this award is intended to highlight the importance of mathematics education and to evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being. It will be presented at the Joint Mathematics Meetings, scheduled for January 3–6, 2024 in San Francisco, CA.



To increase awareness of women's ongoing contributions to the mathematical sciences, the Association for Women in Mathematics holds an annual essay contest for biographies of contemporary women mathematicians and statisticians in academic, industrial, and government careers. AWM is pleased to announce that the 2024 contest is sponsored by Math for America, www.mathforamerica.org.

Essays will be based primarily on an interview with a woman currently working in a mathematical career. The AWM Essay Contest is open to students in the following categories: **grades 6–8**, **grades 9–12**, and **undergraduate**. At least one winning entry will be chosen from each category. Winners will receive a prize, and their essays will be published online at the AWM website. Additionally, a grand prize winner will have their entry published in the *AWM Newsletter*. For more information, visit awm-math.org/awards/student-essay-contest/. The deadline for electronic receipt of entries is **February 1, 2024**. To volunteer to be interviewed, please visit the website awm-math.org/awards/student-essay-contest/ and sign up using the link at the bottom of the page.



Yunqing Tang Wins 2024 AWM-Microsoft Research Prize

AWM will present the sixth AWM-Microsoft Research Prize in Algebra and Number Theory to **Yunqing Tang**, in recognition of her breakthrough work in arithmetic geometry, including results on the Grothendieck-Katz p-curvature conjecture, a conjecture of Ogus on algebraicity of cycles, arithmetic intersection theory, and the unbounded denominators conjecture of Atkin and Swinnerton-Dyer. An observer wrote that Tang "has a knack for absorbing difficult ideas with lightning speed, making them her own, and then applying them in creative and unexpected ways."

Citation: The p-curvature conjecture lies in the field of arithmetic geometry: it predicts that for a certain vector bundle associated to a variety over a number field, if an invariant called the p-curvature vanishes for all but finitely many primes, then an associated "monodromy representation" has finite image. Tang has made progress toward this conjecture by proving for example that the conclusion holds if the p-curvature vanishes for all primes, when the variety is the projective line minus three points. In the area of p-adic Hodge theory, Tang has proved Ogus' conjecture (which predicts that cycles in de Rham cohomology which are invariant by almost all crystalline Frobenii are Hodge cycles) for a large class of abelian varieties.

With collaborators, Tang has developed a program in arithmetic intersection theory on Shimura varieties that can prove a phenomenon of interest occurs at infinitely many primes. This has had many interesting consequences. As a first example, Ananth Shankar and Tang have proved that an abelian surface with real multiplication over a number field is isogenous to a product of elliptic curves when reduced modulo infinitely many primes. As a second example, with Ananth Shankar, Arul Shankar, and Salim Tayou, Tang's work proves that a K3 surface over a number field with everywhere good reduction has the property that the Picard rank of the reduction jumps at infinitely many places.

Recently, in joint work with Frank Calegari and Vesselin Dimitrov, Tang has presented a proof of the 50-year-old "unbounded denominators conjecture" originally posed by Atkin and Swinnerton-Dyer. This conjecture can be framed (roughly speaking) as the statement that a modular form for a finite index subgroup of $SL_2(\mathbb{Z})$, expanded as a Fourier series in q, has integral coefficients if and only if it is a modular form for some congruence subgroup of $SL_2(\mathbb{Z})$.

Yunqing Tang. Photo credit: Neil Freese/UC Berkeley

Yunqing Tang is an assistant professor at University of California, Berkeley. She received a PhD from Harvard University in 2016, for which she was awarded an AWM Dissertation Prize. Tang subsequently was a member at the IAS, an instructor at Princeton University, a junior researcher (chargée de recherche) at CNRS/Université Paris-Sud, and an assistant professor at Princeton University. Her work is supported by the NSF, and Tang has recently been awarded a Sloan Research Fellowship and the SASTRA Ramanujan Prize. A press release from the Ramanujan Prize committee wrote that Tang's "wide ranging contributions are bound to have impact in the decades ahead."

Response from Tang: I am very honored to receive the 2024 AWM-Microsoft Prize in Algebra and Number Theory. I would like to thank the AWM and Microsoft for their generosity in recognizing my work.

I have been very lucky to have several amazing mentors: my PhD advisor, Mark Kisin, as well as Peter Sarnak and Shou-Wu Zhang; they have been supportive over the years and shared with me numerous mathematics insights. I am deeply indebted to my collaborator Ananth Shankar, with whom I have been working since graduate school time; our numerous discussions have shaped part of my research program. I also would like to give a special thank you to my collaborators Wanlin Li and Vesselin Dimitrov for numerous Zoom discussion and working sessions to keep

me productive during the pandemic. I would like to thank all my collaborators: Frank Calegari, Victoria Cantoral Farfán, Elena Mantovan, Davesh Maulik, Rachel Pries, Arul Shankar, Sho Tanimoto, Salim Tayou, and Erik Visse; I am very grateful to have opportunities to work with them and learn interesting math from them.

I would like to thank the math department and my colleagues, especially the algebraic geometry and number theory group, at UC Berkeley for a supportive working environment. Many of my works have been done during my stays at Princeton, CNRS, Université Paris-Saclay, IAS and Harvard, and I am grateful for the excellent working environment at these places. Finally, I would like to thank AWM again for providing the community of women mathematicians and for recognizing my work at an early stage through the dissertation prize.

Established in 2012, the biennial presentation of the AWM-Microsoft Research prize serves to highlight to the community outstanding contributions by women in the field of algebra and number theory, and to advance the careers of the prize recipients. This award is made possible by a generous contribution from Microsoft Research. It will be presented at the Joint Mathematics Meetings, scheduled for January 3–6, 2024 in San Francisco, CA.

Robin Neumayer Wins 2024 AWM-Sadosky Research Prize

AWM is pleased to announce that the 2024 AWM-Sadosky Research Prize in Analysis is awarded to **Robin Neumayer** for her exceptional research.

Citation: The 2024 AWM-Sadosky Research Prize in Analysis is awarded to Robin Neumayer for outstanding contributions to calculus of variations, partial differential equations, and geometric analysis. Neumayer earned her PhD from The University of Texas at Austin in 2017 and has held postdoctoral positions at Northwestern University and the Institute for Advanced Study. In 2021, she joined Carnegie Mellon University as a tenure track assistant professor.

Neumayer's research focuses on problems in calculus of variations and partial differential equations, with a strong emphasis on their connection to geometric analysis. Her recent work on the regularity and convergence of Riemannian manifolds demonstrates her profound geometric insights and exceptional technical skills. Notably, her series of papers on epsilon regularity for scalar curvature showcases her ability to tackle challenging problems in the field.

Neumayer's research interests span a wide range of topics, underscoring her versatility and breadth of knowledge. She has achieved remarkable results in the quantitative stability of Sobolev inequalities and for minimizers of the Yamabe energy, the regularity theory of free boundary problems, and the existence and characterization of minimizers of sharp trace Sobolev inequalities.

As an outstanding analyst, Neumayer has made significant contributions to various areas of analysis and has paved the way for new research directions at the intersection of calculus of variations, PDEs, and geometric analysis. Her broad skill set, extensive knowledge, and leadership in her field are highly regarded by her peers.

Robin Neumayer

Without a doubt, Robin Neumayer deserves the esteemed recognition of the 2024 AWM Sadosky Research Prize for her outstanding achievements and invaluable contributions to mathematical analysis.

Response from Neumayer: It is a true honor to receive the AWM-Sadosky Prize in Analysis. I am grateful to the selection committee for recognizing my work, to the family and friends of Cora Sadosky for their support in establishing this prize, and to the AWM for all it does for the community

continued on page 20

of women in math. It is a privilege to receive an award named for Cora Sadosky and to have my name alongside the previous prize winners whose work I admire deeply.

I have been fortunate to have exceptional mentors at every step of my career. I am particularly indebted to Maria Girardi, whose undergraduate real analysis class made me want to become a mathematician and whose support helped me get there; Alessio Figalli and Francesco Maggi, my PhD advisors whose guidance and example have shaped my mathematical development; and Aaron Naber, who introduced me to geometric analysis and taught me so much. I am lucky to work alongside brilliant collaborators, from whom I am constantly learning and who make all of this a joy.

Established in 2012, the AWM-Sadosky Research Prize recognizes exceptional research in analysis by a woman early in her career. The award is named for Cora Sadosky, a former president of AWM, and is made possible by generous contributions from Cora's husband Daniel J. Goldstein, daughter Cora Sol Goldstein, and friends Judy and Paul S. Green and Concepción Ballester. The award will be presented at the Joint Mathematics Meetings in San Francisco, CA, January 3–6, 2024.

BOOK REVIEW

Book Review Editor: Margaret Bayer, University of Kansas, Lawrence, KS 66045-7523, bayer@ku.edu

Proving It Her Way: Emmy Noether, a Life in Mathematics, by David E. Rowe and Mechthild Koreuber, Springer, 2020. ISBN 978-3030628109

Emmy Noether: Mathematician Extraordinaire, by David E. Rowe, Springer, 2021. ISBN 978-3030638092

Reviewer: Gizem Karaali, Pomona College, gizem.karsali@pomona.edu

> If a woman's dance is mathematics, she dances alone.
> JoAnne Growney, "My Dance Is Mathematics"

Emmy Noether loved to dance. She also loved to go on walks with colleagues and friends and talk about mathematical ideas. Apparently, she loved swimming, too, and Anita Zieher, in her rendition of Emmy in the mostly-a-one-woman-play "Diving into Math with Emmy Noether," directed by Sandra Schüddekopf, does both. With the aid of a projector screen set up in the background of the stage, we see Zieher's Emmy swim in a pool, and walk in the woods and other places.

Emmy Noether's story can easily be portrayed as a tragic one. She was a woman for whom opportunities for a full life in mathematics were severely constrained by her gender and her ethnicity, a woman who was finally able to obtain an academic position after years of perseverance in the face of sexism and then lost it due to a Nazi proclamation that German Jews were not German enough, a woman who died too young. Her story can also be a triumphant one if we pick out other threads that make up her life. She is today seen as the mother of modern algebra. Her name is attached to a most important theorem connecting the symmetries of a physical system and its varied conserved quantities, as well as a handful of respected lecture series and awards. Her work was well regarded and much appreciated (though not by all) during her lifetime. She had many colleagues and collaborators who were also dear friends. And she had her mathematics, the beautiful conceptual mathematics that she loved and worked hard to build.

Zieher and Schüddekopf choose to give their audience a bit of both. Emmy had to face a lot of challenges, but she also had a life full of mathematics, good friends, and, apparently, delicious pudding. This is a realistic but decidedly upbeat version of the story, and I for one was very much taken by it. Seeing the play helped me appreciate David E. Rowe and Mechthild Koreuber's recent book, *Proving It Her Way: Emmy Noether, a Life in Mathematics*, a lot more.

Rowe and Koreuber are both historians of mathematics. They worked together with Zieher and Schüddekopf on the play, and it shows. Mathematicians love seeing their craft and their heroes depicted in popular media, but we often end up cringing every now and then when the mathematics gets mangled up along the way. In "Diving into Math with Emmy Noether," I as an algebraist felt no cringe; on the contrary the math was done so well and was so expertly threaded into the narrative that I left the theatre completely pumped up and ready to dive right back into *Proving It Her Way*.

Proving It Her Way is a book that is intended to accompany the play "Diving into Math." It is a perfect gift from the authors to the curious audience members who want to know more about this fascinating, larger-than-life

character they have just met. It is organized in a way that makes the book somewhat nontraditional for a biography, but that makes perfect sense after seeing the play. There is a list of characters who show up in the play as they have been important in Noether's life. A chronology of the major events in Noether's life (a total of twenty-five, starting with her birth in 1882 and ending with her death in 1935) is also given at the start, but then specific periods are emphasized differently in the rest of the text. There are more than twenty photos and other visuals accompanying the text, some taken from historical and archival material and others portraying Zieher in her role as Emmy Noether. All in all, the authors do a spectacular job bringing Emmy Noether to life, along with the world she was living in.

I should make it clear: *Proving It Her Way*, though intended to accompany "Diving into Math," is coherent and interesting on its own and definitely stands alone well. As such, I believe it would be a good introduction to the life and times of Emmy Noether even for a general audience that has not seen the play. However, the reading experience is definitely enriched by the play, just as the experience of watching the play would be enriched by the reading.

Now it just happens that David Rowe published a second book on Emmy Noether within a year of *Proving It Her Way*. This one is titled *Emmy Noether: Mathematician Extraordinaire*. And as its title implies, this book is more oriented towards explaining and contextualizing Emmy Noether's mathematics. Though it is also a fully self-contained biography of Noether, its main distinguishing feature is its emphasis on the mathematics. While *Proving It Her Way*, understandably, given the intended audience, emphasizes the creative and collaborative aspects of Noether's mathematics without delving too deep into the technicalities, *Emmy Noether: Mathematician Extraordinaire* does not shy away from the details. Though parts of Noether's work are described in more detail elsewhere (see, for example, Yvette Kosmann-Schwarzbach's *The Noether Theorems: Invariance and Conservation Laws in the Twentieth Century*, also cited in the book), there is a lot of mathematics in this book, definitely sufficient to satisfy the curiosity of a mathematical audience.

The two books overlap significantly. Section 3.2 on Academic Antisemitism in *Proving It Her Way* is word-by-word identical to Section 1.2 in *Emmy Noether: Mathematician Extraordinaire*. More generally Chapter 3 of *Proving It Her Way* is basically the same as Chapter 1 of *Mathematician Extraordinaire* (both are titled "Max and Emmy Noether: Mathematics in Erlangen"). Reviewing and comparing the tables of contents for the two books, one realizes that a reader is not meant to read both books at the same time. You are supposed to choose. If you have seen the play or if you are not interested much in the mathematical content or context of Noether's work, and your main concern is to learn more about this creative and collaborative mind, then *Proving It Her Way* is likely the best option for you. If, on the other hand, you want to understand at least something of what her math was about and what exactly she contributed to modern mathematics, then *Mathematician Extraordinaire* should probably be the way to go.

If you are interested in the history of mathematics, either book will be an excellent introduction to the fertile and imaginative mind of Emmy Noether. Both books are well researched and well sourced; even the non-specialist book boasts a bibliography of almost twenty pages—the bibliography in the other one runs over thirty pages. Both books do a good job to situate Noether's work as well as her life and the challenges she faced within her lifetime in their full historical context.

All in all, I enjoyed reading both books and I learned a lot. But I have to admit that Anita Zieher's performance was what made them come into full color for me. Almost everyone has seen Noether's photo from the 1930s where she is sporting a Mona Lisa smile. Anita Zieher filled in that smile with her boisterous portrayal. (See https://www.math.harvard.edu/emmy-noether-takes-center-stage/ for side-by-side photos and https://youtu.be/dCuqQApjUPo for a taste of Zieher's depiction of Emmy Noether.) The bittersweet taste one often has after hearing about yet another woman in math and her challenging life was in this instance replaced by a hint of sweet pudding. Zieher, with Rowe and Koreuber, convinced me that, yes, Emmy did dance alone, but she also took many friends along on her walks; the joy of connecting with other minds was never lacking in her life.

EDUCATION COLUMN

Education Column Editor: Jackie Dewar, Loyola Marymount University, jdewar@lmu.edu

A Mathematical Journey of Mind and Heart

Guada Lozano, Associate Research Professor, Director and Endowed Chair, Center of University Education Scholarship, University of Arizona

Who do you feel you are?
How is this guiding your journey?
Looking within, what matters to you?
How is this shaping your journey?
…
How do others see you?
How is that guiding your journey?

Last February, twenty-or-so STEM undergraduates, mostly women, read these questions in my opening slide. I had come to their weekly honors seminar to talk with them about my work and pursuits in mathematics, to illustrate possibilities, to kindle nascent curiosities.

But I didn't start by telling them much. I was asking. Asking who they felt they were—not what they liked, or what they were good at. Why did I start this way? What was I envisioning? Why did I make that choice?

One of the things equity and identity work teaches me is that I hold tools—you hold tools—for change. One of those tools is curbing an almost automatic tendency to talk about ourselves in terms of accomplishment or achievements—the things we put in our vitae. We can choose instead to amplify space for connection. Connection around what's human, what's vulnerable, what drives us from within. If you are new to this perspective, the positioning I describe might appear to trade a focus on mathematics for one on the human condition. It may sound like derailing attention to subject (research, teaching, mathematics) for attention to people—the actors of that work. It is not quite that. It is rather the opposite—it is tilling our space of impact for human flourishing—much like Francis Su suggests in his book.[1]

That was my intent that day. I would share about me, yes. But I would do so through a focus on three causes I hoped we could all relate to—causes bigger than accomplishments or achievement, or degrees, or titles. I would try to elicit space to talk about identity and purpose, about advocacy and about influence. The opening questions, which I answered first after we all thought and wrote things down for a few minutes, aimed to create a space for authentic sharing, a space for risk and heart, for a little critical trust in others and in ourselves.

Identity and purpose. Splitting the first four questions from the latter two (who do you feel you are? vs. how do others see you?) into separate slides brought forth the awareness I had hoped for. Several students openly shared noticing differences between how they saw themselves ("I love art and drawing, but I'm good at science" or "music and instruments are my favorite things") and what others expected of them ("since I'm good at science, and science is hard, I'm expected to major in STEM" or "there's pressure on me to major in science"). Even my colleague instructor, a geosciences professor, expressed outright surprise at the contrast between her own vision of herself and that etched onto the expectations of others, including our gendered-masculine academy.

Striving for alignment in how we see ourselves and how others see us propels us forward, resolves contradictions, brings value to our pursuits. Equity is in part about enabling that alignment for ourselves and others. Recently the AWM and the MAA published materials that outline differences between how others see us vs. how we see ourselves. AWM EvenQuads cards[2] showcase women contributors to mathematics through short biographies printed on each card. MAA's book *Testimonios*[3] features biographical reflections from Latinx mathematicians told through their own voices. The cards portray how others see the women being featured. The book gives access to these mathematicians as they see themselves. Two women, Hortensia Soto and Tatiana Toro, are featured in both the book and the cards. How did their human experience blossom into their mathematical lives? How did their identities shape their purpose, not just their mathematical achievements? In what ways does your identity shape your purpose, not just your

[1] Su, Francis. (2020). *Mathematics for Human Flourishing*. Yale University Press. https://doi.org/10.2307/j.ctvt1sgss

[2] AWM Notable Women in Math Playing Cards. (2021). awm-math.org/publications/playing-cards/evenquads/

[3] Harris, P., Prieto-Langarica, A., Quinones, V. R., Vieira, L. S., Uscanga, R., & Melendez, A. R. (2021). *Testimonios, Stories of Latinx & Hispanic Mathematicians,* American Mathematical Society & The Mathematical Association of America, ISBN 978-1-4704-6657-2. maa.org/press/ebooks/maa-member-library

professional career goals? My colleague Cynthia Anhalt and I explicitly invite some of these reflections in a forthcoming chapter[4] "Alternate Sources, Alternate Narratives, Creating the Mathematics Ethos that May Have Been."

Centering our perceived identity in what we do need not mean radically changing our pursuits, but instead finding and holding our identity-driven causes—that which we love, that which fuels our passion—in the paths we create, in the courses or labs we take, in the grants we lead or support, in the papers we write, in the organizations and students we serve. Two of my causes are equity and the student experience. Focusing on causes keeps my pursuits aligned with my identity. It foregrounds my purpose above particular goals or achievements. And helps me identify valuable opportunities for advocacy and influence.

Advocacy. As this next set of questions displayed on the slide—What are you learning? How is that challenging you? Empowering you? What do you care about? How might you center it? Or stand up for it?—more silent thinking and writing ensued. Then followed some sharing. "Perhaps I can still write poetry even if I do STEM," came a new student's voice, which until then had been very quiet. "I don't know exactly how, but maybe I can." Indeed, attention to where we'd truly love to go, even if we don't yet know how we might get there is restorative, reassuring to the self. Sometimes we find ways for our causes to come alive. Sometimes those ways—or even new causes—find us.

[4] Lozano, G., Anhalt, C. (accepted). Alternate Sources, Alternate Narratives, Creating the Mathematics Ethos that May Have Been. In M. Strutchens, D. White, J. Bay-Williams, G. Krause (Eds.) *Advocacy and Action Steps Toward Antiracist Mathematics Teaching and Learning*, TODOS: Mathematics for All, NCTM Affiliate.

In the summer of 2016, somewhat serendipitously during a stay in France, I met Marie-Françoise Roy, an inspiring woman and now friend, who is also a noted algebraic geometer. Recently retired and freshly appointed to lead the Committee for Women in Mathematics within the International Mathematical Union, Roy revealed in our first conversation what I would call today a cause, one of her causes: women in science. Two summers later, she had made something latent take form—she had organized (and secured funding for) a global effort to measure and help reduce the gender gap in science and mathematics.

The questions I posed to you above stem directly from time spent reflecting upon my involvement in that project. I learned, for example, that my equity cause held space to include questions on gender representation in the academy. I was challenged to study new literature on bias, institutional norms and structures, peer review, academic service, and parental leave policies. And I was empowered through finding resonance with audiences who witnessed my learning and its fruits, who saw themselves mirrored or represented in the talks I gave during project conferences, or the articles I wrote about a topic seemingly tangential to my research.

When a cause finds you, identity-driven advocacy can empower you. What do you care about? How might you center it? Or stand up for it? There's value in serving your causes and being open to their new forms within—or along—your mathematical pursuits.

Influence. How are you learning perspective? What are you writing about? Speaking about? How are you using your voice? Your strengths? Your power? What are you helping transform?

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CALL FOR PROPOSALS

Research Collaboration Conferences for Women

The AWM works to establish and support research networks for women in all areas of mathematics research. In particular, the AWM RCCW Committee provides mentorship and support to new networks wishing to organize a Research Collaboration Conference for Women (RCCW). The Committee offers help finding a conference venue, developing and submitting a conference proposal, and soliciting travel funding for participants. Thanks to a National Science Foundation grant, some funding may be available through the AWM to support new RCCWs, especially interdisciplinary proposals and proposals that bring together researchers from traditionally underrepresented populations.

Mathematicians interested in organizing the first conference of a new RCCW are invited to submit a proposal to the AWM describing the conference topic, potential co-organizers and project leaders, and potential participants. Proposals should be no more than one page (PDF files only, please) and should be sent to awm.rccw@gmail.com. Deadlines for submission: **February 1** and **July 1**.

More information about Research Collaboration Conferences for Women, existing RCCW networks, and related initiatives can be found at http://awm-math.org/programs/advance-research-communities/.

This last set of questions aimed to offer the students a meaningful horizon, something to look toward, a promising destination. Not in terms of doctorates, or professorships or grants, though those would also likely come along. Rather, a horizon in terms of opportunities to influence spaces we occupy or causes larger than each of us. Exercising our capacity to positively influence takes intentionality and courage. And it is not something we explicitly encourage in the pursuit of our academic careers. But if we broaden our will and our perspective, we find that opportunities to influence and help transform abound.

Early in 2021, five graduate students and I set out to create a culturally affirming precalculus curriculum centered in Tucson, and the Southwestern United States, as place and identity.[5] The grant supporting the project, much broader than its precalculus component, did not call for curriculum creation, but the opportunity shone open, held promise and value, and was laid bare to be honored. To be done well, the work required much learning outside our expertise, including humility to embrace communities and experiences academia is generally unconcerned with, particularly in mathematics. But the opportunity to influence equity and the student experience—my two causes—was plain to see.

Today, a growing community of teachers, instructors, and postdocs work together to explore each other's strengths along those of our students. We use and write content grounded in causes that restore cultural balance to mathematics learning. We study the nature and value of what we have created for those who teach, and those who learn.

What spaces do you influence? What are your strengths? How might you use them to positively transform?

"Our best" is, to a large degree, a local statement, a derivative of our context, our evolution, our learning. No matter our place, our role, our level of expertise, our accomplishments, we hold tools—you hold tools—to shape, advocate for, and influence causes that matter. Look for causes, and let them find you. Ponder the value of a mathematical existence of mind and heart.

[5] Lozano, G. (accepted). Grounded in place: A Culturally Affirming Precalculus Curriculum. In M. Strutchens, D. White, J. Bay-Williams, G. Krause (Eds.) *Advocacy and Action Steps Toward Antiracist Mathematics Teaching and Learning*, TODOS: Mathematics for All, NCTM Affiliate.

MEDIA COLUMN

In addition to longer reviews for the Media Column, we invite you to watch for and submit short snippets of instances of women in mathematics in the media (WIMM Watch). Please submit to the Media Column Editors: Sarah J. Greenwald, Appalachian State University, appalachianawm@appstate.edu and Alice Silverberg, University of California, Irvine, asilverb@math.uci.edu.

Call Me Kat: Once A Math Professor

Sarah J. Greenwald, Appalachian State University

Call Me Kat is a Fox sitcom based on the British sitcom *Miranda*. *Miranda* centered around an awkward and socially inept lead character. *Call Me Kat* has reimagined the lead character to include mathematics. In the American version, Kat used to be a mathematics professor but left that job to open a "cat cafe," a cafe that also has cats in it.

In numerous episodes, Kat describes being a math professor as unfulfilling and as a job she disliked. There is never a mention of trying industry or other careers with mathematics in them, which is a shame as these careers usually make the very top of best-career lists. There's also an implication that her career might have been exclusive to having a family in this quote from season 1, episode 7: "When my friends started having their first babies, I was in grad school. And when they had their second babies, I was trying to get tenure. And then when their babies started having babies, I was giving birth to this cafe."

Mathematics is very briefly mentioned in quite a number of episodes. For example, Kat brings up her paper on the "characterization of operators in non-Gaussian infinite dimensional analysis" in season 2, episode 18. There is a real-life doctoral dissertation with this title from 2003 by Eugene Yablonsky. I tried contacting Yablonsky but didn't hear back, so I don't know how or why they used this. In other episodes Kat broaches that she is good at math, such as numbers, algebra or polynomials. In season 2, episode 13, Kat wears a dress with mathematical symbols and stands in front of a whiteboard with visuals and equations to indicate how to win in bowling. Mathematical connections are occasionally quite silly in the show, like Purr-thagoras, Fur Isaac Newton, and René DesCat in season 3, episode 18. These are only a few of numerous mathematical references in the

show. The mathematical references typically are nonsensical and have nothing to do with the main plot line.

There are some odd mathematical history errors that I've noticed. In season 2, episode 18, Kat says: "I've always wanted to visit the birthplace of my favorite mathematician, Marie Crous. She invented the decimal point." However, decimal notation with the period appeared posthumously in a publication by John Napier before any of Crous' known publications. Others, including Abu'l Hasan Ahmad ibn Ibrahim Al-Uqlidisi's decimal fractions and Babylonian's sexagesimal notation, were precursors. There are sources that note that Crous introduced the notation in France, so I wonder if the writers simply misunderstood what this is saying. More on Crous and her work can be found in the second section of "Notice bibliographique sur le calcul décimal" that was published in 1853 in *Nouvelles annales de mathématiques*. It is available at http://www.numdam.org/item/NAM_1853_1_12__195_0.pdf. In season 3, episode 5, Kat inexplicably calls Euclid of Megara the father of geometry while eliminating Euclid of Alexandria.

Kat's mother is often mean to her and math degrees take the brunt at times. In season 1, episode 4, her mom remarks: "My daughter has a doctorate in mathematics, not that she's doing anything with that now. If someone asked if there's a doctor on the plane what would she do to help? solve for *x*?" In season 3, episode 21, Kat is working her way through an agility course with a cat and her mother says: "doesn't it feel better than those stupid degrees."

I binge watched the show's three seasons when I found out that Kat had been a math professor. It's not a show I would have watched otherwise nor would recommend, because of its mean-spiritedness at times. However, I wanted to understand how math was portrayed. While I like that it is sometimes presented as somewhat useful, as in the bowling reference, the show more typically takes a negative spin on math. It is used to contextualize Kat's weirdness. Moreover, characters are impatient or dismissive about math every so often. Plus, degrees in math and a career as a math professor don't fare well. Overall, in my view, the show contributes to negative stereotypes about mathematicians.

STUDENT CHAPTER CORNER

Coordinator: Malena Español, student-chapters@awm-math.org

AMIGAs' Impact: Computation, Collaboration, Community (C^3)

Therese Azevedo (Montana State University), Daniela Ali Beckelhymer (University of Minnesota Twin Cities), Jazmin Jones (Howard University), Lucy Martinez (Rutgers University), Danae Sarahi Galan Covarrubias (University of Minnesota), and Arshia Singhal (Rice University)

About

The Institute for Pure and Applied Mathematics (IPAM) hosted the first Applied Mathematics skills Improvement for Graduate studies Advancement (AMIGAs) program at the University of California, Los Angeles (UCLA), organized by Erika Tatiana Camacho (Arizona State University, now at UT San Antonio), Keisha Cook (Clemson University), Malena Español (Arizona State University), Alicia Prieto-Langarica (Youngstown State University), and Nancy Rodriguez (University of Colorado Boulder). AMIGAs, initially inspired by the Roots of Unity workshop,[1] is a week-long program for incoming second and third-year graduate students primarily studying applied and computational mathematics. This initiative aims to support and train a new generation of mathematical scientists to increase the representation of women and underrepresented minorities in academia and industry.

Throughout the program, a cohort of 21 graduate students from universities across the country participated in several technical tutorials provided by F. Patricia Medina (The City University of New York, College of Technology), Marilyn Vazquez (Simpson College), Keisha Cook (Clemson University), Sofia Ruiz Suarez (University of Toronto), Vianey Leos Barajas (University of Toronto) and Umaa Rebbapragada (NASA Jet Propulsion Laboratory). Some topics included machine learning, statistics, computer programming, mathematical modeling, and data analysis. These sessions were presented by women in academia and industry. There were also professional development activities provided by Selenne Bañuelos (IPAM and CSU Channel Islands), Malena Español, Alicia Prieto Langarica, and Nancy Rodriguez and networking opportunities. At the end of the workshop, students gave presentations about key takeaways and learning outcomes.

Before AMIGAs

Prior to the workshop, the organizers provided participants access to three DataCamp courses: Introduction to R, Introduction to Python, and Machine Learning with

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[1] https://cse.umn.edu/ima/events/roots-unity-workshop

scikit-learn. Participants received a six-month DataCamp subscription as part of their acceptance, and successful course completion included official certificates for their training. Additionally, the organizers established a Discord server to facilitate pre-workshop networking among all participants.

Day-to-Day

The AMIGAs program framework encompassed morning and afternoon training sessions centered around specific topics such as statistical foundations, math modeling techniques, and machine learning, followed by professional development sessions. Mornings commenced with breakfast and networking and continued with training sessions featuring a structured workflow in either Python or R. Instructors provided meticulously documented scripts and relevant datasets, fostering collaborative practice among students in a conducive learning environment. During the afternoon sessions, students immersed themselves in hands-on exercises directly linked to the day's technical subject matter through problem-solving activities. The overarching objective of each session was to acquaint junior graduate students with the latest techniques in applied mathematics and data science.

In addition to technical conversations, AMIGAs also created the space to discuss professional development topics, including navigating hierarchical mentoring, communication within academia, and graduate student opportunities within the mathematical sciences. Students, event organizers, and tutorial speakers shared personal and professional experiences. The professional development series ignited meaningful and reflective conversations that provided a holistic outlook on one's career.

The full workshop days were concluded with a dinner funded by a generous donation from Ersen Arseven. Students, organizers, and instructors socialized with one another, strengthening their connection over time. The sun setting and tables filled with empty plates indicated that the day was nearly over, or an additional adventure was just around the corner. Many utilized the time after dinner to explore the Los Angeles area, including Santa Monica, Malibu, and the Griffith Observatory. From the beginning, it was clear that the behind-the-scenes planning of AMIGAs was meticulously designed, resulting in a fun and significantly fulfilling week-long experience.

Why You Should Apply

As pilot participants, we strongly encourage all aspiring students in the early stages of their graduate studies with a passion for data-driven innovation and a thirst for knowledge to apply to this program. AMIGAs offers a unique and dynamic learning experience that combines cutting-edge topics in data science and applied mathematics so that participants receive critical exposure to example problems for future successful careers. With expert tutorial speakers, hands-on exercises, and

AMIGAs 2023. Photo credit: IMAP

access to well-documented data exercises, students can acquire essential technical skills and engage in collaborative learning with peers and future colleagues. Moreover, this program is designed to broaden horizons, build a strong foundation in applied mathematics and data sciences, and facilitate networking with like-minded individuals. In addition to academic growth, AMIGAs provides a vital network of women in academia and industry who share this passion for applied mathematics. This program prioritizes community building, networking, and personalized professional development to empower participants in their journey. We end this article by providing tips and advice on how to apply to AMIGAs or similar programs.

Application Advice:

1. Begin the application process early.
2. Request application feedback from multiple sources.
3. Request letters of recommendation well in advance from writers who know you best.
4. Ensure completion of each application component.
5. Create a CV/resume highlighting skills and experiences related to the application and program.
6. Set a reminder to submit application materials by the due date.
7. Register for mathematics/statistics professional organizations for notification of related events.

Advice for participants:

1. Come to the workshop with an open mind, ready to be surprised.
2. Engage actively during the workshop by asking questions, participating in discussions, and collaborating with fellow participants.
3. Seek constructive feedback from instructors and peers regarding your work.
4. Maintain organized notes and materials to facilitate future reviews and reference of key concepts.

AWM at MAA MathFest

Janet Fierson, La Salle University

The Mathematical Association of America hosted MAA MathFest 2023 in Tampa, FL, from August 2 through August 5.

For the conference, the AWM Committee on MAA MathFest [**Shanna Dobson** (California State University, Los Angeles), **Janet Fierson** (La Salle University), **Emelie Kenney** (Siena College), **Buna Sambandham** (Utah Tech University), and **Jeanette Shakalli** (Panamanian Foundation for the Promotion of Mathematics – FUNDAPROMAT)], organized a panel on mental health in the mathematics community and a contributed paper session with mathematics and art as its theme.

While many in the city of Tampa were still sleeping, a diverse crowd of mathematicians packed a conference room in the convention center at 8:00 a.m. for the AWM-sponsored panel, *Mental Health in the Mathematics Community*. Through their personal introductions, panelists **Vinodh Chellamuthu** (Utah Tech University), **Alicia Prieto Langarica** (Youngstown State University), **Jennifer Quinn** (University of Washington Tacoma), and **Adriana Salerno** (Bates College) made attendees feel welcome and set the tone for an interactive session. Moderator **Jeanette Shakalli** posed a couple of prompts to spark the conversation, and each panelist shared their experiences and observations. After this initial portion of the event, attendees were invited to bring forward questions or comments of their own. There was a strong response from the crowd, and the rest of the session was driven by the voices of current and former faculty members and students who stepped up to the microphone, some more than once. Topics addressed included burnout, work-life balance, the relationship between career success and self-worth, and the impact of the pandemic on the mental health of students and faculty. Some of those who spoke sought

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Friends of AWM: Jennifer Quinn, Ximena Catipillán, Cynthia Huffman, Linda McGuire, and Jeanette Shakalli

advice, and the panelists and even audience members provided it. Others who came forward offered words of encouragement, and some brainstorming took place around what actions the broader mathematics community might take to support the mental health of its members on a larger scale. Diverse perspectives were presented throughout. After the session, many attendees expressed their gratitude to the panelists and the organizers for sharing their insights and for creating the opportunity to come together to trade stories and suggestions in such a supportive environment; some even exchanged hugs. There was significant interest in more programming on this topic in the future. Stay tuned for a follow-up session!

Additionally, the AWM MAA MathFest Committee also organized a contributed paper session (CPS) titled *MathArt: Classic and Novel Intersections of Mathematics and the Arts*. The session welcomed both research and classroom experiences and allowed for creative interpretations of art. Each of the nine presenters answered the call to present a unique instance of the math-art connection, and collectively the group spanned an incredibly wide range. Attendees were made aware of the role of mathematics in dance, origami, video games, and music. They learned of classes exploring mathematics in traditional works of art and through recycled materials, and they were even given the opportunity to examine artistic and creative calculus exams. One of the scheduled presenters was unable to attend, but the impromptu talk delivered by a volunteer from the audience was a fitting complement to the schedule. The session drew a large audience from start to finish, and attendees took the opportunity to learn more through their questions.

Falconer Lecturer Tatiana Toro with AWM President Talitha Washington

Tatiana Toro (University of Washington; SLMath, formerly MSRI) delivered the 2023 AWM-MAA Etta Zuber Falconer Lecture, *Geometry of Measures*. Those in attendance learned of the motivation behind

Panelists Vinodh Chellamutha, Adriana Salerno, Alica Prieto Langarica, and Jennifer Quinn with moderator Jeanette Shakalli

Violeta Vasilevska speaking at the CPS

Toro's recent work in geometric measure theory. Discussion included how the behavior of a measure on balls in different metrics provides information about the structure of the support of the measure. Additionally, the role of concepts from calculus in geometric measure theory was shared.

An associated AWM-MAA invited paper session (IPS), *Geometric Measure Theory, Harmonic Analysis, and Partial Differential Equations*, also took place. This session, co-organized by **Max Goering** (Max Planck Institute Leipzig), **Anna Skorobogatova** (Princeton University), and **Mariana Smit Vega Garcia** (Western Washington University), showcased the interactions among the three named areas and revealed new developments at their interface. Travel support for participants in this session was provided by grant NSF DMS-2113506.

Watch the Falconer Lecture and the IPS on MAA's YouTube Channel here: https://youtu.be/pW-zaq2eirg?si=Dq4Vm2NyeQrxDyuX (Falconer) and https://www.youtube.com/watch?v=cK-zkSRUssE (IPS)

Finally, the AWM Student Chapter Awards were presented at the MAA Ice Cream Social. Chapters were recognized for their outstanding achievements in community outreach (Western Ontario University), funding and sustainability (University of Texas at Austin), professional development (Rutgers University), and scientific excellence (University of Pittsburgh). The winners were celebrated with dessert and lively conversation!

The Association for Women in Mathematics is grateful for the support and partnership of the Mathematical Association of America. We look forward to planning some exciting activities for next year's MAA MathFest in Indianapolis in August of 2024!

Photo credits: MAA: Friends and student chapter; Edray Goins: Falconer; Janet Fierson: Panel and Vasilevska. Many thanks!

Lauren Siegel, Naila Hajiyeva representing the University of Texas chapter, and Talitha Washington

Applications Open for

AMS CONGRESSIONAL FELLOWSHIP 2024–2025

Apply your mathematics knowledge toward solutions to societal problems.

The American Mathematical Society will sponsor a Congressional Fellow from September 2024 through August 2025.

The Fellow will spend the year working on the staff of either a member of Congress or a congressional committee, working in legislative and policy areas requiring scientific and technical input.

The Fellow brings his/her/their technical background and external perspective to the decision-making process in Congress. Prospective Fellows must be cognizant of and demonstrate sensitivity toward political and social issues and have a strong interest in applying personal knowledge toward solutions to societal problems.

Now in its 19th year, the AMS Congressional Fellowship provides a unique public policy learning experience, and demonstrates the value of science–government interaction. The program includes an orientation on congressional and executive branch operations, and a year-long seminar series on issues involving science, technology, and public policy.

"Every day on the Hill is new and exciting! Whether I am writing press releases, synthesizing complicated ideas into one-pagers, or meeting influential individuals, I learn something new every day. "

—Duncan Wright,
AMS Congressional
Fellow 2022–2023

Applicants must have a PhD or an equivalent doctoral-level degree in the mathematical sciences by the application deadline (February 1, 2024). Applicants must be US citizens. Federal employees are not eligible.

The Fellowship stipend is US$100,479 for the Fellowship period, with additional allowances for relocation and professional travel, as well as a contribution toward health insurance.

Applicants must submit a statement expressing interest and qualifications for the AMS Congressional Fellowship as well as a current curriculum vitae. Candidates should have three letters of recommendation sent to the AMS by the February 1, 2024 deadline.

For more information and to apply, please go to **www.ams.org/ams-congressional-fellowship**.

Deadline for receipt of applications: **February 1, 2024**

AMS AMERICAN MATHEMATICAL SOCIETY
Advancing research. Creating connections.

jmm 2023

Learn more at the JMM 2024 session on DC-based Policy and Communications Opportunities to be held Friday, January 5, 2024 at 4:30 p.m.

ADVERTISEMENT

Tenure-Track Position in Mathematics
University of Pennsylvania

The Department of Mathematics at the University of Pennsylvania invites applications for one tenure-track Assistant Professor position. We are especially looking for mathematicians working on Geometry-Topology or Combinatorics. Responsibilities include teaching undergraduate and graduate courses in Mathematics and conducting research in the field.

We are a collaborative and interactive department. We pursue original investigations in Differential Geometry, Partial Differential Equations, Functional Analysis, Mathematical Physics, Algebraic Topology, Algebraic Geometry and Algebraic Number Theory, Combinatorics and Algorithms, Category Theory, Logic and its applications to Computer Science, and several other areas of current mathematical development. The Mathematics Department is housed within the School of Arts & Sciences, which is comprised of 28 academic departments, the College of Arts and Sciences, the Graduate Division, and the College of Liberal and Professional Studies. Interdisciplinary research and collaboration are supported by the breadth and depth of academic pursuits at Penn as well as the proximity of resources on our contiguous green urban campus in Philadelphia, Pennsylvania. We promote and encourage curiosity, intellectual engagement, and discovery among all our students and faculty. University, School, and departmental resources that support our efforts include but are not limited to: the Offices of the Vice Provost for Faculty and Vice Provost for Research, PennGlobal, Wellness at Penn, the Center for Teaching and Learning, the Penn Center for Undergraduate Research and Fellowships, and Penn Human Resources.

The department offers an undergraduate major that provides students an understanding of the modern discipline of mathematics. More generally, we teach hundreds of undergraduate students and sixty grad students each year. Our graduate students often go on to become postdocs and faculty in academic institutions, and to work as applied research mathematicians for government agencies, as industry scientists working in data analysis, and as researchers in biotech companies. Our faculty also participate in cross-disciplinary undergraduate programs, such as computer science, physics, systems and mechanical engineering, and operations research and statistics in the business school.

We seek candidates who share our strong commitment to research, teaching and mentoring, and to a scholarly community shaped by values of inclusive excellence. The School of Arts and Sciences at the University of Pennsylvania is committed to cultivating and sustaining a community of students, scholars, researchers, and staff that reflects the diversity of our world. We nurture working and learning environments that are affirming, equitable, and inclusive. As a community, we are committed to thoughtful discussions and dynamic interactions as we strive for an environment where everyone is supported and valued. Please see our School's Inclusion and Anti-racism Initiatives to learn more about our active priorities: https://www.sas.upenn.edu/2020-inclusion-and-anti-racism-initiatives.

Qualifications include:

- Strong research potential
- Capacity for teaching at both the graduate and undergraduate levels and mentoring and supporting a diverse student body
- The ability to direct graduate/undergraduate research
- Candidates are required to have a PhD and expected to have some postdoctoral experience by the time of appointment, which is July 1, 2024.
- The successful candidate will be expected to
  - attract external funding to contribute actively to the mission of the department

Application instructions/Required documents:

- Please provide the following application materials to http://apply.interfolio.com/131393:
  - CV
  - Cover letter
  - Personal statement(s):
    - Research
    - Teaching
    - DEI
- Publication list
- 3 reference letters from mathematicians familiar with your work
- 1 additional letter discussing your teaching experience and ability
- Review of applications begins on **October 16, 2023** and will continue until the position is filled.

2023–2024 Individual Membership Form

JOIN ONLINE at awm-math.org!

Please fill in this information and return it along with your dues to:
AWM Membership, PO Box 40876, Providence, RI 02940

ASSOCIATION FOR WOMEN IN MATHEMATICS

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The AWM Newsletter is published six times a year. If you have questions, contact AWM at **awm@awm-math.org**, 401.455.4042, or visit our website at: **https://awm-math.org.**

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If student, check one:

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If not employed, leave position and institution blank.

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INDIVIDUAL DUES SCHEDULE

Please check the appropriate membership category below. Make check or money order payable to: Association for Women in Mathematics.

NOTE: All checks must be drawn on U.S. banks and be in U.S. funds.

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☐ Regular individual membership *(members earning <$90,000)* $70
☐ Regular individual membership *(members earning ≥$90,000)* $100
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☐ Contributing membership (*3 year membership, members earning <$90,000*) $480
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☐ Contributing membership (*3 year membership, members earning ≥$90,000*) $570
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