ASSOCIATION FOR WOMEN IN MATHEMATICS

Newsletter

VOLUME 53, NO. 3 • MAY–JUNE 2023

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.

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PRESIDENT'S REPORT

As we transition to the summer, I become reassured of the generation of new ideas, perspectives, and energies that continue to support moving the Association for Women in Mathematics (AWM) forward. Recently I had the pleasure of walking up the street in the heart of Atlanta to hear Amie Wilkinson of the University of Chicago give the Erdös Memorial Lecture at the American Mathematical Society Southeastern Sectional Meeting held at Georgia Tech. She eloquently provided insights on how to think beyond dynamical systems to see their underlying structures while delightfully engaging the audience along the way. Seeing new and former colleagues reinstills the humanity of mathematical experiences from which the theories and practices emanate.

Shortly before that conference, I had the pleasure of presenting at a meeting at the National Academies of Science, Engineering and Medicine. I led a discussion on the lack of progress in diversifying the STEM workforce, even though there appears to be a greater institutional commitment to diversity. In the Annual Survey of the Mathematics and Statistical Sciences, of the 1960 new PhDs reported for 2017–18, 48% (935) of recipients were US citizens, 29% (567) were women, and 8% (79) were members of underrepresented groups.

While some may use the production of PhDs in mathematics as an indicator to suggest the "health" of our field, we cannot overlook the fact that our society is not well reflected in these data. Others may suggest that we have the intelligence and the know-how to have more diverse representations and wonder why we have not solved this issue. Change is hard work, and organizations do not naturally diversify. To change the trajectory, a different force must be applied so that we swing in the direction of a more diverse STEM workforce. This force is the collective sum of forces that each one of us contributes, both big and small. As a nation, over a period of time, we have built social structures that stalled the participation of women in mathematics. We must be steady, patient, and persistent in developing new social structures that advance diversity.

We must also take time to celebrate the achievements of mathematicians. Ingrid Daubechies of Duke University just won the Wolf Prize in Mathematics "for work in wavelet theory and applied harmonic analysis." Dandrielle Lewis of High Point University has assumed the role of Editor-Elect of AWM and will bring new perspectives to our community. Catherine Roberts will join COMAP as Chief Executive Officer in September, and I am thankful for her work as the Executive Director of the American Mathematical Society. Jennifer Balakrishnan, the Clare Boothe Luce Professor of Mathematics at Boston University, has been awarded the 2023–2024 AMS Joan and Joseph Birman Fellowship for Women

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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.

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PRESIDENT'S REPORT *continued from page 1*

Scholars. Gloria Ford Gilmer (1928–2021), a researcher, educator, and leader in the mathematical community, has become the first Black woman mathematician to have her archives added to the Library of Congress.

While not all mathematical achievements are known, it brings me joy to pause and reflect on the accomplishments of others. As we enter the summer and transition to vacations, workshops, and conferences, let us continue to reinvigorate our mathematics and celebrate our community.

Talitha Washington
March 28, 2023
Atlanta, GA

Talitha Washington

Anne Schilling Named 2024 Noether Lecturer

The AWM and the AMS announce that Anne Schilling has been selected to deliver the 44th Emmy Noether Lecture at the Joint Mathematics Meetings to be held in San Francisco on January 3–6, 2024.

Professor Anne Schilling is recognized for sustained leadership and impact in algebraic combinatorics and related fields, including globally recognized research and inspiring contributions to the broader mathematics community.

Schilling is Professor and Chair of the Mathematics Department at UC Davis, which she joined in 2000. Previously she held a Moore Instructorship at MIT and was a postdoc at the Institute for Theoretical Physics at the University of Amsterdam. Schilling has been awarded a Humboldt Research Fellowship (2002) and a Simons fellowship (2012–2013) and was named an AMS Fellow (2019).

Schilling's work in algebraic combinatorics is highly regarded, combining deep results with elegant solutions and appearing in the leading journals of mathematics. Continuously supported by the NSF through both collaborative and individual grants, the work spans problems that many would agree are the most fundamental and difficult in the area, such as the restriction problem, the plethysm problem and the combinatorial analysis of other structure coefficients.

Anne Schilling

Schilling is the co-author of nearly 100 papers, two research texts, and a linear algebra textbook. Her recent book with Daniel Bump on crystal bases has been highly praised by others using it in the community.

In addition to her research accomplishments, Schilling is an inspiring mentor and an extremely active leader in the research community. She has organized over 27 conferences and workshops in her field, most recently as the main organizer for the Formal Power Series and Algebraic Combinatorics conference, the largest annual conference in algebraic combinatorics known for highlighting contributions of junior mathematicians. In addition, she is one of the main contributors to SageMath, a free and open source computer algebra system, which is an invaluable tool for experimentation in mathematics. She is an editor on the board of two open access journals, *Combinatorial Theory* and *Algebraic Combinatorics*, and she helped to write the constitution for *Algebraic Combinatorics* as it was getting established. Schilling's energetic mentorship has been visible in several venues, complementary to her supervision of eleven graduate students and several postdocs. She has been active in two Algebraic Combinatorixx workshops at Banff and in the Research Community in Algebraic Combinatorics at ICERM, mentoring untenured women faculty and leading research groups that support junior women researchers in their careers.

AWM established the Emmy Noether Lectures in 1980 to honor women who have made fundamental and sustained contributions to the mathematical sciences. The lecture honors Emmy Noether (1882–1935), one of the great mathematicians of her time. She worked and struggled for what she loved and believed in. Her life and work remain a tremendous inspiration.

AWM Essay Contest

Congratulations to all the winners of the 2023 AWM Essay Contest: Biographies of Contemporary Women in Mathematics! Many thanks to Johanna Franklin, Hofstra University, contest organizer, and to the other members of the committee, along with the many volunteer judges. We are also grateful to Math for America for their sponsorship of this contest. The essay contest is intended to increase awareness of women's ongoing contributions to the mathematical sciences by inviting sixth-graders through college seniors to write biographies of contemporary women mathematicians and statisticians in academic, industrial, and government careers.

The 2023 Grand Prize essay appears after the list of this year's winners. To see the other prize-winning essays, visit https://awm-math.org/2023-student-essay-contest-results/.

GRAND PRIZE WINNER

Student: Adeline Elder (Blacksburg Middle School)
Title: Anjali Dhabaria's Journey in Mathematics
Interviewee: Anjali Dhabaria (Torc Robotics)

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Membership Dues
Membership runs from Oct. 1 to Sept. 30
Individual: $70 **Contributing:** $160
Family, new member, and reciprocal (first two years): $35
Affiliate, retired, part-time: $30
Student, unemployed: $20
Outreach: $10
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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.

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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@math.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 Emek Köse, student-chapters@awm-math.org. Send everything else, including ads and address changes, to AWM, awm@awm-math.org.

Undergraduate Winner

Student: Anna McLerran (Utah Valley University)
Title: Woman + Challenge = Drive
Interviewee: Pearl Sandick (University of Utah)

Undergraduate Honorable Mentions

Student: Amanya Gonzales (Kettering University)
Title: The Remarkable Dr. Jeanette Shakalli
Interviewee: Jeanette Shakalli (FUNDAPROMAT)

Student: Lindsay Moskal (Duquesne University)
Title: The Power of a Mathematical (Role) Model: Dr. Rachael Neilan's Journey Through Mathematics
Interviewee: Rachael Neilan (Duquesne University)

Student: Rebecca Riley (The University of Texas at Austin)
Title: From Regletas to Fusion Reactors
Interviewee: Irene Gamba (The University of Texas at Austin)

Grades 9–12 Winner

Student: Alexa Eskovitz (Windward School)
Title: From the World Cup to a Sustainable World: Mandiola's Math Mindset
Interviewee: Leticia Torres Mandiola (Ørsted)

Grades 9–12 Honorable Mentions

Student: Abraham Hernandez (Mission High School)
Title: LaQuanta Hernandez—Created to Count
Interviewee: LaQuanta Hernandez (Mission Consolidated Independent School District)

Student: Mark Leschinsky (Bergen County Academies)
Title: Igniting Minds: Dr. Heitzman's Inspiring Journey from Kiln to Classroom
Interviewee: Carla Heitzman (Bergen County Academies)

Grades 6–8 Winner

Same as Grand Prize Winner.

Grades 6–8 Honorable Mentions

Student: Katelyn Joseph (Rachel Carson Middle School)
Title: Against All Odds
Interviewee: Cicily Joseph (Fatima High School)

Student: Anna McCracken (Walnut Springs Middle School)
Title: I Use Math to Catch Bad Guys
Interviewee: Amanda Kaye McCracken (PNC Bank)

ASSOCIATION FOR WOMEN IN MATHEMATICS

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-Microsoft Research Prize: May 15, 2023
AWM-Sadosky Research Prize: May 15, 2023
AWM Fellows: May 15, 2023
AWM Louise Hay Award: May 15, 2023
AWM M. Gweneth Humphreys Award: May 15, 2023
AWM Student Chapter Awards: May 15, 2023
AWM Travel Grants: May 15 and October 1, 2023
AWM Research Symposium Poster Presentations: June 15, 2023
RCCW Proposals: July 1, 2023
AWM Workshop at JMM: August 15, 2023
AWM-AMS Noether Lecture: Sept. 15, 2023
AWM–MAA Falconer Lecture: September 15, 2023
AWM–SIAM Kovalevsky Lecture: September 15, 2023
AWM Alice T. Schafer Prize: Sept. 15, 2023
AWM Dissertation Prize: September 15, 2023
Ruth I. Michler Memorial Prize: Oct. 1, 2023

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Anjali Dhabaria's Journey in Mathematics

Adeline Elder, Blacksburg Middle School

Anjali Dhabaria works every day to do something that has never been done before, create fully self-driving vehicles. Many engineers have attempted this, but Dhabaria's company, Torc Robotics, is very close. Her job is "mapping and location." She uses algorithms, a set of logic rules, to figure out every tiny detail of the road and where the vehicle is located on it. She figures out where every bush, pole, and sign is, and then codes it into a digital map. This map is then used by the self-driving vehicle to define a route or a list of directions for how to get somewhere. Some of the routes spread hundreds of miles! Anjali Dhabaria finds her job at Torc exciting and with much freedom, but her path was not always an obvious one.

Growing up in India with a dad and brother who were engineers, and a mom who worked in science and biology, Anjali Dhabaria's interests grew in mathematics and science from an early age. As a child, she was wild, curious, and very interested in the world around her. School life in India is a bit different than in the US. All grades go to one school for elementary, middle, and high school. Kids start school at the age of 3 or 4 and can end around the age of 14 or 15. They study subjects including science, math, English, and social science (social studies) and participate in sports and a club. As a child, Dhabaria was interested in dance and music. She also played ping-pong as her sport.

After primary school, Dhabaria continued her education in undergraduate school. Her friend had introduced her to computer science, and she really liked mathematics and logic, so she decided to get her degree in it. But she still wanted to learn more. So at age 21, Anjali Dhabaria moved from India to America to go to the Georgia Institute of Technology to get a master's degree. For the first time in her life, she had to cook and clean for herself. She was all alone, but soon she had to focus on jobs; she needed the experience and money. During college, Dhabaria got a part-time job as a software engineer. She did not enjoy it much, though, because she felt restricted and limited by her company; she couldn't apply her knowledge and creativity to mathematics and science. She moved on to tutoring math. Dhabaria found it much more enjoyable. Not only was she meeting other students, but she was also proud of how she could remember math from earlier in her life and help others to understand. This made Dhabaria realize that maybe being a software engineer wasn't her dream job, or was it?

During college, she was one of the few women who were in many of her math classes. For most people, this might be discouraging, but for Dhabaria, this motivated her. She felt special and just as good as any boy. She was one of the few women who were accepted into these classes. She worked as hard as possible; this was her opportunity, and she would not let it get away.

She kept working hard until one day Georgia Institute of Technology had a career fair. One of the booths that happened to be there was Torc Robotics. Dhabaria walked up to their booth and talked to their representatives. They told her about what Torc does, and that they dream of creating self-driving vehicles. There was an immediate spark. She realized that she wanted to be a part of making this incredible technology. She would still be a software engineer, but with Torc, she could be creative and share her knowledge and creativity, instead of feeling limited. After college, it was off to Blacksburg, VA, the headquarters of Torc Robotics!

Dhabaria started working with Torc, and she found it amazing! She finally found her dream job. A place where she could work with creative, open-minded engineers and think outside the box. "It feels amazing to test your own software on a vehicle!" Dhabaria told me with a grin that went cheek to cheek. Torc was her absolute favorite job ever.

Dhabaria now uses geometry to represent features on the map/road, such as bushes, lane lines, and poles. Her team also uses mathematics to create models of the vehicle and sensor data. They design algorithms using algebra and calculus so the vehicle can accurately find its exact location on the map. Optimization and fusion techniques are also used to develop solutions that ensure the accuracy of the vehicle's location. She had a long journey but finally found her calling. She advised me that whatever job I choose to do, I need to always welcome new ideas, try new things, and always be motivated to follow my dreams, even when it seems impossible. Anjali Dhabaria is an amazing engineer that is making the impossible a true reality.

You can renew your membership at awm-math.org.

BOOK REVIEW

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

The Exceptions: Nancy Hopkins, MIT, and the Fight for Women in Science, by Kate Zernike, Scribner, 2023. ISBN 978-1982131838.

Reviewer: Marge Bayer, University of Kansas

Many readers will remember hearing about the 1996 report on gender inequities in lab sizes (and many other things) at MIT. Now, 27 years later, Kate Zernike has written a fascinating book, detailing the experiences of individual women scientists at MIT before the report, the formation of the Committee on Women Faculty, the actions and reactions of administrators before and after the formation of the committee and its report, and the subsequent successes of the women scientists at MIT.

The structure of the book mirrors in a certain way the development of the community of women scientists at MIT. Nancy Hopkins arrived at MIT in 1973 as an assistant professor in the Center for Cancer Research, under the biology department. For most of the next 20 years, she had little contact with other women scientists at MIT. Some of the other women scientists were more in touch with each other, but it was not until the early 1990s that they really came together and realized that their problems were not their problems as individuals. Similarly, about three quarters of the book tells individual stories, mostly of Nancy Hopkins, but also of several other MIT women scientists. In the last part, we learn about how the women came together and the results of their special collaboration.

The young women faculty who arrived at MIT in the 1970s and 1980s heard stories from older women about how they had been overlooked and mistreated. But often the young women looked at those experiences as things of the past, assuming that in their generation, because of changing attitudes and civil rights laws, if they were careful and worked hard, they would be treated as they deserved to be. As time went on, and their expectations of advancement and resources were not met, they often ascribed this to their own weaknesses or faults. This was made worse by their isolation: they might not have peers to share their experiences with, and so they failed to see the gender pattern in the behavior of their male colleagues and department chairs.

As the book does, I will focus on the story of Nancy Hopkins. As an undergraduate at Radcliffe, Nancy worked in the lab of Jim Watson (of DNA fame). He continued to be a mentor for her for many years. She did her PhD at Harvard in molecular biology, and then a postdoc at Cold Spring Harbor Laboratory, where Watson was director. There she met Barbara McClintock, a very distinguished geneticist, who had been unable to get a university position, although soon after she was elected to the National Academy of Sciences. (Her biography, *A Feeling for the Organism*, by Evelyn Fox Keller, appeared in 1983.) From there Nancy Hopkins went to MIT.

Two years before Nancy arrived at MIT, Jerome Wiesner became president, serving until 1980. In response to calls from women faculty, staff and students, he formed a committee to study the climate for women at MIT. He appointed Mildred Dresselhaus (later named the first female "Institute Professor") to chair the committee, which produced a report, "On the Role of Women Students at MIT." At the time 10% of undergraduates and 2% of faculty were women. Some on campus argued that women students would ultimately earn less than men and that this would "weaken alumni fundraising." [p. 138]. In any case, while admissions of women students increased after this, there were apparently no changes for women faculty.

Nancy Hopkins arrived in the year that MIT was celebrating the 100th anniversary of the graduation of the first woman, Ellen Swallow Richards. Nancy was optimistic about her future at MIT. But soon, as the only woman faculty member in the cancer center, she began to feel like a second-class citizen. She shared a secretary with a male faculty member; the secretary did Nancy's work only if she had time after finishing the work of the other scientist. Students and postdocs working on other projects used her materials and equipment without permission. She began to fear that others would take her ideas for their own, and so she started to keep those ideas to herself. Wanting to avoid being seen as a difficult woman, she didn't speak up for herself. Before the tenure decision, the chair of biology warned her that the department would not nominate her for tenure, because of her "lack of collegiality." [p. 155]. When, after she received tenure, space was renovated for labs for three people, including a new assistant professor, Nancy got the smallest space. She had some friends with whom she could share her concerns. (These included Jim Watson.) But in general she tried to keep her head down and focus on her research.

The straw that broke the camel's back for Nancy concerned a course that she had designed with colleague Eric Lander. The course was a new biology course that would be required for all undergraduates. The course was to introduce molecular biology and genetics and include material on

biotechnology and ethical questions. It was first offered in 1991. Nancy put a great deal of work into designing the course, and worked hard (and successfully) to improve student ratings. Then suddenly she learned that she had been replaced by another faculty member, Harvey Lodish. It turned out that Harvey Lodish had become interested in teaching the course, after he had been approached by a publisher to write an introductory textbook. So not only was Nancy going to be removed from the course, but her work in developing the course would be used by others for profit. It was time to consult a lawyer.

Nancy drafted a letter to then MIT President Chuck Vest. She met with Mary-Lou Pardue, a biologist and member of the National Academy of Sciences. Pardue wanted to add her signature to the letter, but she also thought they should reach out to other women. Within a month a dozen women faculty in the School of Science, most of whom did not know each other, met and shared their stories of discrimination. (This was out of 15 tenured women in the School of Science, who constituted 7% of the tenured faculty [p. 284].) They went to the dean with a proposal to create a committee to study the status and treatment of women faculty. Over the objections of department chairs, but with the support of President Vest, the dean was able to get Science Council approval to create the Committee on Women Faculty. The committee of nine, which first met in February 1995, included Nancy Hopkins, five other women faculty, and three men faculty. One of the men was from the Mathematics Department, which had no tenured women at the time. (The math representative was Danny Kleitman, a combinatorialist I have known.)

The committee focused on collecting data for their report. They collected data on salaries, teaching assignments, grants, space, and the number of women at different stages, from undergraduates to tenured faculty. In Biology as well as Brain and Cognitive Sciences, faculty had to pay part of their salaries with grants, and they found that women were using grants to fund a higher percentage of their salaries than men, while their salaries were 17% lower than the men's [p. 312]. The number of women on the faculty had not increased in twenty years. The dean, Bob Birgeneau, started making changes even before the report was submitted. He reviewed salary levels, but also ended the requirement that portions of salaries had to come from grants. He hired a couple of tenured women and created a named professorship for one of the current woman full professors, soon after the committee was formed.

Meanwhile Nancy worked with a lawyer as she seriously considered suing Lander and Lodish over the use of her work in their book. In the end, she decided against it. (Seven years later Lander stepped down as a co-chair of the US President's Council of Advisors on Science and Technology "after a White House investigation found that he had demeaned and disrespected colleagues" [p. 352].)

When the report was finished, several department chairs objected to it, but other department chairs and the dean were supportive. President Vest worried that releasing

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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**.

the report would invite lawsuits, but he found the report convincing and even wrote a preamble. News of the report reached the press. Kate Zernike (the author of this book) worked in the newsroom of the *Boston Globe* then. She reports that she called Nancy at the time, and asked how she knew that men had more lab space than her. The answer: "I measured … With a tape measure." (This was the thing I remembered 25 years later.) Nancy Hopkins and Bob Birgeneau were guests on the dais when President Bill Clinton and Hillary Clinton gave speeches for Equal Pay Day. Other institutions pursued the goal of gender equity, either for the first time or with greater vigor. The NSF Advance Program was started.

The detailed stories of the women at MIT and their strategies for redress are interesting and instructional. The book is well written. I sometimes found it difficult to understand the timing of events; more frequent references to dates would have been helpful. But I think we can all find the book enjoyable and of use in dealing with present-day issues.

EDUCATION COLUMN

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

Conceptualizing Equity in Mathematics Education During Challenging Times

Toya Jones Frank, Associate Professor of Mathematics Education Leadership, George Mason University

The Equity Imperative

It is no secret that we are living through a challenging time in education. As most US children poured back into school buildings after being virtually schooled for months on end, school leaders faced the same challenges to serve a diverse group of students that existed pre-pandemic. However, these challenges were further complicated by a pandemic and the racial reckoning of 2020 that shook our worlds and exacerbated already long-standing issues in education. Further, discussions of learning loss permeated public discourse as students re-entered school with what some noted as "gaps" in their learning, particularly in mathematics, a subject area where discussions of underperformance and disparities in performance among disaggregated groups of students are abundant.

The current moment begs for advancing equity in mathematics education, and I would argue that given our US historical context, it has always been a longstanding need. Educational experts have weighed in in droves regarding a path forward. Some push for testing to ensure US students meet grade-level standards, while others call for culturally responsive and sustainable pedagogy in this moment. In all, despite the perspectives and the approaches presented, they all point toward *equity*—a six-letter word with a powerful punch, and I'd argue, an ever-shifting meaning depending on who uses the word.

The equitable aim of ensuring all children have access to meaningful mathematics education is a priority of the mathematics education community. Our community has a legacy of leading the way in equity-focused research. Trailblazing research is happening in novel ways in the field right now. Yet, even as a growing field of mathematical research, the term *equity* is often used without shared understanding. The field is broad and numerous conceptions are warranted, but what do we actually mean?

Conceptualizing Equity

As an equity researcher in mathematics education, I often start from a conception of equity put forth by renowned scholar Rochelle Gutiérrez who states that equity is the inability to predict students' achievement and participation based solely upon social characteristics such as race, ethnicity, sex, and proficiency in the dominant language (Gutiérrez, 2007). Gutiérrez raises two important dimensions of equity here (and others in Gutiérrez, 2012)—achievement and participation. Educational experts often overemphasize the former at the expense of the latter.

Within education circles, numerous approaches to equity are discussed under the broad banner of equity, including:

- Achievement: This approach entails ensuring that students across all walks of life are well-prepared to achieve mathematics success via standardized and classroom-based assessment or other measures of mathematics achievement. Often discussions of learning loss are specifically addressing the achievement dimension.

- Participation: Ensuring that students, no matter their path in life, have the freedom, opportunity, and access to participate in meaningful mathematics education. Many efforts to broaden participation, whether for women or historically marginalized communities, are guided by this approach.
- Materials and resources: This approach addresses students' and stakeholders' access to resources, both material (e.g., learning tools, technology, curricula, etc.) and human (e.g., effective teachers, mathematics coaches, and leaders). Representative of this approach are discussions of school funding and access to technology.
- Affective: This approach addresses how learners and doers of mathematics develop their identities related to mathematics. Additionally, this dimension focuses on mathematics environments and how they foster or impede students' senses of belonging and competence.
- Sociocultural and sociopolitical concerns: This approach acknowledges the larger social, cultural dynamics that impact mathematics teaching and learning (e.g., language, class, gender, and race). A sociopolitical perspective often leads to examining the field with a critical lens and an understanding that mathematics education is inherently political. Thus, the social disparities that permeate society are mirrored within mathematics education (e.g., linguistic bias, classism, sexism, and racism).

This list is by no means exhaustive, and these approaches are interconnected. However, naming specific approaches has implications for addressing long-standing concerns that have often been discussed under a broad equity umbrella. Additionally, once problematic issues are highlighted, the education community can seek solutions for those specific concerns. Furthermore, we need multiple approaches to equity to address persistent issues from diverse angles.

Shifting the Framing of Equity Issues

Identifying and specifying equity issues is important; however, I issue the caveat that we must be vigilant in making sure that pervasive deficit-oriented attitudes do not perpetuate the very issues that we aim to change. Given the need for drastic overhaul in public education, it is easy to attribute the current state of education to families and students. Too many times, I have been part of conversations that discuss what is not happening in students' homes, what students come to school lacking, and how these issues can seem insurmountable in a school environment. No doubt, many of the issues faced as educators are challenging, particularly in the current educational climate, but *the blame is misplaced*. We are in dire need of reframing. Instead of placing blame on the shoulders of the most vulnerable, we must look at the broader structural issues that underlie what we are observing in schools. Additionally, we must look to student, family, and teacher assets. Instead of focusing on learning loss, we can look to leveraging what students learned while at home (assets-based framing). We can also work to address structural issues of access, poverty, linguistic bias, sexism, and racism that produce disparities in achievement often attributed to students and families. To further

continued on page 10

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 interdisci-plinary 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/.

explain, I will use an example from my own work to show what it might look like to reframe a contemporary equity issue.

Mathematics teaching is plagued by teacher shortages. Recruiting and retaining a diverse mathematics teaching force is even more challenging when one drills down with respect to who is teaching. Examining the issue from a resources perspective, one could argue that a key to equity is hiring and retaining mathematics teachers, especially teachers of color. The work I most recently engaged in with my research team addresses the imperative to recruit and retain Black mathematics teachers, a group with the highest turnover in the field. The "filling pipelines" discussions often treat teachers as data points to meet diversity requirements or to simply achieve demographic matches between students and teachers. While much of the rhetoric regarding Black teachers in the news cycle is to the tune of "Where are the Black mathematics teachers?" (a resources approach), our research team posed: "What are the mechanisms that push Black mathematics teachers out of teaching?" and "How are these contemporary mechanisms related to longstanding inequitable structures in teacher education policy?" (a sociopolitical approach).

It is our hope that this research contributes to policy conversations regarding mathematics teacher diversity. In taking a sociopolitical approach to the research, we had several unique findings and recommendations. Ultimately, from large-scale survey data and numerous interviews with Black mathematics teachers, we assert that racism should be considered an organizational factor that contributes to Black mathematics teacher turnover. Black mathematics teachers cited persistent microaggressive incidents related to intelligence such as not being promoted to teach upper-level courses and an overemphasis on being disciplinarians. In fact, Black mathematics teachers overwhelmingly noted their experiences of racism as a significant factor in their decisions to leave mathematics teaching (Frank et al., 2021). One teacher in a focus group even described teaching while Black as "teaching with thick skin."

Looking Ahead

As we look to the future, the road ahead will require both specified attention to varying equity issues and reframing to avoid deficit narratives. With respect to mathematics education research, I implore us to be solutions-oriented. Let's not be so focused on highlighting the problem, which easily slips into comparisons and deficit-laden narratives, that we forget to move forward by using differences as assets and springboards to new approaches to longstanding concerns. There are no quick fixes or magic bullets. New technologies and curricula will not bring about substantive change. Major strides in equity will take more than focusing on mathematics. It is the work of intellect and heart. Reframing means rethinking ideas and approaches that have fared well for many of us who succeed in mathematics, yet left so many without opportunities. I surmise that in the field of mathematics where we puzzle the unimaginable and

CALL FOR NOMINATIONS

The Association for Women in Mathematics Student Chapter Awards

In September 2016, the Executive Committee of the Association for Women in Mathematics established the Student Chapter Awards, to be awarded annually at the MAA MathFest. The purpose of these awards is to recognize outstanding achievements in chapter activities among the AWM student chapters.

Awards will be given out in up to four categories: (1) scientific excellence, (2) outreach, (3) professional development, and (4) funding/sustainability. More details about each category can be found on the AWM website awm-math.org.

Any chapter may nominate itself for awards in one or two categories. The nomination should include: 1) A cover letter: The cover letter should summarize the chapter's qualifications for the award category to which it is nominating itself. If the chapter is applying in two categories, it should ensure that both categories are clearly included in one cover letter. 2) An activities report: The activities report, 500–1000 words in length, should give a detailed description of the particular work for which it is seeking an award. If the chapter is applying in two categories, a separate activities report is required for each. Nomination materials should be submitted online at MathPrograms.org. The submission link will be available 45 days prior to the nomination deadline. Nominations must be received by **May 15, 2023**. If you have questions, phone 401-455-4042, email awm@awm-math.org, or visit https://awm-math.org/awards/awm-student-chapter-awards/.

the complex on a daily basis, we can do the hard work of pulling apart what we know to make space for something new that responds to the moment.

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Editor's Note: Writing Team Changes

In recent issues, I announced the departure of two writers (Erica Walker and Minerva Cordero) who have taken on new roles and positions. Another change will be coming in the July–August issue when Anna Bargagliotti will step out of the rotation to add several new projects to her agenda. I have really appreciated her coverage of the "statistics beat" and I am sure readers have too.

Three new writers have joined the team and three of us are continuing. Here is the new schedule:

- Megan Breit-Goodwin (Anoka-Ramsey Community College): continues writing for the January–February issue
- Jo Hardin (Pomona College): will write for the March–April issue (beginning in 2024)
- Toya Frank (George Mason University and National Science Foundation): will write for the May–June issue
- Jackie Dewar (Loyola Marymount University): moves to the July–August issue
- Yvonne Lai (University of Nebraska–Lincoln): continues writing for the September–October issue
- Guadalupe Lozano (University of Arizona): will write for the November–December issue

I want to thank the new writers for joining the team and express my gratitude to the continuing team members for their past and future contributions.

CALL FOR NOMINATIONS

The AWM Dissertation Prize *(NEW DEADLINE!)*

In January 2016 the Executive Committee of the Association for Women in Mathematics established the AWM Dissertation Prize, an annual award for up to three outstanding PhD dissertations presented by female mathematical scientists and defended during the 24 months preceding the deliberations for the award. The Prizes will be given for those dissertations deemed most outstanding by the award committee. The award is intended to be based entirely on the dissertation itself, not on other work of the individual.

To be eligible for the award graduate students must have defended their dissertation within the last two years (September 15, 2021 to September 14, 2023). They must either be a US citizen or have graduated from a University in the US. The Prizes will be presented at the Joint Mathematics Meetings in San Francisco, CA.

Anyone can be a nominator, whether or not they are AWM members. Self-nominations are permitted. Nominations of members of underrepresented minorities are especially encouraged. The nomination should include: 1) a one to three page letter of nomination highlighting the exceptional mathematical research presented in the dissertation, 2) a copy of the dissertation and/or a URL address where it can be accessed, 3) two letters supporting the nomination, and 4) a curriculum vitae of the candidate not to exceed three pages. Nomination materials should be submitted online at MathPrograms.org. The submission link will be available 45 days prior to the nomination deadline. Nominations must be received by **September 15, 2023**. If you have questions, phone 401-455-4042, email awm@awm-math.org, or visit awm-math.org/awards/awm-dissertation-prize/ for more information.

In Memoriam

Patricia Clark Kenschaft

Lori Kenschaft; reprinted from the Star-Ledger*, https://obits.nj.com/us/obituaries/starledger/name/patricia-kenschaft-obituary?id=38211885*

Patricia Clark Kenschaft
March 25, 1940–November 20, 2022

A mathematics professor, organic gardener, activist, author, wife of the late Fred Chichester, and proud mother of two children, Pat Kenschaft loved her life until the very end.

Pat was the daughter of Bertha Francis Clark (a history teacher and political activist) and John Randolph Clark (an organic chemist) and grew up in Nutley, NJ, as the eldest of four children. She graduated with honors from Swarthmore College and received her doctorate in mathematics from the University of Pennsylvania.

She taught math at Montclair State University for more than thirty years, and she was passionate about both mathematics and racial and gender equity. She was a founding member of the Association for Women in Mathematics, and she was delighted when she learned that she had more Black students than average because of her reputation on the student grapevine. She published eight books and numerous articles, including her research on how women and racial minorities thrive in math classes and mathematical careers. She started a summer program in Newark, NJ, that taught mathematics to elementary school teachers, and for many years she hosted a weekly radio show and interviewed people about math-related topics. When she was a teenager, she and her boyfriend staged Shakespeare plays in her backyard, with neighborhood children as actors. Later, she directed skits at mathematics conferences that illuminated micro-inequities that she and others had experienced. Her motto was: Change is possible.

Pat was also a passionate organic gardener and environmentalist. She raised most of her family's vegetables in her backyard garden, along with fruits and berries of many kinds. She hosted "open gardens" multiple times a year, inviting people to come learn and be inspired, and she often sent visitors home with plants. Her gardening email list included more than a thousand people to whom she sent cheery, newsy gardening advice.

She was politically active throughout her life, starting with helping her mother in her advocacy for cognitively disabled children (like Pat's brother Bruce), special education, and a state income tax to better support schools. She enjoyed going door-to-door and talking with people about political issues and candidates, and she frequently wrote letters to the local newspapers and spoke with her elected representatives and their staff. For years she participated in a weekly vigil protesting the wars in Afghanistan and Iraq. For decades she actively supported numerous groups working for peace, racial justice, and environmental sustainability.

Pat had two children with her first husband, the late Ken Kenschaft. She lived in Montclair, NJ, for 45 years with her second husband, Fred Chichester, who died in May 2021. She was an active member of the Montclair Friends Meeting, and before that the Unitarian Universalist Congregation at Montclair, while Fred was an active member of the Bloomfield Presbyterian Church on the Green. This was typical of their marriage: they supported each other in their myriad interests and passions, and they shared meals and long conversations, with plenty of space for their independent work and friendships too.

Pat had a knack for engaging in conversation with people of all ages. She loved talking with people on the street, in the nearby park, and everywhere she went. When her children were in high school and college, they knew they could bring friends home, for a meal or a holiday break, and they would feel welcome. During those years Pat and Fred also took in several other teenagers, including an exchange student from Japan, a daughter of friends, and teens in the foster care system.

In her last two years, Pat had significant memory and medical challenges, but she continued to enjoy her life with the assistance of two excellent 24/7 aides, Martha and Rosemary, who loved her dearly. She talked frequently about

how happy she was, what a good life she had had, and her gratitude to her parents. One Sunday, after lunch, she died quickly and without pain or struggle, with Martha holding her hands. Her last words were words of love.

Pat is survived by her children, Lori Kenschaft (with Randy Smith) and Edward Kenschaft (with Genia Kenschaft), her grandson Nathaniel Kenschaft, two siblings, Roger Clark and Sue Mullins (with Rick Mullins), four nephews and nieces, and many dozens of former neighbors and friends who remember her fondly. She was a force of nature.

A celebration of Pat's life was held on Saturday, January 7, at the Unitarian Universalist Congregation of Montclair. The service was live streamed at https://www.youtube.com/channel/UCiu_muZvGUZpyiDUfT88hMg/live and was still available at press time.

Donations in Pat's honor may be made to the American Friends Service Committee.

Editor's Note: See also an obituary written by Chelsey Johnstone of the *Montclair Local* at https://montclairlocal.news/obituary-patricia-clark-kenschaft/.

Pat had long participated in professional organizations, including an impressive list of committee work focused on equity and inclusion: AWM Program Chair, 1978–1979; Joint Committee on Women in the Mathematical Sciences (JCW), 1988–1994; Chair, MAA Committee on Participation of Women, 1987–1993; and Chair, NCTM Equity and Diversity Integration Task Force, 2003. She won the Louise Hay Award in 2006 and was the AWM-MAA Etta Zuber Falconer Lecturer in 2013.

In addition to publications like *Winning Women into Mathematics*, published by the MAA in 1991, and *Change is Possible: Stories of Women and Minorities in Mathematics*, published by the AMS in 2005, Pat was a longtime contributor to the education column in this newsletter. A few columns include: "Education, Women, and Ethnomathematics," "Developing a Mathematical Urge and Mind," and "The Joy of Mathematics."

Pat was named an AWM Fellow in 2021, with this citation: For almost 50 years of sustained and lasting commitment to the advancement of underrepresented groups in the mathematical sciences, especially girls, women, and African Americans. Her extensive service, publications, and outreach bring to light racism, sexism, and inequities, always delivered with the message that positive change is possible.

We'll miss you, Pat!

CALL FOR NOMINATIONS

The 2024 Etta Zuber Falconer Lecture *(NEW DEADLINE!)*

The Association for Women in Mathematics and the Mathematical Association of America (MAA) annually present the Etta Zuber Falconer Lecture to honor women who have made distinguished contributions to the mathematical sciences or mathematics education. These one-hour expository lectures are presented at the MAA MathFest each summer. While the lectures began with MathFest 1996, the title "Etta Zuber Falconer Lecture" was established in 2004 in memory of Falconer's profound vision and accomplishments in enhancing the movement of minorities and women into scientific careers.

The mathematicians who have given the Falconer lectures in the past are: Karen E. Smith, Suzanne M. Lenhart, Margaret H. Wright, Chuu-Lian Terng, Audrey Terras, Pat Shure, Annie Selden, Katharine P. Layton, Bozenna Pasik-Duncan, Fern Hunt, Trachette Jackson, Katherine St. John, Rebecca Goldin, Kate Okikiolu, Ami Radunskaya, Dawn Lott, Karen King, Pat Kenschaft, Marie Vitulli, Erica Walker, Izabella Laba, Talithia Williams, Pamela Gorkin, Tara Holm, Bonita Saunders, Suzanne Weekes, and Tatiana Toro.

Anyone can be a nominator, whether or not they are AWM members. Self-nominations are permitted, in which case there must be at least one additional letter of support. Nominations for members of underrepresented minorities are especially encouraged. The letter of nomination should include an outline of the nominee's distinguished contributions to the mathematical sciences or mathematics education and address the nominee's capability of delivering an expository lecture. A curriculum vitae of the candidates not to exceed three pages is also required. Nominations are to be submitted as ONE PDF file via MathPrograms.org. The submission link will be available 45 days prior to the deadline. Nominations must be submitted by **September 15, 2023** and will be held active for a total of two years (one year beyond the initial nominations). If you have questions, phone 401-455-4042, email awm@awm-math.org or visit https://awm-math.org/awards/falconer-lectures/ to learn more.

Roundup of 2022 AWM Springer Series Volumes

Nicholas DiBenedetto, Springer

The AWM Series, published by Springer, has had a fruitful 2022, with the addition of five groundbreaking volumes. Focusing on the work of women in mathematics, these volumes cover numerous topics, including number theory, symplectic and contact geometry and topology, commutative algebra, applied and computational topology, and the study of complex materials. Additionally, a retrospective issue on the history of the AWM and women in mathematics was published and met with great acclaim.

As with all titles in the series, the works were peer-reviewed to meet the highest standards of scientific literature, while presenting topics at the cutting edge of pure and applied mathematics, as well as in the areas of mathematical education and history. Information on these volumes follow, and all are available for purchase, in eBook and in print format, on SpringerLink at link.springer.com.

Vol. 24: ***Women in Numbers Europe III—Research Directions in Number Theory***, Alina Carmen Cojocaru, Sorina Ionica, Elisa Lorenzo García (Eds.): This volume includes articles spanning several research areas in number theory, such as arithmetic geometry, algebraic number theory, analytic number theory, and applications in cryptography and coding theory. Most of the articles are the results of collaborations started at the 3rd edition of the Women in Numbers Europe (WINE) conference between senior and mid-level faculty, junior faculty, postdocs, and graduate students. The contents of this book should be of interest to graduate students and researchers in number theory.

Vol. 27: ***Research Directions in Symplectic and Contact Geometry and Topology***, Bahar Acu, Catherine Cannizzo, Dusa McDuff, Ziva Myer, Yu Pan, Lisa Traynor (Eds.): This book highlights a number of recent research advances in the field of symplectic and contact geometry and topology, and related areas in low-dimensional topology. This field has experienced significant and exciting growth in the past few decades, and this volume provides an accessible introduction into many active research problems in this area. The papers were written with a broad audience in mind so as to reach a wide range of mathematicians at various levels. Aside from teaching readers about developing research areas, this book will inspire researchers to ask further questions to continue to advance the field.

The volume contains both original results and survey articles, presenting the results of collaborative research on a wide range of topics. These projects began at the Research Collaboration Conference for Women in Symplectic and Contact Geometry and Topology (WiSCon) in July 2019 at ICERM, Brown University. Each group of authors included female and nonbinary mathematicians at different career levels in mathematics and with varying areas of expertise. This paved the way for new connections between mathematicians at all career levels, spanning multiple continents, and resulted in the new collaborations and directions that are featured in this work.

Vol. 28: ***Fifty Years of Women in Mathematics—Reminiscences, History, and Visions for the Future of AWM***, Janet L. Beery, Sarah J. Greenwald, Cathy Kessel (Eds.): The AWM, the oldest organization in the world for women in mathematics, had its fiftieth anniversary in 2021. This collection of refereed articles, illustrated by color photographs, reflects on women in mathematics and the organization as a whole. Some articles focus on the situation for women in mathematics at various times and places, including other countries. Others describe how individuals have shaped AWM, and, in turn, how the organization has impacted individuals as well as the broader mathematical community. Some are personal stories about careers in mathematics. The book covers a span from AWM's beginnings through the following fifty years. The volume celebrates AWM and its successes but does not shy away from its challenges.

The book is designed for a general audience. It provides interesting and informative reading for people interested in mathematics, gender equity, or organizational structures; teachers of mathematics; students at the high school, college, and graduate levels; and members of more recently established organizations for women in mathematics and related fields or prospective founders of such organizations.

Vol. 29: ***Women in Commutative Algebra—Proceedings of the 2019 WICA Workshop***, Claudia Miller, Janet Striuli, Emily E. Witt (Eds.): This volume features contributions from the Women in Commutative Algebra (WICA) workshop held at the Banff International Research Station (BIRS) from October 20–25, 2019, run by the Pacific Institute of Mathematical Sciences (PIMS). The purpose of this meeting was for groups of mathematicians to work on joint research projects in the mathematical field of commutative algebra and continue these projects together long-distance after its close. The chapters include both direct results and surveys, with contributions from research groups and individual authors.

The WICA conference was the first of its kind in the large and vibrant area of commutative algebra, and this volume is intended to showcase its important results and to encourage further collaboration among marginalized practitioners in the field. It will be of interest to a wide range of researchers, from PhD students to senior experts.

Vol. 30: ***Research in Computational Topology 2***, Ellen Gasparovic, Vanessa Robins, Katharine Turner (Eds.): This second volume of *Research in Computational Topology* is a celebration and promotion of research by women in applied and computational topology, containing the proceedings of the second workshop for Women in Computational Topology (WinCompTop) as well as papers solicited from the broader WinCompTop community. The multidisciplinary and international WinCompTop workshop provided an exciting and unique opportunity for women in diverse locations and research specializations to interact extensively and contribute collectively to new and active research directions in the field. The prestigious senior researchers that signed on to head projects at the workshop are global leaders in the discipline, and two of them were authors on some of the first papers in the field.

Some of the featured topics include topological data analysis of power law structure in neural data; a nerve theorem for directional graph covers; topological or homotopical invariants for directed graphs encoding connections among a network of neurons; and the issue of approximation of objects by digital grids, including precise relations between the persistent homology of dual cubical complexes.

Vol. 31: ***Research in Mathematics of Materials Science***, Malena I. Español, Marta Lewicka, Lucia Scardia, Anja Schlömerkemper (Eds.): This volume highlights contributions of women mathematicians in the study of complex materials and includes both original research papers and reviews. The featured topics and methods draw on the fields of calculus of variations, partial differential equations, functional analysis, differential geometry and topology, as well as numerical analysis and mathematical modelling. Areas of applications include foams, fluid-solid interactions, liquid crystals, shape-memory alloys, magnetic suspensions, failure in solids, plasticity, viscoelasticity, homogenization, crystallization, grain growth, and phase-field models.

The 2023 AWM Research Symposium Call for Poster Presentations

The Association for Women in Mathematics (AWM) invites graduate students and recent PhD recipients to present their research in a poster session at the 2023 AWM Research Symposium at Clark Atlanta University on September 30–October 2, 2023. This meeting will also feature plenary talks, special sessions, panels, and roundtable discussions on a wide range of topics in the mathematical sciences, a banquet, and many opportunities for discussion and networking.

Open to: Graduate students and recent PhD recipients in the mathematical sciences

Application deadline: June 15, 2023

Applications should be submitted at MathProgams.org:
https://www.mathprograms.org/db/programs/1442

Funding: Thanks to the National Science Foundation (NSF-DMS grant #2113506), the AWM is able to offer partial reimbursement for travel expenses to poster presenters who are not otherwise funded. If your poster application is approved, you will receive an offer of travel support.

Eligibility: Applications are welcome from women and nonbinary mathematicians who have received their PhDs within the last three years or who are graduate students who have made substantial progress on their doctoral thesis.

All applications should include:

- Cover letter
- Curriculum vitae
- Title and abstract (no more than 1 or 2 paragraphs)
- A *brief* letter of recommendation from a faculty member or research mathematician who knows the applicant's research. In particular, a graduate student should have a letter of recommendation from their thesis advisor, primarily to confirm that there is work completed on the proposed project.

Late applications cannot be accepted. Decisions on applications are expected to be made before July 15, 2023.

Daubechies Wins Wolf Prize

Wolf Foundation, February 2023

Ingrid Daubechies is a Belgian mathematician and physicist at Duke University. She earned her bachelor's degree in physics from the Free University of Brussels in 1975. She then continued her research at the same university, earning her doctorate in physics with her thesis "Representation of Quantum Mechanical Operators by Kernels on Hilbert Spaces of Analytic Functions."

Ingrid Daubechies' love for math and science was nurtured from a young age. Her father fostered her curiosity and interest in these subjects while she was in school. As a child, she was fascinated by how things worked and how to construct them, as well as the mechanisms behind machinery and the truth behind mathematical concepts. She would even calculate large numbers in her head when she couldn't sleep, finding it captivating to see the numbers quickly grow.

Daubechies has made significant contributions to the field of wavelet theory. Her research has revolutionized the way images and signals are processed numerically, providing standard and flexible algorithms for data compression. This has led to a wide range of innovations in various technologies, including medical imaging, wireless communication, and even digital cinema.

Wavelet theory, as presented by her work, has become a crucial tool in many areas of signal and image processing. For example, it has been used to enhance and reconstruct images from the early days of the Hubble Telescope, to detect forged documents and fingerprints. In addition, wavelets are a vital component of wireless communication and are used to compress sound sequences into MP3 files.

Beyond her scientific contributions, Daubechies also advocates for equal opportunities in science and math education, particularly in developing countries. As President of the International Mathematical Union, she worked to promote this cause. She is aware of the barriers women face in these fields and works to mentor young women scientists and increase representation and opportunities for them.

Citation: Ingrid Daubechies is awarded the Wolf Prize for her work in the creation and development of wavelet theory and modern time-frequency analysis. Her

CALL FOR NOMINATIONS

Alice T. Schafer Mathematics Prizes *(NEW DEADLINE AND CRITERIA!)*

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schafer Mathematics Prize to be awarded to undergraduate women for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize. The nominees may be at any level in their undergraduate careers, but must be undergraduates as of September 15, 2023. They must either be a US citizen or have a school address in the US. Starting in 2024, two Schafer Prizes and one runner-up will be awarded at the Joint Mathematics Meetings in San Francisco, CA.

Anyone can be a nominator, whether or not they are AWM members. Self-nominations are permitted, in which case there must be at least one additional letter of support. Nominations of members of underrepresented, underserved, and marginalized populations and of students attending institutions with limited resources are especially encouraged. One letter of nomination (at most three pages) should highlight the exceptional qualities of the candidate to be recognized. The letter of nomination may include (but is not limited to) an evaluation of the nominee on the following criteria: quality of performance in advanced mathematics courses, special programs, or mathematical competitions; mathematical growth of the nominee; nominee's ability to overcome barriers in their mathematical journey; nominee's ability to seek out and make the most of resources both at and outside of their institution; ability for independent work in mathematics or ability to work equitably in a team in mathematics. With the letter of nomination, please include a copy of transcripts that indicate expected graduation date. Any additional supporting materials (e.g. reports from summer work using math, copies of talks given, recommendation letters from professors, colleagues, etc.) should be included with the nomination. All nomination material is to be submitted as ONE PDF file via MathPrograms.org. The submission link will be available 45 days prior to the deadline. Nominations must be received by **September 15, 2023**.

If you have questions, phone 401-455-4042, email awm@awm-math.org, or visit https://awm-math.org/awards/schafer-prize-for-undergraduates/.

discovery of smooth, compactly supported wavelets and the development of biorthogonal wavelets transformed image and signal processing and filtering.

Her work is of tremendous importance in image compression, medical imaging, remote sensing, and digital photography. Daubechies has also made unparalleled contributions to developing real-world applications of harmonic analysis, introducing sophisticated image-processing techniques to fields ranging from art to evolutionary biology and beyond.

Daubechies's most important contribution is her introduction in 1988 of smooth compactly supported orthonormal wavelet bases. These bases revolutionized signal processing, leading to highly efficient methods for digitizing, storing, compressing, and analyzing data, such as audio and video signals, computed tomography, and magnetic resonance imaging. The compact support of these wavelets made it possible to digitize a signal in time linearly dependent on the length of the signal. This was a critical ingredient for researchers and engineers in signal processing to be able to rapidly decompose a signal as a superposition of contributions at various scales.

In subsequent joint work with A. Cohen and J.C. Feauveau, Daubechies introduced symmetrical biorthogonal wavelet bases. These wavelet bases give up orthonormality in favor of symmetry. Such bases are much more suitable for treating the discontinuities arising at the boundaries of finite-length signals and improving image quality. Her biorthogonal wavelets became the basis for the JPEG 2000 image compression and coding system.

CALL FOR NOMINATIONS

The 2024 Kovalevsky Lecture *(NEW DEADLINE!)*

AWM and SIAM established the annual Sonia Kovalevsky Lecture to highlight significant contributions of women to applied or computational mathematics. This lecture is given annually at the SIAM Annual Meeting. Sonia Kovalevsky, whose too-brief life spanned the second half of the nineteenth century, did path-breaking work in the then-emerging field of partial differential equations. She struggled against barriers to higher education for women, both in Russia and in Western Europe. In her lifetime, she won the Prix Bordin for her solution of a problem in mechanics, and her name is memorialized in the Cauchy-Kovalevsky theorem, which establishes existence in the analytic category for general nonlinear partial differential equations and develops the fundamental concept of characteristic surfaces.

The mathematicians who have given the prize lecture in the past are: Linda R. Petzold, Joyce R. McLaughlin, Ingrid Daubechies, Irene Fonseca, Lai-Sang Young, Dianne P. O'Leary, Andrea Bertozzi, Suzanne Lenhart, Susanne Brenner, Barbara Keyfitz, Margaret Cheney, Irene M. Gamba, Linda J.S. Allen, Liliana Borcea, Éva Tardos, Catherine Sulem, Lisa Fauci, Vivette Girault, Anne Greenbaum, and Annalisa Buffa.

The lectureship may be awarded to anyone in the scientific or engineering community whose work highlights the achievements of women in applied or computational mathematics. Anyone can be a nominator, whether or not they are AWM members. Self-nominations are permitted, in which case there must be an additional letter of support. Nominations of members of underrepresented minorities are especially encouraged. The letter of nomination should outline the nominee's contributions to applied or computational mathematics and provide a list of some of their most important research papers. This letter must be accompanied by a citation of about 100 words that may be read when introducing the speaker and a curriculum vitae of the candidate not to exceed three pages. Nominations are to be submitted as ONE PDF file via MathPrograms.org. The submission link will be available 45 days prior to the deadline. Nominations must be received by **September 15, 2023** and will be kept active for a total of two years (one year beyond the initial nominations).

The awardee will be chosen by a selection committee consisting of two members of AWM and two members of SIAM. Please consult the award web pages www.siam.org/prizes/sponsored/kovalevsky.php and awm-math.org/awards/kovalevsky-lectures/ for more details.

News from the AMS

Balakrishnan Awarded 2023–2024 AMS Birman Fellowship

February 2023

Jennifer Balakrishnan, the Clare Boothe Luce Professor of Mathematics at Boston University, has been awarded the 2023–2024 AMS Joan and Joseph Birman Fellowship for Women Scholars.

"It is an honor to be awarded the Joan and Joseph Birman Fellowship, and I am deeply grateful for the support of my collaborators and mentors," Balakrishnan said. "I am looking forward to the opportunity this fellowship will provide in supporting a full-year sabbatical, as well as inviting a collaborator to visit Boston University."

Balakrishnan's research is motivated by various aspects of the classical and p-adic Birch and Swinnerton-Dyer conjectures, as well as the problem of algorithmically finding rational points on curves.

Balakrishnan received an AB and AM from Harvard University and a PhD in mathematics from the Massachusetts Institute of Technology under the supervision of Kiran Sridhara Kedlaya. She was a National Science Foundation Postdoctoral Fellow at Harvard, a Titchmarsh Research Fellow at the Mathematical Institute of the University of Oxford, and a Junior Research Fellow of Balliol College, Oxford. She is the recipient of a Sloan Research Fellowship, an NSF CAREER award, and the AWM-Microsoft Research Prize in Algebra and Number Theory. Balakrishnan is a Fellow of the AMS and AWM.

About the Fellowship: The Joan and Joseph Birman Fellowship for Women Scholars is a mid-career research fellowship made possible by a generous gift from Joan and Joseph Birman.

The fellowship seeks to address the paucity of women at the highest levels of research in mathematics by giving exceptionally talented women extra research support during their mid-career years.

The most likely awardee will be a mid-career woman, based at a US institution, whose achievements demonstrate significant potential for further contributions to mathematics. A requirement of this fellowship is that the awardee must be a member of the AMS at the time of application.

Candidates must have a carefully thought-out research plan for the fellowship period. Special circumstances (such as time taken off for care of children or other family members) may be taken into consideration in making the award. Awardees may use the fellowship in any way that most effectively enables their research: for instance, for release time, participation in special research programs, travel support, childcare, etc. The award is issued through the recipient's institution, and no part of it may be utilized for indirect costs.

The award for the 2023–2024 academic year is expected to be in the amount of $50,000.

Gilmer is First Black Woman Mathematician Archived by Library of Congress

February 2023

Gloria Ford Gilmer (1928–2021), a researcher, educator, and leader in the mathematical community, has become the first Black woman mathematician to have her archives added to the Library of Congress. Along with William S. Claytor, Dr. Gilmer is one of the namesakes of the AMS Claytor-Gilmer Fellowship. Historians of science and technology at the Library of Congress Manuscript Division worked with the Gilmer family to assemble 64 boxes of her papers, files, photographs, and more that will be added to collections.

See also "Milwaukeean becomes first Black woman mathematician to have her papers in Library of Congress manuscript collection" by Devi Shastri in the January 10, 2023, *Milwaukee Journal Sentinel*: https://www.jsonline.com/story/news/education/2023/01/10/library-of-congress-collects-papers-of-milwaukee-mathematician/69775125007/. [Ed. Note: It's a great article!]

AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

You can renew your membership at awm-math.org.

2024 AWM Prizes and Awards Call for Nominations

AWM will accept nominations for the following AWM prizes and awards through **May 15, 2023** on mathprograms.org. They will be presented during the Joint Prize Session at the Joint Mathematics Meetings in San Francisco in 2024.

2024 Class of AWM Fellows

The Association of Women in Mathematics Fellows Program recognizes members of any gender 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." For more information visit https://awm-math.org/awards/awm-fellows/.

2024 Louise Hay Award

The Louise Hay Award for Contributions to Mathematics Education recognizes outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense. 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. For more information visit https://awm-math.org/awards/hay-award/.

2024 M. Gweneth Humphreys Award

The M. Gweneth Humphreys Award recognizes outstanding mentorship activities. This prize is awarded to a mathematics teacher who has encouraged women undergraduate students to pursue mathematical careers and/or the study of mathematics at the graduate level. M. Gweneth Humphreys (1911–2006) taught mathematics to women for her entire career, first at Mount St. Scholastica College, then for several years at 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. For more information visit https://awm-math.org/awards/humphreys-award/.

2024 Microsoft Research Prize in Algebra and Number Theory

The AWM Microsoft Research Prize in Algebra and Number Theory highlights outstanding research by a woman early in her career in algebra or number theory. Made possible by a generous contribution from Microsoft Research, this prize has been awarded every other year since 2014. For more information visit https://awm-math.org/awards/awm-microsoft-research-prize/.

2024 Sadosky Research Prize in Analysis

The AWM Sadosky Research Prize in Analysis recognizes exceptional research in analysis by a woman early in her career. The prize, awarded in even years since 2014, is named for Cora Sadosky, a former president of AWM, and 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. For more information visit https://awm-math.org/awards/awm-sadosky-research-prize/.

Data Science and Literacy Act

The AWM endorsed the Data Science and Literacy Act on February 14, 2023, the day it was introduced in the House. The bill seeks to "increase access to data science education, reduce course equity gaps for all students, and help build America's 21st century STEM workforce." Numerous other organizations have signed on, including the AMS, MAA, and SIAM.

The link to the AWM endorsements page is https://awm-math.org/policy-advocacy/endorsements/, and the link to the press release from the sponsors is https://stevens.house.gov/media/press-releases/rep-stevens-leads-bipartisan-legislation-increase-access-data-science-and. The current list of endorsements can be found via a link on the latter page.

The Data Science and Literacy Act of 2023 supports a voluntary program at the Department of Education through which educational entities (from elementary to two- and four-year colleges) can apply for funding to increase access to data science and literacy education. Specifically, grant funding can be used for the following:

- Preparing and supporting teachers to develop students' ability to make sense of data and implement it in problem-solving.
- Development of data literacy, data science, and statistics curricula.
- Expanding access to support and high-quality learning materials.
- Creating plans for expanding overall access to and support within rigorous STEM classes and reducing course equity gaps for all students.
- Ensuring additional support and resources for students from populations traditionally underrepresented in STEM fields.
- Providing evidence-based professional development for current data science and statistics educators, or training for current educators seeking to transition into data science education.

CALL FOR NOMINATIONS

The 2025 Noether Lecture *(NEW DEADLINE!)*

AWM established the Emmy Noether Lectures in 1980 to honor women who have made fundamental and sustained contributions to the mathematical sciences. In April 2013 the lecture was renamed the AWM-AMS Noether Lecture and since 2015 has been jointly sponsored by AWM and AMS. This one-hour expository lecture is presented at the Joint Mathematics Meetings each January. Emmy Noether was one of the great mathematicians of her time, someone who worked and struggled for what she loved and believed in. Her life and work remain a tremendous inspiration.

The mathematicians who have given the Noether lectures in the past are: Jessie MacWilliams, Olga Taussky Todd, Julia Robinson, Cathleen Morawetz, Mary Ellen Rudin, Jane Cronin Scanlon, Yvonne Choquet-Bruhat, Joan Birman, Karen Uhlenbeck, Mary Wheeler, Bhama Srinivasan, Alexandra Bellow, Nancy Kopell, Linda Keen, Lesley Sibner, Ol'ga Ladyzhenskaya, Judith Sally, Olga Oleinik, Linda Rothschild, Dusa McDuff, Krystyna Kuperberg, Margaret Wright, Sun-Yung Alice Chang, Lenore Blum, Jean Taylor, Svetlana Katok, Lai-Sang Young, Ingrid Daubechies, Karen Vogtmann, Audrey Terras, Fan Chung Graham, Carolyn Gordon, Susan Montgomery, Barbara Keyfitz, Raman Parimala, Georgia Benkart, Wen-Ching Winnie Li, Karen E. Smith, Lisa Jeffrey, Jill Pipher, Bryna Kra, Birgit Speh, Marianna Csörnyi, and Laura DeMarco. The 2024 lecturer will be Anne Schilling.

Anyone can be a nominator, whether or not they are AWM members. Self-nominations are permitted, in which case there must be an additional letter of support. Nominations of members of underrepresented minorities are especially encouraged. The letter of nomination should include a one-page outline of the nominee's contribution to mathematics, giving four of her/their most important papers and other relevant information. A curriculum vitae of the candidates not to exceed three pages is also required. Nominations are to be submitted as ONE PDF file via MathPrograms.org. The submission link will be available 45 days prior to the deadline. Nominations must be submitted by **September 15, 2023** and will be held active for a total of three years (two years beyond the initial nominations). If you have questions, phone 401-455-4042, email awm@awm-math.org or see the website https://awm-math.org/awards/noether-lectures/

AWM Workshop at the 2024 Joint Mathematics Meetings

Application deadline for graduate student poster session: August 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 both junior and senior speakers from one of the AWM Research Networks. An AWM Workshop will be held in conjunction with the Joint Mathematics Meetings in San Francisco, CA, January 3-6, 2024.

FORMAT: The workshop will consist of a **Special Session** focused on **Women in Operator Theory** organized by Asuman Aksoy and Catherine Bénéteau, and a **Poster Session** for graduate students and recent PhDs. The Special Session will feature selected junior and senior mathematicians from the Research Network Women in Operator Theory (WinOT); it follows the Lorentz Center workshop "Working Groups for Women in Operator Theory" that was held virtually in July of 2021 as well as the WinOT workshop that was held at the University of Memphis in October 2022.

POSTER SESSION: The Poster Session is open to ALL areas of research; graduate students working in areas related to operator theory are especially encouraged to apply. Poster presenters will be selected through an application process to present posters at the Workshop Reception & 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 reception, 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 in operator theory will have the opportunity to connect with the WinOT 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 grants or other sources of support are welcome to apply.

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

- a title of the proposed poster
- an abstract in the form required for AMS Special Session submissions for the Joint Mathematics Meetings
- a curriculum vitae
- one letter of recommendation from the applicant's thesis advisor.

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

MENTORS: We also 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 **September 15, 2023**.

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 to obtain institutional support to attend the presentations.

ADVERTISEMENT

ICERM Partnerships for Research Innovation in the Mathematical Sciences—The Institute for Computational and Experimental Research in Mathematics (https://icerm.brown.edu/) is proud to be an eligible partner in the NSF Division of Mathematical Sciences' Partnerships for Research Innovation in the Mathematical Sciences (https://www.nsf.gov/pubs/2023/nsf23560/nsf23560.htm?WT.mc_ev=click&WT.mc_id=&utm_medium=email&utm_source=govdelivery) (PRIMES)! PRIMES is a new funding opportunity to build lasting ties between DMS-supported math research institutes and minority-serving institutions. Eligible Historically Black Colleges and Universities, Hispanic-Serving Institutions, Tribal Colleges and Universities, and Asian American and Pacific Islander-Serving Institutions are invited to submit a proposal nominating a faculty member to serve as a co-Principal Investigator alongside a Director, Associate Director, or equivalent, at one of the eligible partner institutes.

We would like to invite faculty at eligible minority-serving institutions to start the PRIMES process by applying to participate in one of the following ICERM semester programs: 'Topology and Geometry in Neuroscience' (https://icerm.brown.edu/programs/sp-f23/w2/) (Fall '23), where leading researchers at the interfaces of topology, geometry and neuroscience will take stock of recent work and outline future directions; 'Numerical PDEs: Analysis, Algorithms, and Data Challenges' (https://icerm.brown.edu/programs/sp-s24/) (Spring '24), where researchers will discuss the current state-of-the-art and emerging trends in computational PDEs; 'Theory, Methods, and Applications of Quantitative Phylogenomics' (https://icerm.brown.edu/programs/sp-f24/) (Fall '24), where mathematicians, statisticians, computer scientists, and experimental biologists will come together to address the challenges involved in genome-scale phylogenetic inference; and 'Geometry of Materials, Packings, and Rigid Frameworks' (https://icerm.brown.edu/programs/sp-s25/) (Spring '25), where researchers will integrate diverse fields of discrete mathematics, geometry, theoretical computer science, mathematical biology, and statistical and soft matter physics.

Ruth I. Michler Prize

The Association for Women in Mathematics invites applications for the Ruth I. Micheler Memorial Prize.

A $50,000 prize will be awarded to a woman, recently promoted to associate professor or the equivalent, for a semester of mathematical research without teaching obligations in the Mathematics Department of Cornell University.

A supplemental housing/subsistence stipend award of $3,000 will be provided. Office space, library access, and computing facilities will be provided by Cornell.

The application deadline is October 1 for the award to be used during the 2024–25 academic year.

www.awm-math.org/michlerprize.html.

Cornell University

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SUMMER RESEARCH IN MATHEMATICS
SLMath (MSRI): Berkeley, California

The **2024 Summer Research in Mathematics (SRiM) program at the Simons Laufer Mathematical Sciences Institute (SLMath)**, formerly MSRI, provides space, funding, and the opportunity for in-person collaboration to small groups of mathematicians with partial results on an established project, especially women and gender-expansive individuals, whose ongoing research may have been disproportionately affected by various obstacles including family obligations, professional isolation, or access to funding. **Visits for the program are expected to take place between June 10 and July 26, 2024.** Participants are provided with lodging, meals, and travel expenses; funding to support childcare expenses is also available. **Apply via MathPrograms.org from July 1 – Oct. 8, 2023.**

NSF

msri.org/summer

Register for 2023-24 Workshops

MSRI / SLMath: Berkeley, California - msri.org/workshops

SLMath (formerly MSRI) invites registration for the Institute's 2023-24 workshops. All workshops are free of charge; funding for travel and childcare support is available as well as a nursing room for parents on site. See website for details.

- ***Connections Workshops*** *are open to all, introducing a program's themes and new directions in research, showcasing the work of women in the field, and connecting early-career researchers to potential senior mentors.*
- ***Introductory Workshops*** *provide researchers at all levels with an accessible overview of the goals, ideas, and techniques of the Institute's research programs.*

MATHEMATICS AND COMPUTER SCIENCE OF MARKET AND MECHANISM DESIGN

CONNECTIONS WORKSHOP: SEPT. 7-8, 2023
- Organizers: Michal Feldman (Tel-Aviv U.), Nicole Immorlica* (Microsoft Research)
- Funding Deadline: May 17, 2023

INTRODUCTORY WORKSHOP: SEPT. 11-15, 2023
- Organizers: Scott Kominers (Harvard Business School), Paul Milgrom (Stanford U.), Alvin Roth (Stanford U.), Eva Tardos (Cornell U.)
- Funding Deadline: May 21, 2023

ALGORITHMS, FAIRNESS, AND EQUITY

CONNECTIONS WORKSHOP: AUG. 24-25, 2023
- Organizers: Vincent Conitzer (Carnegie Mellon U.), Rachel Cummings* (Columbia U.), Ana-Andreea Stoica (UC Berkeley)
- Funding Deadline: June 7, 2023

INTRODUCTORY WORKSHOP: AUG. 28 - SEPT. 1, 2023
- Organizers: Vincent Conitzer (Carnegie Mellon U.), Moon Duchin* (Tufts U.), Wesley Pegden (Carnegie Mellon U.), Dana Randall (Georgia Institute of Tech.), Soledad Villar* (Johns Hopkins U.)
- Funding Deadline: June 11, 2023

COMMUTATIVE ALGEBRA

CONNECTIONS WORKSHOP: JAN. 18-19, 2024
- Organizers: Christine Berkesch (U. of Minnesota, Twin Cities), Louiza Fouli (New Mexico State U.), Maria Evelina Rossi (Università di Genova), Alexandra Seceleanu* (U. of Nebraska)
- Funding Deadline: Oct. 18, 2023

INTRODUCTORY WORKSHOP: JAN. 22-26, 2024
- Organizers: Srikanth Iyengar (U. of Utah), Claudia Miller (Syracuse U.), Claudia Polini (U. of Notre Dame), Anurag Singh* (U. of Utah)
- Funding Deadline: Oct. 22, 2023

NONCOMMUTATIVE ALGEBRAIC GEOMETRY

CONNECTIONS WORKSHOP: FEB 1-2, 2024
- Organizers: Rina Anno (Kansas State U.), Elizabeth Gasparim (Universidad Católica del Norte), Alice Rizzardo* (U. of Liverpool)
- Funding Deadline: Nov. 1, 2023

INTRODUCTORY WORKSHOP: FEB. 5-9, 2024
- Organizers: Nicolas Addington (U. of Oregon), David Favero, Wendy Lowen (Universiteit Antwerp), Alice Rizzardo (U. of Liverpool)
- Funding Deadline: Nov. 5, 2023

msri.org/workshops

** denotes lead organizer(s).*

Women, gender-expansive individuals, minorities, mathematicians not located at research centers, recent PhDs, and graduate students are encouraged to apply for funding to attend SLMath workshops. MSRI, now becoming SLMath, is supported by the National Science Foundation, now joined by the National Security Agency, over 100 Academic Sponsor departments, by a range of private foundations, and by generous and farsighted individuals.

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Printed in the U.S.A.

ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 53, Number 3, May–June 2023

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