ASSOCIATION FOR WOMEN IN MATHEMATICS

Newsletter

VOLUME 46, NO. 3 • MAY–JUNE 2016

The purpose of the Association for Women in Mathematics is

- to encourage women and girls to study and to have active careers in the mathematical sciences, and
- to promote equal opportunity and the equal treatment of women and girls in the mathematical sciences.

IN THIS ISSUE

PRESIDENT'S REPORT

Progress. On my way back from the Annual British Maths Colloquium in Bristol, UK, I am encouraged by the fact that 30% of the invited speakers this year were female, probably a record. Looking around at other major venues showcasing research in mathematics, I am seeing those numbers reflected more broadly in what seems like an encouraging trend!

Two long-running international biannual conferences in number theory will take place this summer featuring many more women as plenary and invited speakers than ever before: the 14th Meeting of the Canadian Number Theory Association (CNTA XIV) has **3/7** female plenary speakers and **7/21** female invited speakers; the Twelfth Algorithmic Number Theory Symposium (ANTS-XII) has **2/5** female invited speakers. Women in Numbers (WIN), the research community for women in number theory now supported in part by the AWM ADVANCE grant, was launched roughly 10 years ago in order to address exactly this issue, and although we cannot show direct causation, we can be very pleased with the progress on this front.

As another example, **Karen Vogtmann**, **Barbara Wohlmuth**, and **Karine Chemla** will give Plenary Lectures at the 7th European Congress of Mathematics (ECM) in Berlin in July 2016 (3/10 are female!). The Chair of the Scientific Committee, **Tim Gowers**, made an open and public call for nominations for plenary speakers and I know many of my colleagues were motivated to nominate outstanding female mathematicians. The percentage of invited talks by women does not look quite as high, but it seems that progress is being made in both process and results to achieve better representation and visibility for leading female mathematicians at prestigious and influential venues such as the ECM. Now let's see what happens for the next International Congress of Mathematics (ICM) in Brazil! At the 2014 Congress in Korea the percentage of female plenary and invited lecturers hovered around 10%.

AWM Advances! The AWM ADVANCE webpage is live and has links to all the networks. The AWM Workshop at JMM 2017 will be organized by **Alina Bucur** and **Ellen Eischen** as a follow-up to WINE and WIN3, and WIT2 and WINART are happening this April at Banff International Research Station (BIRS). If you are interested in starting a Research Network for Women in your research area, please contact the chair of our new RCCW Committee, **Michelle Manes**. Next deadline is July 1! The **2017 AWM Research Symposium** supported by the NSF ADVANCE grant will take place on April 8–9, 2017 at UCLA, co-organized by the AWM President, President-Elect, and Executive Director, along with local

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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*

UCLA faculty member **Luminita Vese**, **Reagan Higgins**, **Tatiana Toro**, and **Carol Woodward**.

Diversity initiatives. MSRI hosted a whole afternoon discussion on diversity for the Academic Sponsors Day, chaired by **Judy Walker**, and advertised the success of Research Networks for Women such as WIN and WIT and highlighted the successful Carleton program for women. NSF has just issued a new solicitation, INCLUDES, for proposals focusing on diversity. The AMS Committee on the Profession plans to host a panel on diversity at JMM 2017. And these are just the diversity initiatives which have come to my attention since I wrote my last report two months ago! If you wish to help promote diversity in your department, sign up to be an AWM Liaison on our webpage. Men and women are welcome as liaisons!

In Cooperation with AWM. We would like to encourage more math programs and conferences to be organized as "Meetings in Cooperation with AWM." The benefits are cross-advertising with AWM and potential to attract a diverse set of participants. I recently co-organized, with **Judy Walker** and **Everett Howe**, a Research Collaboration Conference for both women and men at the Institute for Pure and Applied Mathematics (IPAM) "In Cooperation with AWM." The IPAM Director was pleased to have the conference organized in cooperation with AWM and noted that it was the first time that IPAM hosted a research conference which was roughly 50/50 men and women. At the conference, we advertised the AWM ADVANCE program and deadlines for other upcoming collaboration conferences for women such as WINE-2. The proceedings volume will be published in the AWM Springer Series, which benefits the AWM. The conference was covered by participant **Beth Malmskog** in the AMS Blog PhD+Epsilon, making a great case for the value of the Research Collaboration Conferences model at the heart of AWM ADVANCE. Thanks, Beth!

It is my hope that we can have all of the major long-standing programs and conferences for women, such as the programs at Carleton, Smith, the Institute for Advanced Study (IAS), the Nebraska Conference for Undergraduate Women, and

IPAM: Algebraic Geometry for Coding Theory and Cryptography

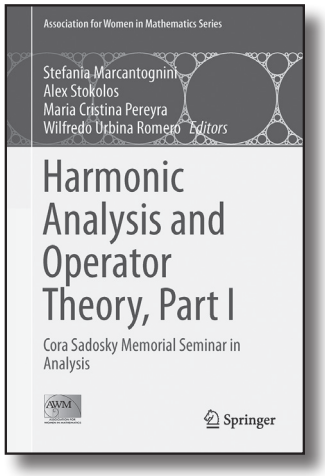
EDGE, listed on the AWM webpage as organized "In Cooperation with AWM." The AWM can help to advertise deadlines and highlight these great events on social media, and advertising AWM to the participants at the meetings can help recruit the next generation of members of AWM!

Several of the Regional Conferences for Women such as WiMSoCal and the Midwest Women in Math Symposia are already listed there, along with some of the Research Collaboration Conferences for Women such as WhAM!, WiSh, and Women in Math Biology. The page also lists innovative events such as the Girl Scouts Women in Mathematics Earned Badge!

To advertise your conference, event, or program as "In Cooperation with AWM" please visit our website and submit the form to request the status from AWM Executive Director **Magnhild Lien**. If appropriate, consider publishing a proceedings volume in the AWM Springer Series from your conference or event!

Awards. AWM is delighted to announce that **Lisa Fauci** will deliver the 2016 Kovalevsky Lecture at the SIAM Annual Meeting and that **Pallavi Dani** has won the 2016–2017 Michler Prize. Lisa is the Pendergraft Nola Lee Haynes Professor of Mathematics at Tulane University. She was selected for her pioneering contributions to mathematical and computational modeling of aquatic locomotion, microorganism motility, and fluid dynamics of human reproduction. Pallavi is an Associate Professor of Mathematics at Tulane University and will spend the spring 2017 semester at Cornell University to work with faculty in the area of geometric group theory. In particular, she studies quasi-isometry invariants of groups and has a special interest in hyperbolic groups and CAT(0) groups. Congratulations to both winners! For more information, see the press releases on pages 4–6 of this issue.

AWM Springer Series. Two new volumes have appeared in the AWM Springer Series: *Directions in Number Theory, Proceedings of the 2014 WIN3 Workshop* is Volume 3 of the series, edited by **Ellen Eischen**, **Ling Long**, **Rachel Pries**, and **Katherine Stange**. Volume 4 is *Harmonic Analysis, Partial Differential Equations, Complex Analysis, Banach Spaces, and Operator Theory, Celebrating Cora Sadosky's Life*, edited by **S. Marcantognini**, **A.M. Stokolos**, **M.C. Pereyra**, and **W.U. Romero**.



New Portfolio Chairs. I would like to thank the AWM Executive Committee (EC) members who have agreed to lead the five Portfolios for the next two years. Much of the work of the organization is done in these portfolios and their leadership and coordination with the rest of the EC is invaluable. Please join me in thanking new EC member **Gail Letzter** (Policy and Advocacy), AWM Clerk **Janet Beery** (Membership), **Joan Ferrini-Mundy** (Awards), **Talitha Washington** (Programs), and ongoing Meetings Coordinator **Kathryn Leonard**.

Spring events. We continue ramping up our cooperation with MAA Sections this spring by hosting another AWM Lunch Table at the Southern California MAA section meeting at Loyola Marymount University on April 2. The Lunch Table is organized by **Janet Beery** and **Aparna Higgins** and features conversation with AWM President-Elect **Ami Radunskaya**! On May 5, we plan another visit to Capitol Hill to represent AWM and connect with lawmakers on issues

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Membership Dues
Membership runs from Oct. 1 to Sept. 30
Individual: $65 **Family:** $30
Contributing: $150
New member, affiliate and reciprocal members, retired, part-time: $30
Student, unemployed: $20
Outreach: $10
AWM is a 501(c)(3) organization.

Institutional Membership Levels

Category 1: $325
Category 2: $325
Category 3: $200

See www.awm-math.org for details on free ads, free student memberships, and ad discounts.

Executive Sponsorship Levels

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$2500–$4999
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Print Subscriptions and Back Orders—Regular and contributing members living in the US may elect to receive a print version of the *Newsletter.* Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for $65/year. Back orders are $10/issue plus shipping/handling ($5 minimum).

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

Newsletter Ads—AWM will accept ads for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership and other appropriate subjects. The Managing Director, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the* Newsletter *must be Affirmative Action/Equal Opportunity designated.* Institutional members receive discounts on ads; see the AWM website for details. For non-members, the rate is $116 for a basic four-line ad. Additional lines are $14 each. See the AWM website for *Newsletter* display ad rates.

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

Addresses
Send all queries and all *Newsletter* material except ads and queries/material for columns to Anne Leggett, amcdona@luc.edu. Send all book review queries/material to Marge Bayer, bayer@math.ku.edu. Send all education column queries/material to Jackie Dewar, jdewar@lmu.edu. Send all media column queries/material to Sarah Greenwald, greenwaldsj@appstate.edu and Alice Silverberg, asilverb@math.uci.edu. Send everything else, including ads and address changes, to AWM, fax: 703-359-7562, e-mail: awm@awm-math.org.

affecting women and girls in science. I will be joined by EC members **Talitha Washington** and **Talithia Williams** and student chapter members to discuss an agenda set by the AWM Policy and Advocacy Committee.

Staffing change. Matthew Hundley has been AWM Membership Director since summer 2008, and he's done a wonderful job for us. You may have met him at the AWM table during the 2014 JMM in Baltimore. Recently he earned a promotion at our association management company, and **Amanda Leibert** has moved into this position. Congrats, Matthew, and welcome, Amanda!

As always, we welcome your input and news about women in math. Please send me (or Tweet me!) your news to be posted on our AWM Facebook page and Twitter feed @AWMmath. Pictures are especially welcome!

Kristin Lauter

Best wishes,

Kristin Lauter
March 26, 2016
La Jolla, CA

Lisa Fauci Named Kovalevsky Lecturer

The Association for Women in Mathematics and the Society for Industrial and Applied Mathematics (SIAM) have selected Lisa Fauci to deliver the prestigious Sonia Kovalevsky Lecture at the 2016 SIAM Annual Meeting.

Fauci is the Pendergraft Nola Lee Haynes Professor of Mathematics at Tulane University. She was selected to deliver the AWM-SIAM Sonia Kovalevsky Lecture for her pioneering contributions to mathematical and computational modeling of aquatic locomotion, microorganism motility, and fluid dynamics of human reproduction. Her career combines rigorous asymptotic analysis and biological data to validate computational models, a history of service to the mathematical community, and a lasting legacy of mentoring early career scientists.

Fauci received her BS from Pace University and her MS and PhD in Mathematics from the Courant Institute of Mathematical Sciences, New York University. Her PhD advisor was Charles Peskin.

Fauci joined the faculty of Tulane University immediately after receiving her PhD. She has held visiting positions at both the University of Utah and New York University and has given lectures on biological fluid dynamics throughout the world, including as an invited speaker at the Eighth International Congress on Industrial and Applied Mathematics in Beijing, China in August 2015.

She is a prolific researcher who collaborates extensively with other applied mathematicians, computational scientists and experimental biologists and has an impressive list of publications. In addition to publishing in area specific journals

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: http://www.awm-math.org

Web Editor

Adriana Salerno, awmwebeditor@gmail.com

AWM DEADLINES

AWM ADVANCE Proposals for RCCWs: July 1, 2016

AWM Workshop at JMM: August 15, 2016

AWM-MAA Falconer Lecturer: September 1, 2016

AWM Alice T. Schafer Prize: October 1, 2016

AWM-AMS Noether Lecture: October 15, 2016

AWM Workshop at SIAM: November 1, 2016

AWM Michler Prize: November 1, 2016

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Lisa Fauci

Fauci also writes papers for journals with a broader scientific audience. For the last 28 years her research has been funded by an uninterrupted string of federal grants. Due to the interdisciplinary nature of her research, much of the funding has come from agencies other than the National Science Foundation (NSF), such as the Department of Energy (DOE), the National Institute of Health (NIH), the Army Research Office and recently the Gulf of Mexico Research Initiative.

Fourteen postdocs (three currently) and eleven PhD students have worked under the tutelage of Fauci. She is recognized for playing a substantial leadership role in mentoring women in the mathematical sciences.

Early in her career Fauci was awarded a Sloan Fellowship and in 2012 she became a Fellow of the Society for Industrial and Applied Mathematics (SIAM). She has served on the editorial board of several journals and is currently an Associate Editor of *Science Advances* (AAAS).

The 2016 SIAM Annual Meeting will be held July 11–15 in Boston, MA. The Kovalevsky Lecture honors Sonia Kovalevsky (1850–1891), the most widely known Russian mathematician of the late 19th century. In 1874, Kovalevsky received her Doctor of Philosophy degree from the University of Göttingen and was appointed lecturer at the University of Stockholm in 1883. She did her most important work in the theory of differential equations. Past Kovalevsky lecturers are Linda J.S. Allen, Irene M. Gamba, Margaret Cheney, Barbara Keyfitz, Susanne C. Brenner, Suzanne Lenhart, Andrea Bertozzi, Dianne P. O'Leary, Lai-Sang Young, Irene Fonseca, Ingrid Daubechies, Joyce R. McLaughlin, and Linda R. Petzold.

CALL FOR NOMINATIONS

The 2017 Etta Z. Falconer Lecture

The Association for Women in Mathematics and the Mathematical Association of America (MAA) annually present the Etta Z. 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 Z. 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 and Erica Walker.

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. 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 1, 2016** and will be held active for two years. If you have questions, phone 703-934-0163 or email awm@awm-math.org.

Pallavi Dani

Pallavi Dani Wins Michler Prize

The Association for Women in Mathematics and Cornell University are pleased to announce that Pallavi Dani, Louisiana State University will receive the 2016–17 Ruth I. Michler Memorial Prize.

The Michler Prize grants a mid-career woman in academia a residential fellowship in the Cornell University mathematics department without teaching obligations. This pioneering venture was established through a very generous donation from the Michler family and the efforts of many people at AWM and Cornell.

Pallavi Dani was selected to receive the Michler Prize because of her wide range of mathematical talents and the close connection of her work with the research of several mathematics faculty at Cornell. She earned a BSc in Mathematics from the University of Mumbai, Mumbai, India in 1999 and an MS in Mathematics from the University of Chicago in 2001. Dani received her PhD in mathematics, under the direction of Benson Farb, from the University of Chicago in 2005.

Before coming to Louisiana State University in 2008, where she is currently an associate professor in the Department of Mathematics, Dani spent time as a Visiting Assistant Professor at the University of Oklahoma. In 2008–09 she was a Visiting Research Associate at Emory University. She will be spending the spring 2017 semester at Cornell University.

Dani's research is in the area of geometric group theory. In particular, she studies quasi-isometry invariants of groups, such as Dehn functions and divergence, with a special interest in hyperbolic groups and CAT(0) groups. More recently she has been working on the quasi-isometry and commensurability classification of right-angled Coxeter groups. Her work is partially funded by a research grant from the National Science Foundation (NSF).

About her upcoming semester at Cornell Dani says: "I am honored to have been given the opportunity to participate in the vibrant research atmosphere at Cornell University. While there I will work with Tim Riley on questions related to subgroup distortion in hyperbolic groups, and filling invariants in subgroups of non-positively curved groups. I hope to learn more about the theory of special cube complexes from Jason Manning. I also expect to have fruitful interactions with Martin Kassabov and Justin Moore. I feel confident that this experience will help me forge new directions in my research."

Ruth Michler's parents Gerhard and Waltraud Michler of Essen, Germany established the memorial prize with the Association for Women in Mathematics because Ruth was deeply committed to its mission of supporting women mathematicians. Cornell University was chosen as the host institution because of its distinctive research atmosphere and because Ithaca was Ruth's birthplace. At the time of her death, Ruth was in Boston as an NSF visiting scholar at Northeastern University. A recently promoted associate professor of mathematics at the University of North Texas, she was killed on November 1, 2000 at the age of 33 in a tragic accident, cutting short the career of an excellent mathematician.

AWM Essay Contest

Congratulations to all the winners of the 2016 AWM Essay Contest: Biographies of Contemporary Women in Mathematics! Many thanks to Heather Lewis, Nazareth College, contest organizer, for coordinating the judging, and to the committee that does the matching (of students to subjects) and the judging. 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 students from sixth-graders through college seniors to write biographies of contemporary women mathematicians and statisticians in academic, industrial, and government careers.

The 2016 Grand Prize essay appears after the list of this year's winners. Congratulations to all! To see the other prize-winning essays, visit http://www.awm-math.org/biographies/contest/2016.html.

GRAND PRIZE WINNER

"Engaging with the Ensemble: Alissa Crans' Journey through Mathematics"
Priyanka Nanayakkara, University of California, Los Angeles, Los Angeles, California
(The essay was about Dr. Alissa Crans of Loyola Marymount University.)

Undergraduate Level Winner

Same as Grand Prize Winner.

Undergraduate Level Honorable Mentions

"I Wanted to Be an Astronaut"
Mackenzie Carlson, Dartmouth College
(The essay was about Dr. Robyn Millan of Dartmouth College.)

"An Unconventional Path"
Sarah Fleming, Williams College, Williamstown, Massachusetts
(The essay was about Dr. Pamela E. Harris of the United States Military Academy.)

"Mathematics for the Colombian Indians"
Also available in Spanish as "Matemáticas para los Indígenas Colombianos"
Maria Lozada, Broward College, Pembroke Pines, Florida
(The essay was about Ms. Yahaney Yagari who works with indigenous communities in Colombia.)

High School Level Winner

"To Count the Natural Numbers"
Emily Jia, Illinois Math and Science Academy, Aurora, Illinois
(The essay was about Dr. Tanya Khovanova of the Massachusetts Institute of Technology.)

High School Level Honorable Mentions

"Laura Copp, the Mathbuster"
Kasey Bersh, Marco Island Academy, Marco Island, Florida
(The essay was about Ms. Laura Copp of Hernandez Middle School.)

"The Path to Success"
Nikki Heinen, Maple Grove Senior High, Maple Grove, Minnesota
(The essay was about Dr. Samantha Schumacher of Target Corporation.)

Middle School Level Winner

"Another Contest Won"
Adun Oladeji, Homeschool, Alpharetta, Georgia
(The essay was about Ms. Laura Zehender of the Art of Problem Solving Online School.)

Middle School Level Honorable Mentions

"Never Give Up"
Lucy Glueck, Richmond Middle School, Hanover, New Hampshire
(The essay was about Dr. Deborah Glueck of the University of Colorado.)

"Math Magic. Outer Space, Virtual Space and Sun"
Addy Javetz, New Exploration into Science, Technology and Math School, New York City, New York
(The essay was about Dr. Sun Mi Chung of AOL Platform.)

"Building Treehouses: A Journey of Courage and Perseverance"
Reilly Uiterwyk, Crossroads Academy, Lyme, New Hampshire
(The essay was about Dr. Vicki V. May of Dartmouth College.)

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Engaging with the Ensemble: Alissa Crans' Journey through Mathematics

Priyanka Nanayakkara

Mathematics has long been part of Professor Alissa Crans' life. Hers is not so much a journey *into* mathematics, but rather a journey *through* it. When she was in elementary school, her father, who majored in mathematics, used to review her math homework with her. Her enjoyment was twofold; she liked the math, but she also loved the fact that it gave her a chance to spend time with her father.

In middle school, she flourished with support from her teachers. During one exam in the sixth grade, her teacher Mr. Peschman "pointed to a problem and said, 'I put this problem on the test to see if you wouldn't get 100% this time.'" She can't remember if she got 100% on the exam or not, but she remembers that Mr. Peschman saw her talent, and challenged her.

By her senior year of college, she was ready to become a mathematician ... or a musician. She wasn't yet sure which one.

At the University of Redlands, she majored in mathematics, but immersed herself in several music classes as well, almost double majoring. She wrote proofs and played preludes, finding a rhythm she could call her own. When she couldn't make headway on a problem set, she would step away with her clarinet. Note by note, her mind cleared. When it was time to return to her problem set, she had new ideas that her subconscious had been working on.

So when it came time to apply to graduate schools, she wasn't sure whether to pursue music or mathematics, and applied to programs in both. Both fields would allow her to pursue something she loved; both would encourage her creativity. But mathematics offered her something that music could not: the chance to perform away from the stage, without hundreds of eyes watching, hundreds of ears listening, hundreds of minds judging. So she decided to keep music a personal hobby, focusing her studies on mathematics.

Five years later, in the summer of 2004, she earned her PhD in mathematics from the University of California at Riverside. Since then, she has been on the faculty in the Department of Mathematics at Loyola Marymount University (LMU) in Los Angeles and has held positions at various institutions, including Pomona College, The Ohio State University, and the University of Chicago. Today, she is an associate professor at LMU, as well as an Associate Director of Project New Experiences in Teaching (NExT). In her free time, she plays the clarinet with the Santa Monica College Wind Ensemble.

Professor Crans enjoys mathematics both with others and alone. When she wants to learn a new topic, she gets a textbook and studies the material, quietly grappling with the ideas and letting them sink in. However, when she wants to discover something new, she likes working with others. Bouncing ideas back and forth is what has led to many of her and her coauthors' findings.

Some of her scholarly interests are "quantum algebra, geometric topology, relationships between mathematics and music, and the scholarship of engagement." She sees a "beautiful, intimate relationship between algebra and geometry," and explores this relationship through her research. Crans isn't as focused on the applications of her research; instead, she seeks out new mathematics for the sake of mathematics. She says that just as some people enjoy going to art museums or the symphony, she enjoys math.

And she doesn't want to be the only one with this enjoyment. She deeply values her role as an educator, and the opportunity she has to share mathematics with students. She says, "I would much rather have a student say they took another math class because they enjoyed my class than say, 'I cited your theorem.'" In the classroom, she puts her students in small groups, often grouping female students together, for a moment giving them a chance to experience mathematics without being The Only Woman In The Group.

Her commitment to women in mathematics extends past her own classroom. As the Associate Director of Diversity and Education at the Mathematical Sciences Research Institute (MSRI), she recognized the lack of women (and especially women of color) earning advanced degrees in mathematics and worked to close this gap. Additionally, she has taught in the Enhancing Diversity in Graduate Education (EDGE) program and the Summer Program for Women in Mathematics (SPWM). She also works with a program called Pathways, which is "a mathematics outreach program for LA County schools," where she is "part of a team of mathematics faculty members who teach at LA County colleges and universities and who visit K–12 classrooms to share [their] love and passion for mathematics."

The motif of Crans' mathematical work is her commitment to sharing mathematics through community. She doesn't see mathematics as an exclusive field, a private

concert only to be enjoyed by a select few. Instead, it's a symphony of ideas for everyone. From her days as a young girl reviewing her math homework with her father, to her current roles as a committed teacher and researcher of mathematics, her relationship with mathematics has been grounded in working with others.

Crans is breaking the mold of the solitary mathematician, a man holed up alone in a room with a piece of chalk and a question. Crans is in that same room, but with her students or with colleagues, sharing mathematics and finding new mathematics to share. She prefers the ensemble to the solo performance, inclusivity to exclusivity. The melody she creates is strong, and crisp, and refreshingly inviting. Her way of mathematics makes you want to pull up a chair and listen, to pick up an instrument and play, to discover for yourself the harmony within mathematics.

About the Student:

I'm Priyanka Nanayakkara, and I am a sophomore at UCLA majoring in statistics. One of my favorite books is *Mathematicians: An Outer View of the Inner World* by Marina Cook, because it gives a glimpse into what wonderful and intriguing personalities mathematicians often have. Within mathematics, my favorite subjects are logic and probability. Outside of mathematics, I like running, blogging about my life through food, and creating NPR-style radio stories for Daily Bruin Radio. Also, this past October, I attended the Graduate Research Opportunities for Women (GROW) conference at Northwestern University, which is how I found out about AWM!

STUDENT CHAPTER CORNER

Coordinator: Kathleen Fowler, kfowler@clarkson.edu

Colorado School of Mines AWM Chapter

Kownoon Her

The Society for Women in Mathematics (SWiM) is an AWM chapter at the Colorado School of Mines. Approximately 20 students and faculty attend bi-monthly meetings. For one of these meetings each month, SWiM brings in a mathematician to discuss her "mathematical story" with

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Frances Vallejo, Vice President for ConocoPhillips and CSM Board of Trustees member, shared her mathematical story and community involvement.

CALL FOR PROPOSALS

Research Collaboration Conferences for Women

Supported by a National Science Foundation ADVANCE grant, the AWM is working to establish and support research networks for women in all areas of mathematics research. As part of the grant, the AWM will provide mentorship and support to new networks wishing to organize a research collaboration conference for women (RCCW), including: help finding a conference venue, help developing and submitting a conference proposal, and help soliciting travel funding for participants.

Mathematicians interested in organizing 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. Deadline for submission: **July 1, 2016**.

More information about the ADVANCE Grant, Research Collaboration Conferences for Women, existing RCCW networks, and related initiatives can be found at http://awmadvance.org/.

our students, with the goal of exposing our students to a variety of different career options, mathematical paths, and general advice. Additionally this provides SWiM members an opportunity to interact with a variety of successful women in mathematics. Our invited guests are often alumnae, and we have utilized both the Alumni Office and faculty connections to find them. For the alternate meeting each month, SWiM holds a variety of workshops, panels, and social events. SWiM also sends students each year to present their research at the Nebraska Conference for Undergraduate Women in Mathematics.

The list below provides a sample of some our speakers from the past year:

- Karly Holland and Ryan Ward from FAST Enterprises, who spoke about predictive analytics and implementation consulting
- Dr. Kelley Tatangelo, co-advisor of SWiM, who is currently doing a postdoc at the Colorado School of Mines and spoke about the academic career path
- Dr. Emilie Hogan from Pacific Northwest National Labs who spoke about graph theory and cybersecurity
- Frances Vallejo, Vice President for ConocoPhillips and CSM Board of Trustees member, who shared her mathematical story and community involvement
- Dr. Renee Spinhirne from Lockheed Martin Space Systems, who spoke about her current project on the Orion spacecraft

The list below provides a sample of some of our workshops/panels from the past year:

- Career Panel: Participants were Blakelee Mills, CEO of Golden Software; Chelsae Cameron, Quantitative Risk Analyst Intern; Dr. Leigh Benson, Quantitative Modeling and Analytics; and Wendi Agre, Senior Health Care Actuary.
- Negotiation Workshop: Students learned about negotiating salary and benefits and practiced their skills in mock interviews.
- Resume Workshop: Students learned how to write a resume and had the opportunity to receive feedback on their own resumes from an HR representative from FAST Enterprises.
- Summer Opportunities Panel: We had a panel consisting of students who had participated in REUs and internships, as well as an HR representative from FAST Enterprises.
- Elementary School Math & Science Night: Members of SWiM created hexaflexagon activities for elementary school students for the fair.

We are very fortunate to have the generous financial and logistical support of FAST Enterprises, a local software and information technology company, and the Department of Applied Mathematics and Statistics. FAST has also recently endowed an annual scholarship that is awarded to one SWiM member each year. Faculty advisors are Drs. Debra Carney, Rebecca Swanson and Kelley Tatangelo. The executive board members are Izzy Aguiar, Taylor Chott, Jessica Deters, Jacqueline Feuerborn, Cassidra Harris and Kownoon Her.

Colorado School of Mines AWM Chapter

AWM WORKSHOP AT THE 2017 JOINT MATHEMATICS MEETINGS

Application deadline: August 15, 2016

For many years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent PhDs in conjunction with major mathematics meetings. Beginning in 2016 and going forward, the workshop talks will be supported by the AWM ADVANCE grant. The AWM Workshops serve as follow-up workshops to Research Collaboration Conferences for Women, featuring both junior and senior women speakers from one of the Research Networks supported by the ADVANCE grant. An AWM Workshop is scheduled to be held in conjunction with the Joint Mathematics Meetings in Atlanta, Georgia, January 4–7, 2017.

FORMAT: The workshop will consist of a Special Session focused on Number Theory organized by Alina Bucur and Ellen Eischen and a Poster Session for graduate students. Selected junior and senior women from the Research Collaboration Conferences for Women (RCCWs) WIN3 and WINE will be invited to give 20-minutes talks in the Special Session on Number Theory. The speakers will be supported by the National Science Foundation AWM ADVANCE grant: Career Advancement for Women through Research Focused Networks. The Poster Session will be open to *all* areas of research, and graduate students working in areas related to number theory are especially encouraged to apply. The graduate students will be selected through an application process to present posters at the Workshop Reception & Poster Session. Pending funding, 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 mathematicians at all stages of their careers. In particular graduate students in number theory will have the opportunity to connect with the Women in Number Theory (WIN) Research Network.

All mathematicians (female and male) 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.

MENTORS: We also seek volunteers to act as mentors for workshop participants, in particular the graduate students. If you are interested in volunteering, please contact the AWM office at awm@awm-math.org by **September 15, 2016**.

ELIGIBILITY: To be eligible for selection and funding, a graduate student must have made substantial progress towards her thesis. Women with grants or other sources of support are welcome to apply. All non-US citizens must have a current US address.

All applications for the poster session should 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 her thesis advisor.

Applications (including abstract submission via the Joint Mathematics Meetings website) must be completed electronically by **August 15, 2016**. See http://www.awm-math.org/workshops.html for details.

MEDIA COLUMN

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

Route to the IMO: Mathematical Brilliance, ASD, and Gender

Janet E. Mertz, University of Wisconsin-Madison

One of the extracurricular events available at the JMM held in Seattle, WA in January 2016 was a screening of the film *A Brilliant Young Mind* (1). This coming-of-age movie first appeared in the USA last September and is now available on DVD. It was originally released in the United Kingdom in March 2015 as *X + Y*. It stars Asa Butterfield (of *Hugo* fame) as the teenage Nathan Ellis, a math prodigy with Asperger's syndrome. The plot was inspired by the real-life story of Daniel Lightwing (2), but deviates considerably from it, presumably to achieve greater dramatic effect and appeal to the lay public.

In real life, Daniel Lightwing is currently a mathematically gifted 26-year-old who has been diagnosed with autism spectrum disorder (ASD). During a "gap year" before matriculating to university, Daniel met Yan Zhu, a Chinese woman, while living in the People's Republic of China (PRC) and training with the PRC's IMO team hopefuls. He then went on to achieve a silver medal in the 2006 International Mathematical Olympiad (IMO) as a member of the United Kingdom team. He subsequently married Yan while a university student at Trinity College at the University of Cambridge, but they later split up.

The director of *A Brilliant Young Mind*, Morgan Matthews, had previously made the 2007 movie *Beautiful Young Minds* (3). This 90-minute documentary follows 20 mathematically gifted British students from the time they were initially selected to attend the British Mathematically Olympiad (BMO) training camp held at Trinity College through the final selection of the six-member team at Oundle School and their participation in the 2006 IMO in Slovenia. This documentary briefly shows many of these 20 students, including two girls, but highlights three boys, especially Lightwing, all of whom are on the autism spectrum.

Matthews also includes in his 2007 documentary an interview with Simon Baron-Cohen, Professor of Developmental Psychopathology at the University of Cambridge and Director of the Autism Research Centre in Cambridge. Baron-Cohen was (and may still be) a proponent of the Extreme Male Brain Theory which postulates that people on the autism spectrum have an amplification of cognitive features considered typical of males, e.g., "systematizing" as opposed to "empathizing." Because mathematics requires systematizing and autism is more frequently diagnosed in men, the Extreme Male Brain Theory offers an explanation for the paucity of females at the highest levels of mathematics.

There is considerable skepticism about Baron-Cohen's conjecture. Nevertheless, Matthews takes it at face value, implying (incorrectly) by the subjects he chooses to highlight that essentially all of the boys, yet none of the girls, among the top 20 students who attend the BMO training camp have ASD. He even includes footage showing one of the girls stating that most of the boys are rather odd socially. He then goes on to show (in both the documentary and movie) none of the British girls making the team even though about half of the UK teams throughout the past quarter century have had one or more girls on them, including in 2001, 2002, 2003, 2004, 2007, and 2008 (5). Were there no girls on the fictional 2019 British IMO team because it would have been inconsistent with Baron-Cohen's hypothesis that it is mostly ASD boys who excel at this extreme level of mathematics? Clearly, the existence of lots of non-ASD IMO-medal-achieving girls and boys negates this stereotype.

This film has an outstanding cast, including Sally Hawkins as Nathan's mother, Martin McCann as Nathan's father, Edward Baker-Close as 9-year-old Nathan, Rafe Spall as Nathan's math teacher, Eddie Marsan as the BMO lead coach and IMO team leader, Isaac Cooper as another autistic IMO team hopeful, and Jo Yang as Nathan's girlfriend. Butterfield does a terrific job of playing the part of an academically brilliant teenage boy who is socially quite awkward, sensory defensive, and bullied by his classmates at school. The scenes where he interacts with his parents and girlfriend are quite warm and emotionally moving, providing an excellent depiction of the social and emotional difficulties encountered by young people on the autism spectrum. Marsan does an excellent job of showing what IMO team training is like while providing detail on only one math problem. Clearly, the writer (James Graham) and the director didn't want to scare away potential lay audience members by including real, IMO-level mathematics.

For the lay public, this movie provides a fairly enjoyable hour and 51 minutes of light entertainment while exposing them to the existence of the IMO and IMO training and to the day-to-day difficulties of raising or being a "twice-exceptional" youth.

While achieving these desirable goals, this movie, unfortunately, reinforces several false stereotypes about mathematically gifted children. The most unfortunate of these stereotypes was already discussed above, that is, that one typically needs to be male and autistic to excel in mathematics at this level. Furthermore, only two girls are depicted in the movie, one in each of the 20-student groups training for potential membership on the PRC IMO or BMO team. Both of these girls have a crush on Nathan despite there being 38 boys among whom to choose. One of the girls, Zhang Mei, comes across as being more interested in nabbing him as her boyfriend than in being a member of her country's IMO team. The movie even states that many people will believe that the only reason she qualified for membership on the PRC's top-ranked six-member team is because her uncle is the lead coach and team leader who selected the team members. (Spoiler alert: instead of the plot line then going on to have her proving that she rightfully deserved team membership by achieving a gold medal at the IMO, it, instead, has her getting herself kicked off the team for spending the night immediately before the competition in Nathan's bed with him! Of course, Nathan, a male, isn't likewise kicked off of the UK team for this incident.)

The movie contains multiple other improbable events. (Spoiler alert: Nathan walks out of the IMO competition half an hour into the four-and-a-half-hour session to catch up with expelled Zhang, having concluded that he has finally found true love and isn't about to risk losing it. This scene makes for a nice Hollywood ending, showing his willingness to sacrifice his long-sought, much-desired IMO medal for love. However, are we really supposed to believe that he couldn't wait another four hours before chasing after her? Are we really supposed to believe he would abandon his team and the IMO medal he had been working so hard toward for seven years?) Other improbable events include the PRC students training for the IMO in Taiwan, reserve team members being available onsite for last-minute substitution the morning of the competition, and Nathan instantly acquiring the ability to play a piano. The latter really wasn't necessary for the plot line given that the movie also shows Nathan speaking passable Chinese, a clear indication that he was gifted at acquiring knowledge in fields other than mathematics.

In summary, if you are interested in getting a feel for what it might be like to parent or to be a mathematically gifted child with Asperger's syndrome, *A Brilliant Young Mind*

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CALL FOR NOMINATIONS

Alice T. Schafer Mathematics Prize

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schafer Mathematics Prize to be awarded to an undergraduate woman for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize. The nominee may be at any level in her undergraduate career, but must be an undergraduate as of October 1, 2016. She must either be a US citizen or have a school address in the US. The Prize will be awarded at the Joint Prize Session at the January 2017 Joint Mathematics Meetings in Atlanta, GA.

The letter of nomination should include, but is not limited to, an evaluation of the nominee on the following criteria: quality of performance in advanced mathematics courses and special programs, demonstration of real interest in mathematics, ability for independent work in mathematics, and performance in mathematical competitions at the local or national level, if any.

With the letter of nomination, please include a copy of transcripts and indicate undergraduate level. Any additional supporting materials (e.g., reports from summer work using math, copies of talks, recommendation letters from professors, colleagues, etc.) should be enclosed with the nomination. All nomination material is to be submitted as ONE PDF file via MathPrograms.Org with a copy of transcripts included at the end of the file. The submission link will be available 45 days prior to the deadline. Nominations must be received by **October 1, 2016**. If you have questions, phone 703-934-0163, email awm@awm-math.org, or visit www.awm-math.org.

is a good place to begin. However, if you are a mathematician interested in learning about the IMO and IMO team selection process, a much better place to begin would be Matthew's 2007 documentary *Beautiful Young Minds* (3) or, even better, the 2007 documentary *Hard Problems: The Road to the World's Toughest Math Contest* made during the same time period by George Csicsery (6). The latter, which has been previously reviewed by Melissa A. Desjarlais in this newsletter (7), follows the training and selection of USA IMO team members and their participation in the 2006 IMO. Although that year's team also lacked females, Csicsery mostly highlights mathematically gifted but neurotypical youngsters, not ones with ASD. In addition, the DVD version of this documentary also includes several bonus features, one of which presents the stories of the three females who have been members of USA IMO teams, Melanie Wood, Alison Miller, and Sherry Gong.

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BOOK REVIEW

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

Iris Runge: A Pioneer in Industrial Mathematics

A review of: **Iris Runge: A Life at the Crossroads of Mathematics, Science, and Industry**, by Renate Tobies, translated from Germany to English by Valentine A. Pakis. Birkhäuser/Springer, 2012. 442 pp. ISBN: 978-3-0348-0229-1. German original from 2010.

Reviewer: Else Høyrup, Danish mathematician and historian of science, elsehoyrup@mail.dk

The author of the book under review is the German historian of mathematics and science, and gender historian, Renate Tobies. The protagonist of the biography is Iris Runge (1888–1966). She was a German industrial mathematician and physicist. She came from a distinguished scientific family. Her father, Carl Runge (1856–1927), was the famous applied mathematician behind the "Runge-Kutta method" in numerical analysis.

Electrotechnical research and other themes

The book analyzes the start of industrial mathematics in Germany. Iris Runge was one of the first professional mathematicians working in industry. She became a highly proficient and highly respected problem solver and mathematical consultant at the German electrotechnical corporations Osram and Telefunken. She did research on incandescent light bulbs and radio tubes (electron tubes). At her time in industry (1923–1945), there were no computers, so it was necessary to develop other numerical methods. She was a master at that.

From Renate Tobies' summary of Iris Runge's scientific results in industrial research (pp. 351–352), I will here mention:

- Iris Runge systematized existing graphical methods and created her own.
- Together with Richard Becker and Hubert Plaut, she wrote the first German textbook on statistical methods applied to mass production and quality control: *Anwendungen der mathematischen Statistik auf Probleme der Massenfabrikation*, 1. ed. 1927, 2. ed. 1930. In English the title means: "The Application of Mathematical Statistics to Problems of Mass Production." But the book was not published in English and so the English-speaking scientists did not know it.
- She invented her own scientific devices, including an optical micrometer and a colorimeter.

Iris Runge's results were quite wide-ranging. Renate Tobies concludes: "[Iris Runge] distinguished herself throughout her industrial career by her ability to create mathematical models for problems of physics, chemistry, engineering, and business."

Another focus of the book is the history of women mathematicians, physicists, and engineers in Germany in the first half of the 20th Century. Also as a woman, Iris Runge was a pioneer: In her youth, women were not allowed to study at the universities—not even when their father was a professor. It was also extremely difficult for women to get a job at the universities afterwards. Industry (at least the big industry in Germany) was on the contrary interested in talented people, who could be profitable to the firm. So they hired, retained and promoted Iris Runge.

There is also a broader theme in the book: the relations between science, politics, and society. Iris Runge was a political person, especially interested in the destiny of women and the poor. The Nazi period (1933–1945) is also analyzed, for instance in chapter 4.3: "To emigrate or remain in Germany." Here it is mentioned that the political situation of Iris Runge during the Nazi period was very difficult, especially during the war. Although she did not work under a military contract herself, of course her work on radio tubes was of interest to the military.

Her brother, Wilhelm Runge (1895–1987), was an electrical engineer, working in a leading position at Telefunken before the war. He was one of the pioneers of radar and in this capacity he came under a direct military contract. Their sister Nerina (Nina) Runge (1891–1991) married the famous mathematician Richard Courant (1888–1972), who was a Jew, and the family had to emigrate and went to the US.

The life of Iris Runge and other women scientists

The book is a very thoroughly researched book. The author has been able to trace a lot of material on Iris Runge. In particular her huge correspondence is preserved. Renate Tobies also had access to sources from the corporations Osram and Telefunken.

From Iris Runge's private correspondence we learn that she met some men with whom she had romantic relationships. But she did not marry, primarily because she did not want to lose her job and her independence.

The book also relates that she was a member of a large, warm and closely knit intellectual family. Until the death of her parents, she was in close contact with them through letters.

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CALL FOR NOMINATIONS

The 2018 Noether Lecture

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 and Karen E. Smith.

The letter of nomination should include a one-page outline of the nominee's contribution to mathematics, giving four of her most important papers and other relevant information. 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 **October 15, 2016** and will be held active for three years. If you have questions, phone 703-934-0163 or email awm@awm-math.org.

The correspondence was not only very affectionate, but it was also about her scientific work. Her mother Aimée (1862–1941) was not a scientist herself, but she came from a scientific family. The father of Iris Runge's mother was the physiologist Emile du Bois-Reymond (1818–1896). Iris Runge also told her mother a lot about her scientific work, and they had common literary and political interests. Here I want to put in a personal observation: It is unusual to know so much about a scientist's mother. Usually the sources only tell about a (famous) father.

The world of industry and of applied mathematics and physics was (is?) a male-dominated field. Iris Runge's father was a well-known applied mathematician. This fact may have been of help to her, when she was hired by industry. But business and industry would not have retained her and even promoted her, had she not been extremely capable and "profitable" herself. Although she followed in her father's footsteps and even wrote a book on his mathematical career, she was very intellectually independent from a young age. This was highly regarded, both in her family and in industry. This theme is also nicely described by Renate Tobies.

If we study the background of pioneering women, at least in the history of science, with which I am most familiar, most of them came from scientific families, like Iris Runge herself, or families who gave their daughters the same incentive to be creative as their sons. Renate Tobies is very attentive to this "woman question" in Germany and in general. For instance we learn from the book that Iris Runge was personally acquainted with the famous Austrian-Jewish experimental physicist, Lise Meitner (1878–1968). Their correspondence is preserved. Meitner became a professor of physics in Berlin at a time when it was extremely rare for a woman to become a professor. She later had to emigrate.

What puzzles me personally is that the book does not mention any acquaintance with the other female mathematical giant in Göttingen, Emmy Noether (1882–1935). They were contemporaries, they were both in Göttingen at the same time for a period, and Iris Runge's father, Carl Runge, was a mathematics professor at Göttingen University. He of course knew Noether. I speculate that the two women didn't make a connection because they were in different camps of mathematics, Emmy Noether working in abstract mathematics, Iris Runge in applied mathematics in industry.

CALL FOR NOMINATIONS

The 2017 Kovalevsky Lecture

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 C. Brenner, Barbara Keyfitz, Margaret Cheney, Irene M. Gamba and Linda J.S. Allen. Lisa Fauci will deliver the 2016 lecture at the SIAM Annual Meeting in Boston, MA in July 2016.

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. The nomination must be accompanied by a written justification and a citation of about 100 words that may be read when introducing the speaker. 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 **November 1, 2016** and will be kept active for two years.

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 www.awm-math.org/kovalevskylectures.html for more details.

As can be seen from the above, the book connects many themes. It has an interdisciplinary approach, which may interest people from different professions along with people interested in a human subject.

The book is not meant as a technical or historical textbook. But the longest part of the book, part III, deals with Iris Runge's professional work. Chapter 3.4 is more technical than the rest of the book, which can easily be read by nonprofessionals. Chapter 3.4, "Mathematics as a bridge between disciplines," is concerned with: 1. Graphical methods. 2. Quality control based on mathematical statistics. 3. Solving problems of materials research. 4. Optics and colorimetry. 5. Electron tube research.

There are many notes in the book and luckily they are at the bottom of each page. They refer to a very long bibliography. There is also a detailed index of names with years of birth and death and profession, so that this functions as a biographical mini-dictionary. There are 11 appendices and many photographs.

I have a few critical remarks: When you read a biography about a person who is not well known to the public, you would expect to learn about the person's years of birth and death at the beginning of the book. But the author almost hides this information. At last you find it in Appendix 2, where there is a biographical timeline.

Renate Tobies has chosen to center her book on Iris Runge's work as an industrial mathematician at the German corporations Osram (1923–1939) and Telefunken (1939–1945). The reason is of course that it is for this work that her contribution to history ought to be remembered: She was a pioneer, both as an industrial mathematician and as a woman. But in the beginning of the book, so much is written about Iris Runge's background with respect to family, friends, mentors, and politics, that it feels disappointing that it almost stops at the end of World War II. There is indeed an ultrashort chapter 5 with the title "Post-war developments and concluding remarks." But Iris Runge got another interesting job after the war: She became a university teacher in theoretical physics at Humboldt University in East Berlin. Because the official retirement age for women in Germany was 60 years, her promotion to professor only lasted from 1950 to 1952.

This interdisciplinary biography is an important contribution to the history of applied mathematics, the history of electrotechnical industries, the history of science and society, and gender history in general. Its focus is on Germany, but many things were similar (with the exception of Hitler!) to, for instance, the situation in the US. I have a comment here. Maybe here is the subject for a new project: a comparison between the development of industrial mathematics in different countries.

The translation from German to English was done by Valentine A. Pakis and it is so perfect that you don't think of it being a translation.

The original German edition from 2010 won the honorary book award in 2010 from The [German] Society of Friends of the History of Radio Technology (*Die Gesellschaft der Freunde der Geschichte des Funkwesens*).

To the readers of the *AWM Newsletter*, I can highly recommend this book. Iris Runge is an accomplished, interesting and sympathetic woman to get to know.

EDUCATION COLUMN

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

Revisiting a 1999 Column

Ginger Warfield, University of Washington, warfield@math.washington.edu

Seventeen years ago I published a column[1] that was a translation of an article that had charmed me in a Dutch book by and about women in mathematics. I got many positive comments. In particular, one reader whose name I have, alas, forgotten, described using the column with her students in a way that I promptly picked up and imitated many times with my students. I will describe it at the end. First the article.

For Math, you have to go to your Dad

Francis Meester, translated by Ginger Warfield

(This was an article in *VrouWiskundig*, a book by and about women in mathematics in the Netherlands.[2])

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[1] Education Column by Ginger Warfield in *AWM Newsletter*, v29, n1, January–February 1999, pp 13–15.

[2] *VrouWiskundig: Meisjes in het Wiskunde-onderwijs* by Marja Meeder and Francis Meester, published by OW en OC, 1984.

My mother knew nothing of mathematics. Or so she said. She had finished a school program, and had helped in her parents' cigar store, and undoubtedly learned some calculations for that, but she never liked them. When her children got good grades for arithmetic and later for mathematics, she always referred to my father: "That knack for mathematics you got from him. I have never had or understood anything about mathematics!" And my father could indeed hold his own in the field. Our memory is that he was always busy with the "Brainbuster" from the *Catholic Illustrated*, and he was enthusiastic and proud when after hours of puzzling and probably a good "problem-solving attitude" he found a solution. He also taught us arithmetic. By the time I first went to school, I could line up any two numbers less than a thousand and multiply them. He played little games with us—letter games and strategies for finding the unknown letters; he taught us canasta when we were five years old, and later bridge. So calculation and mathematics were things we learned from Dad. But yet....

Looking back I think—and my three sisters with me—that we learned a tremendous amount from my mother, well within the area of problem-solving but directed towards practicalities. My mother knew nothing of mathematics, but now—after so many years—I understand how many mathematical methods she wielded to keep her head above water. To run a household with six children and a very, very tight budget you've got to carry out some mathematical activities, whether or not you call them that. In what follows, I'll try to make that clear.

In addition to her inevitable reckoning and worrisome weighing of what was and wasn't possible, behind a large number of decisions there lay a well thought out strategy. How many nights she must have lain awake thinking up all those little plans. Every plan she brought to light was fully thought out; all "yes, but ..."s were taken into account in the plan, and the final conclusion of my father or of any of the children was always "Do it!" For the person concerned, this could sometimes be a rather annoying experience. For one's own input there was little or no place. I had the same experience later, when I was confronted with mathematical end-products. The whole thing was right, you could follow the reasoning, but there was no room for your own creative thinking.

My mother taught us among other things the following mathematical activities:

- how with limited means you could still put a balanced and tasty meal on the table
- how to make best use of the different special offers of the stores. It was a bit of extra work, but it paid off. (optimization process)
- how to acquire your school books and materials as advantageously as possible
- how you can learn to paint and paper walls, even if you have never done it before (surface translations and especially self-confidence)
- how to cut out spare rubber soles the right size for our shoes and glue them under our shoes (surfaces and symmetry)
- pattern drawing; figuring them out, reading the pattern and cutting the fabric. This last is a story unto itself. The key element was that you can always get by with a half meter less fabric than the pattern calls for. Thereby endless puzzling. We turned the pattern pieces round and round, figuring what to do about the thread direction of the fabric, about the fold, about the pattern. Sometimes the pattern pieces had to be connected and we opted for invisible seams. Circular skirts were cut out in strips, but so that the pattern carried through reasonably well. The most stressful were the striped materials: diagonal stripes above and vertical lengths. With awe we watched how it (almost) always came out right. (all sorts of geometrical activities)
- how to follow the directions once the pattern was cut out. Some things you can skip or switch the order of, but others—like putting on a collar or lapel—have to be done in the exact order specified. (Some processes are commutative, others not.)
- calculating she most certainly could do! I have only to think of the complex reckoning she carried out in order to figure out just how much curtain material was needed, allowing for pleats and matching up the pattern at the seams. For me she is now an example of someone who can carry out computations just fine provided they occur in an attractive context.
- another example: find out how much carpeting is needed for a bedroom. There was a special on 200 centimeter wide carpeting. We puzzled endlessly (mother and some of her daughters) over the most efficient way to cover the floor of the little brothers' bedroom.
- she showed us how to make a straight carpet runner go around a curve in the stairway by putting folds in just the right places. And after a number of years, when the carpet began to wear, she managed to pull out the pieces of carpet that had been inside the folds and put the worn pieces into new folds.

- knitting was clearly in a whole different category from sewing for her. The liberties she felt free to take with sewing she absolutely would not take with a knitting pattern. She was very secure with the reading of a knitting pattern. She knew that if you got sloppy you could make horrendous mistakes. Knitting and crocheting patterns can be pretty complicated to read, but for a practiced reader they pose no problems.

But in knitting her daughters quickly outstripped her. In elementary school we learned to knit—baby socks, baby jackets—and to crochet—pot holders!—and along with that we acquired some faith in our reckoning and knitting capacities. We caught on swiftly to the fact that you could choose a sweater pattern that you liked, find some pretty wool, without paying attention to its thickness, and get to work. By way of a trial square, the stitch count, the needle count, the centimeter count you could figure everything out for the pattern you wanted (proportional reasoning). Later I realized that a knitting pattern is exactly like a computer program in (for example) BASIC. You give it a name, there are abbreviations, procedures, a start, a repeat command, until ..., go to ..., and an end.

- technology is not for women? My mother had the technique for maintaining her sewing machine down cold. She greased it regularly, and turned the tension regulator or the thread holder to accommodate changes of material or thread. A little parenthetical question: how many men can adjust the thread tension on a sewing machine? technology is not for men?

I can only remember my mother making one mathematical mistake. She wanted to put a new carpet in the upstairs lavatory. Yes, you guessed it. She made an impeccable pattern of the lavatory floor from newspaper, with a hole for the toilet cut out of it, laid the pattern on the bottom side of the rug, cut it out with a sharp carpet knife and tried to put it on the floor. Alas, the cutout for the toilet was on the left side instead of the right. Hilarity in the whole family, including mother, and with a bit of shame, but more sorrow: "Too bad about the rug." She turned the cut up rug into a floor covering for the kitchen cabinets and the upstairs lavatory retained its old rug for at least a year. We comforted each other with "that kind of thing happens—it happens to you once and then never again." Sometimes she got annoyed, when kids or husband teased her about it: "Sure, if you never do anything you never make mistakes! At least I tried something—can't I ever have anything go wrong?" Then we comforted her and nodded: "It could have happened to us, too!"

"For math you have to go to your Dad," she would answer almost before a question was out of our mouths. Did I learn math from my father or from my mother? From both! From my father I acquired self-confidence on the subject of arithmetic before I set foot in elementary school. Probably also something of a problem-solving attitude for theoretical problems, and in any case the awareness that it often takes a lot of time, and you have to keep on trying. But I also saw in my father a lot of fear of failure on practical matters. He had genuine fear of failure about trying something new. He avoided it, but it wasn't because he looked down on that kind of work, or to protect himself—for years he did all manner of boring household tasks to make my mother's job lighter. When he saw his wife busy with new practical tasks he would say, laughing and with a mixture of shame and pride: "I just plain have two left hands," and with this announcement evade any new practical undertaking. Now, years later, I regularly hear students, especially girls, say the same thing "I just plain can't do any mathematics" and thereby arrange never to take the first steps to begin it.

From my mother I acquired a determination to try hard, and not to let myself be defeated. At school I had two sisters as examples before me, and as an encouragement to believe that I, too, had acquired the knack for mathematics. What knack? My mother knew what was what! When members of our family saw our report cards and said it was great to be able to learn so well, it was my mother who came through with "They also work hard for it—they spend a lot of time upstairs studying." She connected the good results with a capacity that you could develop by your own efforts. A level-headed, practical and healthy point of view about learning, it seems to me.

Now, after many years, I realize how many mathematical activities we learned around the house from our mother. I'm just now noticing that, because it is just now that I recognize the mathematics there. **Mathematics is not only mathematics when it is labeled mathematics!**

Mathematical thinking is the power of zooming in and zooming out, working locally or globally, with the concrete or the abstract, the process of mathematization; for me, the mathematics of my father *and* the mathematics of my mother.

Self-confidence on the practical terrain and fear of failure on the abstract terrain I learned from my mother; self-confidence on the abstract terrain and fear of failure on the practical terrain I learned from my father. What came out of that? A person with certainties and uncertainties on the practical and abstract terrains, but now especially a person astonished that for so many years the image of mathematics for me was the mathematics of my father.

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Fortunately I know better now.

And here is a way to use this article with students today: In a class where many students classify themselves as non-mathematical (as is sadly prevalent among future elementary school teachers, for instance) give a two-part assignment: 1) Read the article; 2) Find someone math-resistant and find five ways in which they actually use mathematics (six if they insist on including balancing the checkbook).

The results can be quite charming!

Addendum

From time to time the Education Column will include additional items worth noting. We have two for this issue.

More on p-values

As a follow-up to Cathy Kessel's article, "Psychology Needs More 'Mathematical Intensity'" in the July–August 2015 issue of the *AWM Newsletter*, we call your attention to the American Statistical Association's (ASA) recently published statement on p-values (http://amstat.tandfonline.com/doi/pdf/10.1080/00031305.2016.1154108). The following is taken from the preamble:

> The problem is not that people use p-values poorly," Leek wrote, "it is that the vast majority of data analysis is not performed by people properly trained to perform data analysis" (Leek, 2014). That same week, statistician and science writer Regina Nuzzo published an article in *Nature* entitled "Scientific method: statistical errors" (Nuzzo, 2014). That article is now one of the most highly viewed *Nature* articles, as reported by altmetric.com (http://www.altmetric.com/details/2115792#score).... We hoped that a statement from the world's largest professional association of statisticians would open a fresh discussion and draw renewed and vigorous attention to changing the practice of science with regards to the use of statistical inference.

An interview and discussion of the statement with Ron Wasserstein, ASA's executive director, can be found at http://retractionwatch.com/2016/03/07/were-using-a-common-statistical-test-all-wrong-statisticians-want-to-fix-that/

Rosenthal Prize for math lessons designed for grades 4–8

The National Museum of Math offers an annual $25,000 Rosenthal Prize for Innovation in Math Teaching. Fourth through twelfth grade math teachers are invited to apply, but the winning activity must be designed for grades four through eight. Preliminary applications are due **May 31, 2016**. See http://momath.org/rosenthal-prize/ for more details. Readers are encouraged to share this information with teachers they know.

Call for Nominations for Norwood Award

The Department of Biostatistics in the School of Public Health, University of Alabama at Birmingham (UAB) is pleased to request nominations for the Fifteenth Annual Janet L. Norwood Award for Outstanding Achievement by a Woman in the Statistical Sciences. The award will be conferred on September 14, 2016. The award recipient will deliver a lecture at the UAB award ceremony and will receive all expenses, the award, and a $5,000 prize.

Eligible individuals are women who have completed their terminal degree, have made extraordinary contributions and have an outstanding record of service to the statistical sciences, with an emphasis on both their own scholarship and on teaching and leadership of the field in general and of women in particular and who, if selected, are willing to deliver a lecture at the award ceremony. For additional details about the award and for details on the nomination process, please visit http://www.soph.uab.edu/ awards/norwoodaward. The deadline for receipt of nominations is **June 24, 2016**; electronic submission of nominations is encouraged.

Happy 100th Birthday!

AWM member Maxwell O. Reade, Professor Emeritus, University of Michigan, celebrated his centennial in April. Congratulations!

AWM WORKSHOP AT THE 2017 SIAM ANNUAL MEETING

Application deadline for graduate students: November 1, 2016

For many years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent PhDs in conjunction with major mathematics meetings. Beginning in 2016 and going forward, the workshop talks will be supported by the AWM ADVANCE grant. The AWM Workshops serve as follow-up workshops to Research Collaboration Conferences for Women, featuring both junior and senior women speakers from one of the Research Networks supported by the ADVANCE grant. An AWM Workshop is scheduled to be held in conjunction with the 2017 SIAM Annual Meeting in Pittsburgh, Pennsylvania, July 10–14, 2017.

FORMAT: The workshop will consist of two research minisymposia focused on Numerical Analysis and Scientific Computing organized by Susanne Brenner, Fengyan Li and Beatrice Riviere, a Poster Session and an informational minisymposium directed at starting a career. Selected junior and senior women from the Research Collaboration Conference for Women (RCCW) WhAM!2 will be invited to give 20-minutes talks in the two research minisymposia on Numerical Analysis and Scientific Computing. The speakers will be supported by the National Science Foundation AWM ADVANCE grant: Career Advancement for Women through Research Focused Networks. The Poster Session will be open to *all* areas of research, and graduate students working in numerical analysis and scientific computing are especially encouraged to apply. The graduate students will be selected through an application process to present posters at the Workshop Poster Session run in conjunction with the SIAM Poster Session. Pending funding, AWM will offer partial support for travel and hotel accommodations for the selected graduate students. The workshop will include a luncheon and mentoring session where workshop participants will have the opportunity to meet with other women mathematicians at all stages of their careers. In particular graduate students in numerical analysis and scientific computing will have the opportunity to connect with the Women in Numerical Analysis and Scientific Computing (WINASc) Research Network.

All mathematicians (female and male) are invited to attend the talks, career panel 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.

MENTORS: We also seek volunteers to act as mentors for workshop participants, in particular the graduate students. If you are interested in volunteering, please contact the AWM office at awm@awm-math.org by **February 1, 2017**.

ELIGIBILITY: To be eligible for selection and funding, a graduate student must have made substantial progress towards her thesis. Women with grants or other sources of support are welcome to apply. All non-US citizens must have a current US address.

All applications for the poster session should include:

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

Applications must be completed electronically by **November 1, 2016**. See http://www.awm-math.org/workshops.html for details.

A Conversation with Ulrica Wilson

Interviewer: Katharine Ott, Bates College

Ulrica Wilson is Associate Professor of Mathematics at Morehouse College. Professor Wilson was first drawn to mathematics through problem solving and she continues to love solving problems with her students, her collaborators, and EDGE-ers. I spoke with Ulrica Wilson last fall about her career and her various roles in the mathematics community.

KO: I'd like to start by discussing your history. Do you remember when you decided to become a mathematician?

UW: It was in college. At some point during college, with lots of influence from faculty, I decided to go to graduate school to get a PhD in Mathematics. This probably happened after my first summer research experience, and getting feedback from faculty that I was capable of it [being a mathematician].

KO: Presumably you had an interest in math before college. Do you remember the first time that you were really excited about mathematics?

UW: I remember the first time that I got really excited about solving problems, and that happened during a mathematics class. So, I very much associated solving problems with doing mathematics. It was in sixth grade and my math teacher would do these puzzles. I remember not knowing the answers, and I remember the process of thinking hard to try to figure it out.... It taught me that mathematics was more than formulas and plugging and chugging. From very early on I thought of mathematics as problem solving and that is what I enjoyed.

KO: Where did you attend college?

UW: I attended Spelman College in Atlanta, Georgia.

KO: Can you tell us more about your summer research experience in college?

UW: Actually I had two research experiences. The first one was at Virginia Tech. I remember one of my Spelman professors telling me about the opportunity and encouraging me to go. This was the kind of mentoring that went on at Spelman—you did what faculty members told you to do! I don't really remember the details of the project that we did at Virginia Tech, but I do remember solving problems. It gave me an idea of what to expect in graduate school. The second summer I was in a program at Georgia Tech. They were not REUs back then, I'm pretty sure, and it wasn't nearly as structured as some of the summer programs now, but it was enough for me, along with all of the tools that I was getting at Spelman, to pursue a graduate degree.

KO: So, after Spelman where did you go to graduate school?

UW: Right after Spelman I went to the University of Massachusetts at Amherst. I got a Master's degree there, and then later on I went to Emory and got my PhD.

KO: What area of math did you write your thesis in?

UW: My thesis was in algebra, specifically non-commutative rings. I've never been particularly interested in the applications of mathematics. I very much like the abstractness and the richness of the theory of pure mathematics. To some extent, algebra found me. When I was taking the first three semesters of algebra at Emory I got along well with the professor teaching the course. I spent a lot of time in office hours and then ended up doing a reading course with him. Really, what happened was that I wanted to work with Eric Brussel [my PhD advisor] and it turned out the kind of math that he did was interesting, too.

KO: Have your research interests changed significantly since graduate school?

UW: They have changed a bit. I'm at a primarily undergraduate institution now. In my original area of research it was challenging for me to find problems that my students were interested in and that were also interesting to me. I attended one of these great workshops at a math institute where they talk about finding problems for undergraduate research. With that, unexpectedly, I did a shift in my area of research to an area that was rich with problems for my undergraduate students. This research area is combinatorial matrix theory—more linear algebra type problems.

KO: How did your career progress after graduate school?

UW: I did two postdocs. When I finished graduate school I did go on the market for tenure track positions, but I also applied to postdocs. I had no clue what kind of job I ultimately wanted. I remember during my last year of graduate school people would ask me, "What job do you want next?" Or, "What would be the perfect job?" At the time I said that I would love a postdoc at a liberal arts school, because I thought that I wanted to be at a liberal arts school but I didn't quite want to commit. I thought that I was out of luck because postdocs at liberal arts schools don't exist. But, it turns out that they do. My first job was a postdoc at Claremont McKenna College in Claremont, CA. That was a great experience; I got to teach amazing students and teach some advanced courses. At the same time I was able to work with somebody at UCLA. He was in my research area, so I was able

to stay tapped into an algebra group in southern California. I had the best of both worlds. It confirmed that I wanted to be at a liberal arts college. But before I applied for jobs again I ended up doing a second postdoc at UCSD (the University of California, San Diego). By getting involved in this algebra group, I got a chance to work with someone at UCSD. After my time as UCSD I went on the market and that's what landed me at Morehouse.

KO: Let's talk about your current job. What is your favorite part of your job?

UW: This is going to be so cliché, but without a doubt, my students. I have taken on several different roles in my profession now, and unfortunately it sort of pulls me away from students. I have a reduced teaching load, and just last week I was doing a lot of traveling. I had to make other arrangements for my classes, and I pretty much didn't see my students all last week. Monday when I came back to class, it felt so good.

KO: What other responsibilities do you have besides teaching and research?

UW: For instance, I can just share with you a glimpse of my last week. It included service to our college. I am involved in our curriculum and educational policy committee. I was reviewing lots of new courses and on Monday, I had meetings with faculty about their course proposals. I organized a session at the SIAM meeting in Atlanta last week on matrix theory. Then I went to the annual SACNAS (Society for Advancement of Chicanos/Hispanics and Native Americans in Science) National Conference in Washington, DC. I was there as part of my role as an Associate Director of ICERM (Institute for Computational and Experimental Research in Mathematics). We organized something called a Modern Math Workshop. And then, I gave a talk to the AMS Committee on Education on Friday. This was sort of a strange week, where I was involved in a lot of the different roles at once.

KO: Do you have any strategies for managing your time? How do you set aside time to do research?

UW: I have strategies—whether or not they work is a good question! I try to do just one thing at a time. I block out periods of time when I am doing ICERM stuff, and then block out periods of time when I am doing EDGE stuff, and I give myself permission to not do EDGE stuff outside of that time period. One thing I can't control is the teaching duties. I have to be responsive to that, whenever it comes through and whatever that means. All of the other responsibilities I can compartmentalize pretty well. For the research piece, I do spend more time on that in the summer and over breaks. I often go and visit a collaborator right after the fall semester ends and before Christmas. That way I have something going on over the Christmas break that is research related.

KO: Has your job changed significantly since receiving tenure?

UW: One of the things that I really like about Morehouse is that they are focused on developing junior faculty. Before tenure, I could always pull the "I'm not sure if I should do that right now because I am going up for tenure" card. It gave me an easy out for saying no to some things. But now that I have tenure I can't pull that card anymore. I really like this institution, so I do feel a responsibility to participate in activities and initiatives that keep it strong.

KO: Let's change gears and talk about the EDGE program. Can you give me an overview of the program?

UW: EDGE (Enhancing Diversity in Graduate Education) is a program for women pursuing careers in the mathematical sciences. You enter the program once you have been accepted to a PhD program in mathematics. We have a four week summer session where they do lots of problem solving in analysis, measure theory, abstract algebra and linear algebra. The theme is graduate level problems. In some sense we try to mimic the rigor and the fast pace of graduate school so the women get an idea of what that feels like in an environment that is really supportive. Each summer 14 women participate.... I do want to say, though, that EDGE is much more than that summer session. There is support to give talks, to go to conferences, and to meet with collaborators. We also have some support for mini-sabbaticals to visit a senior researcher. The program has grown to be pretty comprehensive. We have EDGE-ers out there now who are junior faculty and who are tenured faculty, and at every stage we are responsive to whatever the needs are of women who are pursuing this career. Our goal is to make them more visible and active in the full math community.

KO: How did you become involved with the EDGE program?

UW: I became involved in EDGE because when I was a graduate student, I was asked to be a graduate mentor. One of the things I forgot to mention was in addition to the 14 women who are entering PhD programs, we also have three women who are advanced graduate students and serve as graduate mentors for the program. To me, they are the best part of the program and they are why the program works. I kept coming back each summer during those four weeks to be a graduate mentor. After I got my PhD, I started teaching one of the workshops. From there, I just got more and more involved. At some point when the past directors

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(Sylvia Bozeman and Rhonda Hughes) retired, they asked myself and Ami Radunskaya to be the new directors of the program. Ami and I have been directing since.

KO: There are two themes that you keep touching on here, and they are intertwined. One is creating a community in mathematics, and two is mentorship. Do you see them as related or as two separate components working toward the same goal?

UW: I think that they are completely intertwined. I think this is how science, how mathematics, is created traditionally. I don't think we're doing anything new, we're just doing it in a way that is a little more intentional and more inclusive of groups that haven't always been strongly represented in mathematics. This model of a professor recognizing the talent of a student or of a younger professor and pulling them into their office and giving them some advice, or inviting them to a meeting, is not new. This is how scientific groups and scientific communities are made historically and traditionally. This is exactly what EDGE is about. It's making sure this group is informed about opportunities and preventing some typical obstacles that happen as you are pursuing this career.

KO: Have you benefitted from mentors?

UW: Yes. I think even today it has been really helpful for me to have mentors for all kinds of things.... One thing I want to say about mentorship is that most of the people who I think of as mentors probably don't know I think of them as mentors. I think people get a little worried about what that title means. All that it means is looking people in the eye, answering their questions, letting them know when they are messing up, and giving them a path to get back on course.

KO: Do you have a cohort of other female mathematicians that you came through the ranks with?

UW: To some extent I do. Spelman has a good reputation for graduating a lot of math majors who go on to do amazing things, including graduate school. So there's a cohort there. At any point in time I can run into Spelman mathematicians and that is really cool and exciting. There are also women who I've met through the EDGE program who I identify with. For years I really connected with the other graduate mentors as we moved through the process and completed our PhDs and went on to get jobs. I think that it is my natural tendency to build peer relationships like this.

KO: Is there anything else that you would like to share with the AWM community?

UW: I love the direction that the AWM is going in and I look forward to more bridges between different cohorts of women.

Search for New CBMS Director

The Conference Board of the Mathematical Sciences (CBMS) invites applications and nominations for the position of CBMS Director. This is a one-third time position with a target starting date of December 2016.

CBMS is an umbrella organization consisting of seventeen professional societies all of which have as one of their primary objectives the increase or diffusion of knowledge in one or more of the mathematical sciences. Its purpose is to promote understanding and cooperation among these national organizations so that they work together and support each other in their efforts to promote research, improve education, and expand the uses of mathematics. For more information about CBMS, visit http://cbmsweb.org.

The successful candidate will be a member of one or more of the CBMS member societies, and have significant administrative experience, demonstrated strong leadership ability, outstanding speaking and writing skills, and experience with seeking, obtaining and administering external grants. Knowledge of the major issues facing member societies and the profession, the ability to understand, appreciate and represent the views and perspectives of the different member societies, and the ability to communicate with and work with diverse individuals and to seek consensus for the common good are all essential. National visibility with one or more member societies and the mathematics/mathematics education professional communities is desirable.

Inquiries, applications, and nominations should be sent to the Search Committee Chair, Charles Steinhorn, CBMS Secretary-Treasurer (steinhorn@vassar.edu, or Department of Mathematics, Vassar College, 124 Raymond Ave, Poughkeepsie, NY 12604). Email preferred. For best consideration, please send all applications, nominations, and inquiries in confidence no later than **May 31, 2016**.

CBMS is an equal-opportunity employer committed to promoting diversity and inclusion. We welcome applications and nominations from all qualified individuals regardless of race, color, national origin, gender, sexual orientation, age, religion, disability, marital status, veteran status, or other factors protected by law.

Ruth I. Michler Prize

The Association for Women in Mathematics invites applications for the eleventh annual Ruth I. Michler Memorial Prize.

A $47,000 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 November 1 for the award to be used during the 2017–18 academic year.

www.awm-math.org/michlerprize.html

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TOPICAL WORKSHOP

Predictive Policing

August 8-12, 2016

Organizing Committee > Andrea Bertozzi, UCLA; Jeffrey Brantingham, UCLA; Martin Short, Georgia Tech

This workshop is a one-week program aimed at twenty researchers interested in the opportunity to shape the future of research on the mathematics of crime. Small teams will come together to work on real problems with real crime and policing data provided by the Providence Police Department. Five teams will be assembled, each with a technical advisor who will share their expertise and serve as an anchor point and leader for hands-on research that will take place over the course of the week.

This will be a truly hands-on experience in which groups will spend time brainstorming mathematical methods and models to approach the problem at hand, analyzing data provided, and creating code to implement ideas as necessary. There will also be research presentations from the technical advisors throughout the week, as well as closing presentations by each team to present their ideas and progress at the end of the workshop. We fully anticipate that lasting collaborations will be formed, and that work on the projects will continue after the workshop ends. The following topical problems will focus the research activities: police patrol analysis, dynamic prediction of crime events and crime patterns, criminal networks big and small, crowds and social unrest, and social media and hate.

Applications are being accepted via *Mathprograms*.org (search under Brown University).

More details can be found at:
https://icerm.brown.edu/topical_workshops/tw16-7-pp/

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