

ASSOCIATION FOR  
WOMEN IN MATHEMATICS

# Newsletter

VOLUME 44, NO. 5 • SEPTEMBER–OCTOBER 2014

## 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.

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## PRESIDENT'S REPORT

When did it become almost impossible to take a vacation? Should I blame it on email and smart phones, or just confess to my tendency to overcommit? Thankfully, the operative word here is *almost*. A few days in a remote cabin near Lake Tahoe with no phone or internet access and spectacularly beautiful scenery seem to have done the trick. Now with Tahoe behind me, strapped into an airplane seat, I am attempting to refocus my brain by writing this report.

**Membership renewal.** When this newsletter appears, many of us will be gearing up for the start of term. As we look ahead to the challenges before us—be it completing a thesis, applying for jobs, going through a promotion process, or having a new baby—let us remember the importance of support networks, mentorship, recognition, and advocacy. These are the principles on which AWM has focused its attention since its founding in 1971. While the landscape has changed since then, the statistics suggest that there is still a long way to go. Here are a few to contemplate: the percentage of women among

undergraduate math majors: 43%

new PhDs in math: 28%

postdocs in math: 21%

tenured math faculty at PhD-granting universities: 12%

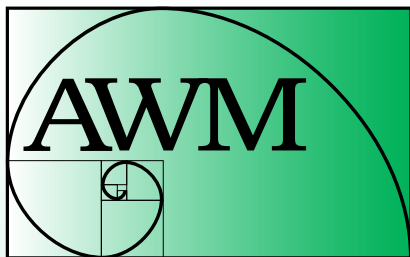
AMS prizes awarded at JMM 2014: 0%

(see my letter to the editor in the August issue of the *AMS Notices*).

There is a growing body of research on the more subtle factors that make change difficult (such as implicit bias and stereotype threat) but there is no question that networks, mentors, and role models play an important role in enabling women to build careers that are not only successful, but also rewarding and enjoyable. *You can help ensure that women have access to these resources by becoming a member of AWM or renewing your existing membership. The AWM membership year begins October 1, so now is the time to act!*

I would especially like to appeal to those of you who recently received your PhD (congratulations!) and had a free membership to AWM as a graduate student. Many AWM programs focus on helping recent graduates build successful careers. We have workshops, conferences, travel grants, and prizes for early career women. To keep up to date with these opportunities and to help support our goals, I strongly urge you to stay connected to AWM. Go to our website and sign up for a membership today!

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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*

For those of you who are long-standing members, let me thank you for your past support and ask that you consider becoming a contributing member or adding a donation to your membership dues. Planned giving is also an option.

**Corporate Sponsorship.** As previewed in my last report, AWM has instituted a new Corporate Sponsorship program, effective this membership year. As Corporate Sponsors, companies will receive a variety of benefits (depending on their sponsorship level) while helping to support AWM's programs. Please spread the word about this new opportunity to your colleagues in industry, or send the AWM office names of potential industry contacts. Details about Corporate Sponsorship can be found on the AWM website.

**SIAM Annual Meeting.** The highlight of July was the SIAM Annual Meeting. The meeting took place in downtown Chicago, just two blocks from Millennium Park. The schedule was packed with AWM activities (though I confess to finding a narrow window for a visit to the Art Institute of Chicago, one of my favorite museums).

Monday featured the AWM-SIAM Sonia Kovalevsky Lecture, given by Irene M. Gamba, the John T. Stuart III Centennial Professor at the University of Texas, Austin. Professor Gamba is known for her work in statistical transport modeling. Her lecture, to a packed audience, gave an impressive overview of current developments in this area.

Monday's schedule also included a two-session career panel organized by Misun Min (Argonne National Laboratory) and Xueying Wang (Washington State University). Eight women at various stages of their careers told personal stories and offered advice on a variety of issues. Topics ranged from "Beating the Imposter Syndrome" to "Two Jobs, Two Children, Two Cars: What Can Possibly Go Wrong?" Slides from the panel are available here: <https://sites.google.com/site/awmmath/programs/workshops/past-workshops/siam-2014-slides>.

Tuesday featured the AWM Workshop for early-career women organized by Ching-Shan Chou (Ohio State University) and Chiu-Yen Kao (Claremont McKenna College). The topic of the workshop was "Numerical and Theoretical Approaches for Nonlinear Partial Differential Equations." Details of the workshop are described in an article later in this newsletter.

The AWM-SIAM activities concluded on Wednesday with a graduate student poster session. A group of judges evaluated the AWM posters and awarded the prize for best poster to Sara Reynolds of the University of Nebraska, Lincoln, with runner-up Aditi Ghosh of Texas A&M University. The prize comes with an invitation to participate in a program at the Mathematical Biosciences Institute (MBI). Congratulations to Sara and Aditi, and thanks to MBI for offering this valuable prize!

Next year's SIAM Annual Meeting will be replaced by the International Congress of Industrial and Applied Mathematics in Beijing. As a result, the AWM activities (with the exception of the Kovalevsky Lecture) that normally take place at this meeting have been rescheduled for the SIAM Computational Science and Engineering (CSE) Meeting in Salt Lake City, Utah, March 14–18.

**MathFest and ICWM.** While August will have passed by the time you read this newsletter, it is still on the horizon as I write it. Three big events coming up in August are MathFest, the International Congress of Mathematics (ICM), and the

International Congress of Women in Mathematics (ICWM).

MathFest will be held in Portland, Oregon. It will feature Marie Vitulli, Professor Emerita at the University of Oregon, as the AWM-MAA Falconer Lecturer and a career panel entitled “Mentoring Matters.” (I’ll second that!)

The ICM and ICWM will be held in Seoul, Korea. The ICWM, which takes place immediately preceding (and a half a day overlapping) the ICM, provides a unique opportunity to network with an international community of women in mathematics and to highlight premier work of women mathematicians to the international community. The ICWM program includes an impressive list of speakers: Donna Testerman, Hee Oh, Gabriella Tarantello, Laura DeMarco, Motoko Kotani, Jaya Iyer, Isabel Dotti, and Ingrid Daubechies. In addition, former AWM President Georgia Benkart will give the Emmy Noether Lecture at the ICM. It is even possible that there might be a female Fields Medalist this year! This will surely be an exciting event.

Speaking of Noether Lectures, I am pleased to announce that Wen-Ching Winnie Li, Distinguished Professor of Mathematics at Pennsylvania State University, has been selected as the 2015 AWM-AMS Noether Lecturer. This lecture series honors women who have made fundamental and sustained contributions to the mathematical sciences. Professor Li’s work in number theory, coding theory, automorphic forms and graph theory has earned her high praise and honors. (See the press release later in this newsletter.) Her lecture will be featured as a plenary talk at the Joint Mathematics Meetings in San Antonio, Texas in January 2015.

**Upcoming events and deadlines.** In addition to the SIAM CSE meeting mentioned above, there are several other AWM events coming up in 2015.

If you are making plans to attend the Joint Mathematics Meetings in San Antonio in January, be sure to check out the full schedule of AWM activities. In addition to Winnie Li’s Noether Lecture, the meeting will include a panel on “Breaking the Glass Ceiling Permanently,” a workshop on homotopy theory, and a poster session. And don’t miss the AWM Reception and Awards Presentation following the Gibbs Lecture. I will have the honor of presenting the inaugural Birman Prize in Topology and Geometry, as well as several other AWM prizes and awards, at this event.

Of particular note is the **AWM Research Symposium 2015** that will be held at the University of Maryland on April 11–12. This is the third in a series of biennial research conferences, beginning with the 40th Anniversary Conference at Brown University. The Symposium will include plenary talks, special sessions, and networking events. Details will be posted on the Symposium website as they become available. Mark your calendar now!

Finally, note that nominations are now open for the following AWM prizes and awards:

- Schafer Prize for Undergraduate Women  
(deadline September 15),
- Emmy Noether Lecturer, JMM 2016  
(deadline October 15),
- Sonia Kovalevsky Lecturer, ICIAM 2015  
(deadline November 1)
- Ruth I. Michler Memorial Prize  
(deadline November 1).

*continued on page 4*

## 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](http://www.awm-math.org) for details on free ads, free student memberships, and ad discounts.

## Sponsorship Levels

**α Circle:** \$5000+

**β Circle:** \$2500–\$4999

**γ Circle:** \$1000–\$2499

## Corporate Sponsorship

See the AWM website for details.

**Subscriptions and Back Orders**—All members receive a subscription to the newsletter as a privilege of membership. Libraries, women’s studies centers, non-mathematics departments, etc., may purchase a subscription for \$65/year. Back orders are \$10/issue plus S&H (\$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.

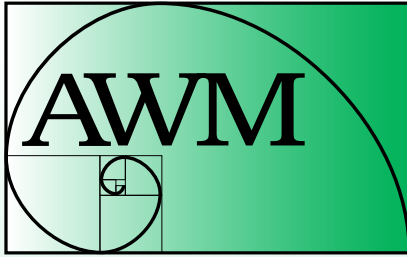
## Newsletter Deadlines

**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, [leggett@member.ams.org](mailto:leggett@member.ams.org). Send all book review queries/material to Marge Bayer, [bayer@math.ku.edu](mailto:bayer@math.ku.edu). Send all education column queries/material to Jackie Dewar, [jdewar@lmu.edu](mailto:jdewar@lmu.edu). Send all media column queries/material to Sarah Greenwald, [greenwaldsj@apstate.edu](mailto:greenwaldsj@apstate.edu) and Alice Silverberg, [asilverb@math.uci.edu](mailto:asilverb@math.uci.edu). Send everything else, including ads and address changes, to AWM, fax: 703-359-7562, e-mail: [awm@awm-math.org](mailto:awm@awm-math.org).



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## AWM ONLINE

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

**Website:** <http://www.awm-math.org>

## AWM DEADLINES

AWM-MAA Falconer Lecture:  
September 1, 2014

AWM Alice T. Schafer Prize:  
September 15, 2014

AWM Travel Grants: October 1, 2014  
and February 1, 2015

AWM-AMS Noether Lecture:  
October 15, 2014

AWM-SIAM Sonia Kovalevsky Lecture:  
November 1, 2014

Ruth I. Michler Memorial Prize:  
November 1, 2014

AWM Essay Contest: January 31, 2015

AWM Mentoring Travel Grants:  
February 1, 2015

AWM-Sadosky Research Prize:  
February 15, 2015

AWM-Microsoft Research Prize:  
February 15, 2015

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## PRESIDENT'S REPORT *continued from page 3*

I would particularly like to call your attention to the last of these, the *Michler Prize*, an exceptional opportunity for a recently tenured woman. The prize provides a fellowship for the awardee to spend a semester in the Mathematics Department of Cornell University without teaching obligations. Previous recipients have remarked that this fellowship made a significant impact on their career. If you know of any appropriate candidates in your field, please urge them to apply.

While I would love to conclude this report with a scintillating discussion of some current issue, I'm afraid that my ever-growing, post-vacation to-do list is insisting that I move on.

Wishing everyone a productive fall term,



Ruth Charney

Ruth Charney  
Waltham, MA  
July 24, 2014



**Late-breaking news:** On Wednesday, August 13, at the ICM in Seoul, Maryam Mirzakhani was awarded one of the four Fields Medals presented at the opening ceremony. She is the first woman to receive this most prestigious of mathematics prizes since they were first awarded in 1936. The Iranian mathematician is a professor at Stanford, renowned for her "striking and highly original contributions to geometry and dynamical systems." She delivered a plenary lecture at AWM Research Symposium 2013 and received a 2014 Clay Prize. Congratulations, Maryam!

Renew your membership or join AWM at  
**[www.awm-math.org](http://www.awm-math.org)**

## Li Named 2015 Noether Lecturer

AWM and the AMS are pleased to announce that Wen-Ching Winnie Li will deliver the Noether Lecture at the 2015 Joint Mathematics Meetings. Dr. Li is a Distinguished Professor of Mathematics at Pennsylvania State University. She has been selected as the 2015 Noether Lecturer for her work in number theory, which is impressive for its depth, the connections it makes between different areas of mathematics, and its continuing influence.

Li received her BS degree from National Taiwan University and her PhD from the University of California at Berkeley. Before joining the Penn State faculty in 1979, she was an assistant professor at the University of Illinois at Chicago, a member of the Institute for Advanced Study in New Jersey, and a Benjamin Peirce Assistant Professor at Harvard University.

Li's research focuses on number theory, in particular modular forms and automorphic forms, as well as broad applications to coding theory and spectral graph theory. She has more than 100 publications and has authored two books. Li's thesis work on the "new" space of modular forms based on the renowned work of Atkin-Lehner was cited in Andrew Wiles' proof of Fermat's Last Theorem. Li studies the rich interplay between combinatorics, group theory, and number theory through associated zeta functions. In particular, she has applied her research results in automorphic forms and number theory to construct efficient communication networks called Ramanujan graphs and Ramanujan complexes. In recent years, she has done important work on the arithmetic of modular forms for noncongruence subgroups, which revitalized the field.

In addition to her position at Penn State, Li serves as Director of Taiwan's National Center of Theoretical Sciences. Previous honors and awards include a Sloan Foundation Fellowship in 1981 and the 2010 Chern Prize in Mathematics, awarded by the International Congress of Chinese Mathematicians for her outstanding contributions to mathematics. She was named a Fellow of the American



Wen-Ching Winnie Li

Mathematical Society in 2013. Li has held numerous visiting professorships at universities in the United States and throughout Europe and Asia.

Li has always been seriously involved in activities to promote the advancement of women in mathematics. In particular, she was a mentor for the Women Mentoring Program at the Institute for Advanced Studies in 1999 and for the Banff International Research Station (BIRS) workshop on Women in Numbers in 2008 and was the Distinguished Women in Mathematics Lecturer at UT Austin in 2011.

*The 2015 Joint Mathematics Meetings will be held January 10–13 in San Antonio, TX. The lecture honors Emmy Noether (1882–1935), one of the great mathematicians of her time. She worked and struggled for what she loved and believed in. Her life and work remain a tremendous inspiration. Recent Noether Lecturers include Carolyn Gordon, Susan Montgomery, Barbara Keyfitz, Raman Parimala and Georgia Benkart.*



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[www.awm-math.org!](http://www.awm-math.org)**

# ICIAM2015 (Part 1 of 2)

*Sarah J. Greenwald, Associate Editor*

The 2015 International Congress on Industrial and Applied Mathematics (ICIAM) will be held in Beijing, China, on August 10–14 (<http://www.iciam2015.cn/>). AWM is an associate member of the International Council for Industrial and Applied Mathematics, which sponsors this congress every four years (since 1987). This is the first of two installments on female speakers at ICIAM2015; here we'll highlight Nancy Reid, Claudia Sagastizábal, Laure Saint-Raymond and Éva Tardos. In the next newsletter we'll profile Annalisa Buffa, Lisa Fauci and Barbara Wohlmuth.

Nancy Reid is a University Professor of Statistics at the University of Toronto and a Canada Research Chair in Statistical Theory and Applications. She earned her PhD from Stanford University, and she works on the foundations of statistical theory and inference. Reid is a Fellow of the American Association for the Advancement of Science, the American Statistical Association, the Fields Institute for Research in the Mathematical Sciences, the Institute of Mathematical Statistics and the Royal Society of Canada. In addition to numerous honors and awards, she is a past president of the Statistical Society of Canada and holds both its Gold Medal and Distinguished Service Award.

Claudia Sagastizábal is a visiting researcher at the Instituto Nacional de Matemática Pura e Aplicada in Brazil. She obtained her PhD and habilitation degrees at Université Paris I Panthéon-Sorbonne. She specializes in both the theoretical and numerical aspects of optimization. Sagastizábal was a long-term member of the National

Institute for Research in Computer Science and Control in France and a senior researcher at Eletrobras-CEPEL, Electric Power Research Center, Rio de Janeiro. Sagastizábal also holds or has held consulting appointments for companies such as EdF, Gaz de France-Suez and Renault in France; Robert Bosch in Germany; and Petrobras, Bovespa and Eletrobras in Brazil.

Laure Saint-Raymond is a professor in the Department of Mathematics and Applications at the École Normale Supérieure and a member of the Jacques-Louis Lions Laboratory. She earned her PhD in applied mathematics from the Université Denis Diderot – Paris VII. She works on numerical analysis and partial differential equations, primarily in the fields of hydrodynamics, statistical physics and fluid mechanics. She is a member of the French Academy of Sciences and has won a number of awards and prizes, including the Irène Joliot Curie award, the AMS Ruth Lytle Satter Prize in Mathematics and a prize of the European Mathematical Society.

Éva Tardos is the Jacob Gould Schurman Professor of Computer Science at Cornell University. She has been selected as the 2015 Olga Taussky-Todd lecturer, which honors “a woman who has made outstanding contributions in applied mathematics and/or scientific computation.” The lecture is named in tribute to and in memory of Olga Taussky-Todd, whose scientific legacy is in both theoretical and applied mathematics, and whose work exemplifies the qualities to be recognized. Past Olga Taussky-Todd lecturers at ICIAM include Pauline van den Driessche and Beatrice Pelloni. Tardos earned her PhD from Eötvös University in Budapest, and she works in the fields of algorithms and algorithmic game theory. She is a Fellow of the AMS and member of the National Academy of Sciences



*Nancy Reid*



*Claudia Sagastizábal*



*Laure Saint-Raymond*



*Éva Tardos*

and the National Academy of Engineering, among others. She is a winner of numerous awards, including the Delbert Ray Fulkerson Prize, the George B. Dantzig Prize, the Gödel Prize and the Van Wijngaarden Award. For further information, see the ICIAM press release (<http://www.iciam.org/OTT/tardosPR.pdf>).

There are many opportunities to participate in ICIAM2015. The deadlines are: minisymposium, September 30; contributed papers, December 30; and posters, April 30. The nomination deadline for the AWM-SIAM Sonia Kovalevsky Lecture at ICIAM2015 is November 1, 2014.

## New International Women in Mathematics Website

In March 2013 the Executive Committee of the International Mathematical Union (IMU) approved the establishment of an Advisory Group for Women in Mathematics, charged with creating and overseeing a section of the IMU website entitled Women in Mathematics (WiM). Opportunities for women vary widely from country to country and a main aim is to enhance the participation of women in all mathematical communities. The new WiM site was launched at the International Congress of Women Mathematicians just before the International Congress of

Mathematicians in August 2014, at the address <http://www.mathunion.org/wim/>.

The site includes information about organizations, people, events, resources and initiatives of interest to women mathematicians worldwide. In order to maximize the usefulness of this site, the Advisory Group welcomes suggestions from the community. Indeed, advice concerning sites for inclusion is important to us, and we may be contacted at [info-for-wim@mathunion.org](mailto:info-for-wim@mathunion.org). The WiM Advisory Group is: Ingrid Daubechies (Chair) (USA), Petra Bonfert-Taylor (USA), Carla Cederbaum (Germany), Nalini Joshi (Australia), Sunsook Noh (Korea), Marie-Françoise Ouedraogo (Burkina Faso), Dušanka Perišić (Serbia), Claudia Sagastizábal (Brazil), Caroline Series (UK), and Carol Wood (USA).

## NSF-AWM Mentoring Travel Grants for Women

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

**Mathematics Education Mentoring Grants.** Women mathematicians who wish to collaborate with an educational researcher to learn about educational research may use the mentoring grants to travel to collaborate with or be mentored by a mathematics education researcher. In order to be considered for one of the travel grants, a mathematics applicant must hold a doctorate in mathematics. A mentor should hold a doctorate in mathematics education or in a related field such as psychology or curriculum and instruction. The applicant's research must be in a field which is supported by the Division of Mathematical Sciences of the National Science Foundation.

**Selection Procedure.** AWM expects to award up to seven grants, in amounts up to \$5,000 each. Awardees may request to use any unexpended funds for further travel to work with the same individual during the following year. In such cases, a formal request must be submitted by the following February 1 to the selection committee or funds will be released for re-allocation. (Applicants for mentoring travel grants may in exceptional cases receive up to two such grants throughout their careers, possibly in successive years; each such grant would require a new proposal and would go through the usual competition.) For foreign travel, U.S. air carriers must be used (exceptions only per federal grant regulations; prior AWM approval required).

**Eligibility and Applications.** Applicants must be women holding a doctorate (or equivalent) and with a work address in the USA (or home address, in the case of unemployed applicants). Please see the website (<http://www.awm-math.org/travelgrants.html>) for further details and do not hesitate to contact Jennifer Lewis at 703-934-0163, ext. 213 for guidance.

**Deadlines.** There is one award period per year. Applications are due **February 1**.

# AWM at the 2014 SIAM Annual Meeting

*Magnhild Lien, AWM Executive Director*

The 2014 SIAM Annual Meeting was held July 7–11, 2014 at the Palmer House in Chicago, IL. The AWM Workshop for Women Graduate Students and Recent PhDs took place over a period of three days, July 7, 8 and 9 and was organized by **Ching-Shan Chou**, Ohio State University; **Chiu-Yen Kao**, Claremont McKenna College; **Elebeoba (Chi-Chi) May**, University of Houston; **Misun Min**, Argonne National Laboratory; **Hoa Nguyen**, Trinity University and **Xueying Wang**, Washington State University. While everyone was part of the pre-workshop preparation, four of the organizers, Chiu-Yen, Chi-Chi, Misun and Hoa were at the meeting. AWM appreciates the efforts made by this dedicated group of women. The workshop was a great success.

**Irene M. Gamba**, University of Texas at Austin, delivered the AWM-SIAM Sonia Kovalevsky Lecture. Clearly excited about the topic, she spoke on “The Evolution of Complex Interactions in Nonlinear Kinetic Systems” to a large audience on Monday afternoon. Gamba was presented with a plaque by AWM President **Ruth Charney** and SIAM President **Irene Fonseca** at the SIAM Awards Luncheon on Tuesday.



*AWM-SIAM Sonia Kovalevsky Lecturer:  
Ruth Charney and Irene M. Gamba at the Awards Luncheon*



*Career Minisymposium organizer and speakers: Misun Min, Anne Shiu, Lois Curfman McInnes, Mary Silber, Margot Gerritsen, and Fengyan Li*

The workshop began Monday morning with the first of a two-part AWM Career Panel, “Women and Challenges in Mathematics, Science, and Engineering.” The second part was held Monday afternoon. The session was chaired by **Misun Min**. With people coming and going, there were between 30 and 50 people in attendance at any given time during these sessions, with the room filled to capacity on a few occasions. The first speaker, **Margot Gerritsen**, Stanford University, ended her presentation “Beating the Imposter Syndrome” with the following: “Feeling like a fake? Good! It might just mean you are a little out of your comfort zone. Is that really a bad thing? Maybe embrace it. It shows we challenge ourselves, we learn. *Jump in.*” **Lois Curfman McInnes**, Argonne National Laboratory, spoke about “My Intertwined Paths: Career and Family.” In an upbeat positive presentation she likened work-life balance to a dancer’s pose in yoga. In her summary she reminded the audience that “It takes all kinds, think outside the box, and face the bumps with a smile.” **Fengyan Li**, Rensselaer Polytechnic Institute, cleverly titled her talk “From Law of Large Numbers...” since the main theme of her presentation was that in the long run one will eventually get what one deserves/wants. She reminded the audience of different paths people take when developing their careers and emphasized the importance of support networks and mentors at all stages of one’s career. **Mary Silber**, Northwestern University, talked eloquently “On the Importance of Good Mentoring and Having an Engaging Community.” By community she was referring to students, colleagues, collaborators ...; within these communities it is important to seek out mentors and role models. The last presentation in the morning session was by **Anne Shiu**, University of Chicago, and her topic was “On



the Road Again: My Experience as an Early-career Mathematician.” When describing her path from graduate school to a tenure-track position and her experience as a new mother she focused on 1) surprises (what I wish I had known, 2) resources and 3) what worked for me. **Barbara Lee Keyfitz**, The Ohio State University, started the afternoon session with a talk entitled “Two Jobs, Two Children, and Two Cars: What Can Possibly Go Wrong?” She admitted that the talk had nothing to do with cars, but was focused on dual-career academic couples. The presentation was a mixture of personal history on how she and her mathematician husband managed the two-body problem and of advice on what universities can do to deal with the issues associated with dual-career academic couples. **Joan Lind**, University of Tennessee, talked about “Perspectives of an Assistant Professor.” She discussed teaching universities versus research universities while describing her own personal journey switching from a tenure-track position at a liberal arts college to a tenure-track position at a research institution. She emphasized that what you start out doing may not be the right thing for you, and you can change. **May Boggess**, Arizona State University, finished the talks with her presentation “Changing Directions.” She told her personal story on why she abandoned her research in pure mathematics to pursue an MS in statistics. She is now happily teaching statistics and doing statistical consulting in health-related fields. The minisymposium concluded with the eight speakers taking questions from the audience. A lively discussion that included many questions and comments ensued. The slides from the talks are available on the AWM website: <https://sites.google.com/site/awmmath/programs/workshops/past-workshops/siam-2014-slides>.



AWM Networking Reception: Hoa Nguyen, Chiu-Yen Kao and Ashlee Ford Versypt

On Monday evening, the AWM Workshop held a Networking Reception. This provided a wonderful opportunity for the workshop participants to gather, interact with their mentors, and meet with AWM president Ruth Charney and Sonia Kovalevsky Lecturer Irene M. Gamba.

On Tuesday, the workshop continued with eight recent PhDs presenting research talks during two minisymposia on “Numerical and Theoretical Approaches for Nonlinear Partial Differential Equations.” The minisymposia were chaired by **Chiu-Yen Kao**. The presentations were well done, and the speakers fielded many questions from the audience. The presenters and the titles of the talks are listed below.

## Research Talks by Recent PhDs

**Silvia Jimenez Bolanos**, Colgate University  
*Nonlinear Neutral Inclusions: Assemblages of Spheres and Ellipsoids*

**Carmen Caiseda**, Inter American University of Puerto Rico  
*Numerical Optimization Method for Simulation Based Optimal Design Problems*

**Shengqian Chen**, University of Wisconsin, Madison  
*Nonlinear Traveling Waves for a Model of the Madden-Julian Oscillation*

**Weitao Chen**, University of California, Irvine  
*Fast Sweeping Methods for Steady State Problems for Hyperbolic Conservation Laws*

**Kasie Farlow**, United States Military Academy  
*A Characterization of the Reflected Quasipotential*

*continued on page 10*



AWM Networking Reception: Kasie Farlow, Ruth Charney, Holly Grant and Carmen Caiseda

**Evelyn Thomas**, University of Maryland Baltimore County  
*Analysis of Si Models with Multiple Interacting Populations  
Using Subpopulations with Forcing Terms*

**Ashlee Ford Versypt**, Massachusetts Institute of Technology  
*Analysis of Finite Difference Schemes for Diffusion in  
Spheres with Variable Diffusivity*

**Xinghui Zhong**, Michigan State University  
*Energy-Conserving Discontinuous Galerkin Methods  
for the Vlasov-Ampere System*

The workshop concluded on Wednesday with six graduate students presenting posters during a well-attended joint poster session for the AWM Workshop and the SIAM Annual Meeting. This year there were two new components to the Poster Session. SIAM organized a Poster Blitz immediately preceding the poster session. The presenters were given one minute each to summarize the key elements of their posters. It was a nice event and it gave the audience an idea of which of the many posters they wanted to check out further. Also new was a poster competition which was for the AWM workshop participants only. The AWM presenters and their poster titles are listed below.

## Poster Presentations by Graduate Students

**Aditi Ghosh**, Texas A&M University  
*Fast Iterative Methods for the Variable Diffusion  
Coefficient Equation in a Unit Disk*

**Holly Grant**, Virginia Tech  
*The Asymptotic Analysis of a Thixotropic Yield Stress  
Fluid in Squeeze Flow*

**Tingting Huan**, University of Connecticut  
*Traveling Fronts to the Combustion and the  
Generalized Fisher-KPP Models*

**Sara Reynolds**, University of Nebraska, Lincoln  
*Sexual Cannibalism as an Optimal Strategy  
in Fishing Spiders*

**Feifei Xu**, Florida State University  
*A Local Grid Mesh Refinement for a Nonlocal  
Model of Mechanics*

**Shujing Xu**, Claremont Graduate University  
*Three Model Problems for 1-D Particle Motion  
with the History Force in Viscous Fluids*



Recent PhD presenter Weitaio Chen



Recent PhD presenters Carmen Caiseda, Ashlee Ford Versypt, Evelyn Thomas and Kasie Farlow



Recent PhD presenter Xinghui Zhong discussing her work with Rachel Levy

The winner of the poster competition was Sara Reynolds, with runner-up Aditi Ghosh. Both will receive a certificate of recognition from AWM. In addition the winner will receive an MBI Conference Award from the Mathematical Biosciences Institute. The MBI Conference Award is a full travel award (which includes transportation and local accommodation) to attend one MBI workshop of the winner's choice in the upcoming year.

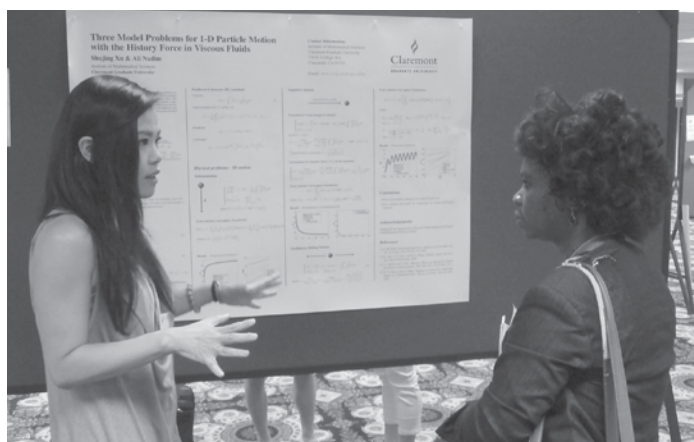
This workshop was made possible by funding from the National Science Foundation and the Department of Energy. A special thanks to **Bettye Anne Case, Ruth Charney, Julianne Chung, Chiu-Yen Kao, Rachel Levy, Elebeoba (Chi-Chi) May, Cammey Cole Manning, Misun Min, Hoa Nguyen** and **Yuanying Michelle Guan** petition judges during the workshop.



Poster Session: Aditi Ghosh and Silvia Jimenez Bolanos

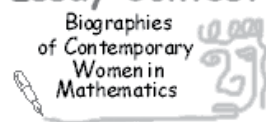


Poster Session: Sara Reynolds explaining her poster



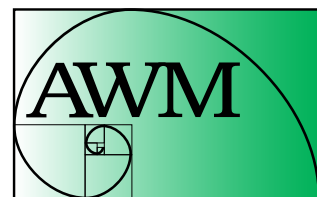
Poster Session: Shujing Xu and Elebeoba (Chi-Chi) May

## Essay Contest



To increase awareness of women's ongoing contributions to the mathematical sciences, the Association for Women in Mathematics holds an essay contest for biographies of contemporary women mathematicians and statisticians in academic, industrial, and government careers. AWM is pleased to announce that the 2015 contest is sponsored by Math for America, [www.mathforamerica.org](http://www.mathforamerica.org).

The essays will be based primarily on an interview with a woman currently working in a mathematical career. The AWM Essay Contest is open to students in the following categories: grades 6–8, grades 9–12, and undergraduate. At least one winning entry will be chosen from each category. Winners will receive a prize, and their essays will be published online at the AWM website. Additionally, a grand prize winner will have his or her entry published in the *AWM Newsletter*. For more information, contact Dr. Heather Lewis (the contest organizer) at [hlewis5@naz.edu](mailto:hlewis5@naz.edu) or see the contest web page: [www.awm-math.org/biographies/contest.html](http://www.awm-math.org/biographies/contest.html). The deadline for electronic receipt of entries is **January 31, 2015**. (To volunteer as an interview subject, contact Heather Lewis at the email address given.)



ASSOCIATION FOR  
WOMEN IN MATHEMATICS



## 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.

## Women in STEM on a Spaceship

Ursula Whitcher, University of Wisconsin-Eau Claire

I don't expect to find role models in video games. There's a difference in goals, of course: I don't want to develop my skill with guns, swords, or jumping long distances, and I'm not planning to wreak revenge on anyone. I don't even want to start a small package-delivery business, which is a standard task in the genre of games I favor.

But there's a more obvious, less pragmatic, reason I don't expect to see myself in video games: I'm a woman. As a female gamer, I belong to a demographic occasionally mocked and often dismissed entirely. Though women constitute just under half of all gamers (48%, according to the latest industry statistics), female characters are rare and female protagonists even rarer. Recently, for example, the

game company Ubisoft announced that there would be no playable female characters in the new *Assassin's Creed* game because "the reality of production" made animating women too expensive.

As a mathematician, I've grown accustomed to real-world contexts where women are rare. In recent years, women have received just over 30% of the PhDs granted in mathematics. Sometimes even 30% seems high: when I go to research workshops in my subfield, I'm often the only junior woman in the room, and occasionally the only woman. That might be because my field overlaps with theoretical physics, and compared to other STEM fields (Science, Technology, Engineering, and Mathematics), math is doing pretty well. Fewer than 20% of new physics and computer science PhDs go to women; the statistics for engineering are similar.

Imagine my surprise, then, when playing the science fiction epic *Mass Effect 3* made me feel like I fit in. In the *Mass Effect* series, you take on the role of Commander Shepard, who leads the crew of the spaceship *Normandy* in a battle against marauding machines called Reapers. You may choose to play either a male or a female Shepard; I played a woman. The other characters are scripted: their responses depend on the choices you make as Shepard. As the story progressed, I found myself thinking, "Wow, there are a lot of women in STEM on my spaceship!"

I don't expect to see research mathematicians heading into battle, but the *Normandy's* crew was full of engineers.

### CALL FOR NOMINATIONS

## The 2016 AWM-Sadosky Research Prize in Analysis

The Executive Committee of the Association for Women in Mathematics has established the AWM-Sadosky Research Prize in Analysis. This prize will be awarded every other year, beginning in 2014. The purpose of the award is to highlight exceptional research in analysis by a woman early in her career. Candidates should be women, based at US institutions who are within 10 years of receiving their PhD, or having not yet received tenure, at the nomination deadline.

The AWM-Sadosky Research Prize serves to highlight to the community outstanding contributions by women in the field and to advance the careers of the prize recipients. The award is named for Cora Sadosky, a former president of AWM, and made possible by generous contributions from Cora's husband Daniel J. Goldstein, daughter Cora Sol Goldstein, friends Judy and Paul S. Green and Concepción Ballester.

The nomination should include: 1) a one to three page letter of nomination highlighting the exceptional contributions of the candidate; 2) a curriculum vitae of the candidate not to exceed three pages and; 3) three letters supporting the nomination (submitted independently). Nomination materials should be submitted online at MathPrograms.Org. The submission link will be available 45 days prior to the nomination deadline. Review of candidates will begin in mid-February. For full consideration, nominations should be submitted by **February 15, 2015**. If you have any questions, phone 703-934-0613 or email awm@awm-math.org.

Two were men (one with the requisite Scottish accent), but the third official engineer was a woman. Then there's Samantha Traynor, who was doing research in electrical engineering or computer science before the Reapers invaded, the alien woman Tali'Zorah, who analyzed the spaceship's drive core when she wasn't blowing up hostile robots, and the spaceship's artificial intelligence EDI, who identified as female. In other words, the technical staff on my spaceship was dominated by women.

The *Mass Effect* series is by no means a uniform triumph for feminism. The art direction, in particular, panders to the male gaze; if I were really in charge of the *Normandy*, I'd ban high heels on combat missions. But I still found myself relaxing as I wandered through a room full of women in technical careers—even though the women were fictional. I cheered when Sam Traynor promised to start mapping the solar systems where she'd saved lives by “analyzing the crap out of some data.”

*Mass Effect 3* is an advertisement for scientific heroism of many stripes. The *Normandy's* exploits buy time for a team of scientists and engineers to research and build a device called the Crucible. Individual efforts are celebrated, too. I teared up when my alien biologist rushed into a collapsing laboratory for a last-minute synthesis with the battle cry, “Anyone else would have gotten it wrong.”

I don't think the *Mass Effect* designers deliberately set out to inspire women in STEM. I've read interviews with

the writer who created Samantha Traynor's dialogue, for instance, and they concentrated on writing a compelling lesbian character, not writing a realistic computer scientist. But I do think the designers made a concerted effort to imagine a setting where roughly equal numbers of men and women were working together. That effort must have felt cheesy at times—who frets about Human Resources for an imaginary spaceship?—but its effect is powerful. Can imagining room for women in another galaxy be a step toward creating space here?

## WIMM Watch: Sherlock's Mother

*Sarah J. Greenwald*

Ever wonder where Sherlock Holmes obtained his amazing memory and deductive reasoning skills? We found out that Sherlock's mother was a mathematician in the season three finale of BBC's *Sherlock*, which originally aired in the U.S. on February 2, 2014 as an episode of PBS' *Masterpiece Mystery!* Many years ago she wrote a book on *The Dynamics of Combustion*. This is clearly a nod to *The Dynamics of an Asteroid*, which was written by Sherlock's foe James Moriarty in the original books by Arthur Conan Doyle. In

*continued on page 14*

### 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 September 15, 2014. 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 Joint Mathematics Meetings in San Antonio, January 2015.

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 **September 15, 2014**. If you have questions, phone 703-934-0163, email [awm@awm-math.org](mailto:awm@awm-math.org), or visit [www.awm-math.org](http://www.awm-math.org).

this remix, Sherlock's father describes how his "complete flake" and genius of a wife gave up being a mathematician for the children: "I could never bear to argue with her. I'm something of a moron myself. But she's unbelievably hot." I interpreted his comments to mean that he would have

preferred that she remain a mathematician, and regardless, he seems very proud of his wife's past and present accomplishments. The author on the combustion book is listed as M. L. Holmes, so it was clearly published after she was married. However, for Sherlock's mother, mathematician M. L. Holmes is long in the past: "Oh, that silly old thing. You mustn't read that. Mathematics must seem terribly fatuous now."

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## EDUCATION COLUMN

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

### Why I Oppose Standardized Testing

*Pat Kenschaft, Professor Emerita of Mathematics, Montclair State University*

"Do you really oppose all standardized tests?" insisted a young father in a small local meeting. "How am I to know how my daughter is doing?" He stimulated my thinking about the extent to which test mania has possessed our country.

Do I really oppose all standardized testing? I could see a defensible reason for college applicants to take tests so that colleges have a way to compare students from many different secondary schools. But Bob Schaeffer, Public Education Director of FairTest, tells me that "dropping test score requirements has been shown to increase diversity of all sorts without undermining academic excellence in any way" (personal communication).<sup>1</sup> In fact, more than 800 accredited, bachelor-degree granting institutions now do not require all or many applicants to submit SAT/ACT scores before admissions decisions are made.<sup>2</sup>

So now I want to give reasons for my position. The foremost reason is that standardized testing seriously damages education. Test-prep is *very* different from education. When New Jersey's math graduation test took effect, I saw a great decrease in the math preparation of my non-majors.

Steve Willoughby tells a story in his book, *The Other End of the Log*,<sup>3</sup> that when he was teaching high school math, he was told he had to raise the standardized test scores of his class. He abandoned serious math and concentrated on test-prep. The next time his class had the highest average in Illinois, but they and he knew they hadn't learned nearly as much mathematics.

Willoughby used only honest methods for improving his students' scores, but a major problem with standardized testing is the extent to which it encourages downright cheating. FairTest documents a number of harmful effects of high-stakes testing<sup>4</sup> and has identified 52 forms of cheating, 14 before the test is administered, 20 during the testing process, and 18 after the test is officially over.<sup>5</sup> Furthermore, it has compiled government and news media reports of cheating in 39 states, the District of Columbia, and U.S. Department of Defense schools.<sup>6</sup>

Of these, there was a reported widespread pattern of cheating in California, Colorado, District of Columbia, Florida, Georgia, Indiana, Louisiana, Maryland, Missouri, New Jersey, New York, Ohio, Pennsylvania, and Texas. My own observations would corroborate the reputation of my own home state.

Mistakes of the test-makers complicate the situation. Remember the time when a group of high school students successfully sued the College Board, probably the test-making company with the best reputation, for being marked wrong on their SAT's when they actually had the right answer?<sup>7</sup>

This situation reflects the fact that there is no accountability for test-makers. Teachers are certified by their states. Doctors and lawyers must meet professional standards. Alas, there are no standards of accountability for those allegedly determining "accountability" in students and teachers.

Students lose basic respect for schooling as they are pressured to satisfy some outsider instead of pursuing knowledge for its own sake and being kind and honest with the people around them. Moreover, when those in authority use unethical processes, the effect on American citizenship and the habits of extended hard work needed for a successful career can hardly be positive. I enjoyed school most of the time, and I want today's and future children to enjoy it too.

Testing is not fun. It makes children anxious and unhappy. I believe that humans are meant to be happy, and was relieved one day when the Dalai Lama said on NPR that God put us on Earth to be happy. The rabbi, imam, and priest on the panel agreed. Free children from standardized testing!

It would be even less fun for a child with my visual

problems. I can't look at a color screen for more than 15 minutes without significant pain. There were no computer screens when I was a child, so I don't know whether I had the same problem then, but I suspect that some children do today. What is their fate on these tests that take place on computers? Would I have been deflected from my joyful career following the earning of a PhD in mathematics because of my disability—which many might have interpreted as being simply uncooperative (or stupid)?

Another frightening result of standardized testing is its effect on the morale of teachers. Teachers want to be able to respond to the individual personalities and intellectual needs of their students. Catering to standardized tests undermines this desire. Teachers don't want to be cogs in a large wheel. I have been told that the best teachers who have other options are leaving the profession and that it is becoming increasingly difficult to recruit candidates for teaching in American public schools.

How did we get into this situation? The current crisis dates from the No Child Left Behind act (NCLB), led by the administration of President George W. Bush. When he was governor of Texas, the "Houston Miracle" was cited as a way to drastically improve schools, so he threw himself into implementing it at the national level. When the Houston Miracle was found to be based on cheating on tests,<sup>8</sup> it did not affect NCLB either under the Bush administration or under President Obama.

The abundance of standardized tests mandated by NCLB and now by the Common Core State Standards (CCSS) as well has been a windfall for major publishing companies. (This is not an article about Common Core, but perhaps I should admit that I can see some benefits to having national guidelines as long as they are not enforced, and that the current CCSS appear to be a good first try. It's the testing program I totally oppose.) Some people argue that the massive recent testing is designed to undermine faith in our public schools, enabling for-profit schools to make more money. I'm personally not that cynical, but it's an argument that can't be completely dismissed.

Am I really against *all* standardized testing? How about testing with no significant "stakes"? I've often said that I oppose standardized tests, but when it serves my purpose, I quote their results. Then I say that when I first went to Broadway Elementary School in Newark, NJ, the third grades routinely had a median of the 25th percentile on the old-fashioned Iowa tests. After I had been working with the teachers for a couple of years, two of the third grades had a median of the 60th percentile and one of the 70th—and that class had only one child below 50 and that child in the 40s. I use that story to illustrate the importance of teaching elementary school teachers the mathematics they are supposed to be teaching. If you don't know the subject matter, as most U.S. elementary school teachers don't, you

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## CALL FOR NOMINATIONS

# The 2016 AWM-Microsoft Research Prize in Algebra and Number Theory

The Executive Committee of the Association for Women in Mathematics has established the AWM-Microsoft Research Prize in Algebra and Number Theory. This prize will be awarded every other year, beginning in 2014. The purpose of the award is to highlight exceptional research in some area of algebra by a woman early in her career. The field will be broadly interpreted to include number theory, cryptography, combinatorics and other applications, as well as more traditional areas of algebra. Candidates should be women, based at US institutions who are within 10 years of receiving their PhD, or having not yet received tenure, at the nomination deadline.

The AWM-Microsoft Research Prize serves to highlight to the community outstanding contributions by women in the field and to advance the careers of the prize recipients. The award is made possible by a generous contribution from Microsoft Research.

The nomination should include: 1) a one to three page letter of nomination highlighting the exceptional contributions of the candidate; 2) a curriculum vitae of the candidate not to exceed three pages and; 3) three letters supporting the nomination (submitted independently). Nomination materials should be submitted online at [MathPrograms.Org](http://MathPrograms.Org). The submission link will be available 45 days prior to the nomination deadline. Review of candidates will begin in mid-February. For full consideration, nominations should be submitted by **February 15, 2015**. If you have any questions, phone 703-934-0613 or email [awm@awm-math.org](mailto:awm@awm-math.org).

can't teach it, no matter how fine a person and skilled a teacher you are.

In this article, I now relate my conversation after this revelation with the much-loved principal of Broadway Elementary School, the late Gerry Samuels. He shook his head as he told me he always wondered why his school had the lowest Iowa scores in the city.

"Oh, I know," I said quickly and his eyes widened. By then I had also worked in many other Newark elementary schools, where I had been disquieted by what I had observed.

"Why?"

"You don't encourage cheating on the tests." His eyes grew even larger.

"You mean?!!!" As I nodded, I reflected that he was president of the Newark principal's union. Apparently, his colleagues did not hold his honesty against him. But even in that low-stakes (no-stakes?) situation, they encouraged their own faculty to promote cheating on tests. No wonder it is common as the stakes get higher!

Recently, I have asked others who took the low-stakes Iowas how they felt about them. They didn't bother me in my childhood; I rather enjoyed them. However, many adults look back at the anxiety they caused. For what? Life is for happiness!

So what do I tell the young father about how to know about his daughter's achievement level? Watch her. Listen to

her and her teachers. Concentrate on helping your daughter live well now and preparing for a happy, contributing life. If she is subjected to standardized tests, help her to do her best, but don't take the results too seriously.

I have never talked with any teacher at any level who thought standardized testing was a good idea. Surely some must, but my experiences indicate to me that our tax money would be much better spent helping teachers learn mathematics and raising their salaries.

### Endnotes

1. "Defining Promise: Optional Standardized Testing Policies in American College and University Admissions." <http://www.nacacnet.org/research/research-data/nacac-research/Documents/DefiningPromise.pdf>
2. <http://www.fairtest.org/university/optional>
3. Willoughby, Stephen, *The Other End of the Log: Memoirs of an Education Rebel*, Vantage Press, 2002, pp. 161–163.
4. [http://fairtest.org/sites/default/files/Cheating\\_Fact\\_Sheet\\_8-17-11.pdf](http://fairtest.org/sites/default/files/Cheating_Fact_Sheet_8-17-11.pdf)
5. <http://fairtest.org/sites/default/files/Cheating-50WaysSchoolsManipulateTestScores.pdf>
6. <http://www.fairtest.org/2013-Cheating-Report-PressRelease>
7. <http://www.fairtest.org/3-million-settlement-sat-scoring-error>
8. <http://www.nytimes.com/2003/12/03/us/a-miracle-revisited-measuring-success-gains-in-houston-schools-how-real-are-they.html>

## CALL FOR NOMINATIONS

### The 2016 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 starting 2015 will be 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, Olga 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 and Georgia Benkart.

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, 2014** and will be held active for three years. If you have questions, phone 703-934-0163 or email [awm@awm-math.org](mailto:awm@awm-math.org).



## BOOK REVIEW

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

**Searching for Scientific Womanpower: Technocratic Feminism and the Politics of National Security, 1940–1980**, Laura Micheletti Puaca, The University of North Carolina Press, ISBN 978-1-4696-1081-8

*Reviewer: Marge Bayer*

The term “technocratic feminism” refers to the strategy of using workforce and national security needs to argue for increasing the participation of women in the STEM disciplines. As the subtitle indicates, the focus of this book is on the period from World War II through the Cold War, but the epilogue includes some discussion of the persistence of technocratic feminist rhetoric today. The book sheds much light on the development of ideas and strategies for getting more women into scientific careers.

A couple of women are highlighted for their roles in the efforts to increase women’s participation in the 1940s. Virginia Gildersleeve was Dean of Barnard College. In 1942,

in a *New York Times Magazine* article, she warned of the shortage of “trained brains” and the dangers this shortage held for the war effort. Her conclusion was that the demand should be met by women. Lillian Moller Gilbreth received a PhD in industrial psychology from Brown University in 1915. She worked with her husband as industrial consultants until his death in 1924, and then found her gender made it more difficult to get contracts. In 1935 she obtained a faculty position at Purdue University, where she became a professor of management in the School of Engineering. She did much wartime consulting work. According to Puaca, she eschewed the label of feminist, but was active in a variety of organizations that advocated for women’s education and employment. (Her name may be familiar as the mother in the family described in the book *Cheaper by the Dozen*.)

Puaca quotes Gildersleeve as saying in 1941 that the reluctance to employ women in scientific fields developed during the depression. This shows the flip side of the technocratic feminist argument, and shows the inherent danger of relying on the argument. If women should be hired when there is a shortage of personnel in the field, shouldn’t female employment be curtailed when there is a surfeit? And, indeed, this is what happened with the end of World

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### CALL FOR NOMINATIONS

## The 2015 Kovalevsky Lecture

AWM and SIAM established the annual Sonia Kovalevsky Lecture to highlight significant contributions of women to applied or computational mathematics. The 2015 lecture will be given at the International Congress on Industrial and Applied Mathematics (ICIAM), Beijing, China, August 10–14, 2015. Sonia Kovalevsky, whose too-brief life spanned the second half of the nineteenth century, did path-breaking work in the then-emerging field of partial differential equations. She struggled against barriers to higher education for women, both in Russia and in Western Europe. In her lifetime, she won the Prix Bordin for her solution of a problem in mechanics, and her name is memorialized in the Cauchy-Kovalevsky theorem, which establishes existence in the analytic category for general nonlinear partial differential equations and develops the fundamental concept of characteristic surfaces.

The mathematicians who have given the prize lecture in the past are: Linda R. Petzold, Joyce R. McLaughlin, Ingrid Daubechies, Irene Fonseca, Lai-Sang Young, Dianne P. O’Leary, Andrea Bertozzi, Suzanne Lenhart, Susanne Brenner and Barbara Keyfitz, Margaret Cheney, and Irene M. Gamba.

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, 2014** 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](http://www.siam.org/prizes/sponsored/Kovalevsky.php) and [www.awm-math.org/kovalevskylectures.html](http://www.awm-math.org/kovalevskylectures.html) for more details.

War II. In a broad swath of professions, women were encouraged to retreat to the home to make way for male employment. The GI Bill exacerbated this. Two million veterans took advantage of the GI Bill to pursue education upon return from the war. Of all veterans, 97% were male, and the males participated in the GI Bill in a greater proportion than women. Thus, the number of women educated under the GI Bill was very small.

By the time of World War II, a few women's professional societies existed. Some of these were honor societies for women, presumably largely functioning as social and support networks. After Pearl Harbor some of these organizations joined in the efforts for developing womanpower for the war effort. The Committee on Women in College and Defense (later renamed the Committee on College Women Students and the War) began in 1940. Along with the American Association of University Women

(AAUW), they pushed the technocratic feminist agenda during the war.

After the war, the Cold War provided the new justification for the expansion of the scientific and technological enterprise in the US, and the concomitant need for scientific personnel. At the same time, the political climate limited the range of acceptable expression. The early 1950s were not a time for arguing against gender conventions or for explicitly fighting for women's equality on civil rights grounds. By the end of the decade, however, women scientists and engineers were divided on strategy. In 1958, President Eisenhower asked Congress to pass the Equal Rights Amendment, first introduced to Congress in 1923 (and—how could it be??—still awaiting passage). Many national women's organizations joined the campaign to pass the ERA, but one that did not was the Society of Women Engineers, one of the earlier and more active women's professional societies. SWE chose, over the objections of some vocal members, to stay out of politics, maintaining its tax-exempt status, but seriously restricting its role in advocacy for women in engineering.

The National Manpower Council was established in 1951. (A main force in the organization was Columbia economics and business professor Eli Ginzberg, who had long been an active proponent of utilizing women in science and defense.) In 1957 the Council published its report, *Womanpower*. The report noted that the USSR graduated 13,000 women engineers annually, compared with fewer than 100 in the US at that time. One third of Soviet engineering students were women. As the post-Sputnik panic set in, the media picked up the cry for recruiting women to science and engineering. The reaction was mixed. Some recalled the important contributions of women in the war. Others warned of the shortage of teachers and nurses if women were redirected to scientific professions.

In 1958, a *Wall Street Journal* story coined the term "feminine fallout," suggesting that training women in science and engineering was not cost effective, since so many women left their professions after marriage. The response from an AAUW member cited studies from AAUW and data from NYU, showing that many women returned to their careers as their children grew older. The problem was not that women did not want to continue their scientific careers; the problem was that employers did not accommodate women with children or people who had to take time off. The attitude that men needed to work to support their families, while women's income was dispensable, was persistent. Consider the experience of Mary (Polly) Bunting. After receiving her PhD in agricultural


## Ruth I. Michler Prize

The Association for Women in Mathematics invites applications for the ninth 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 2015–16 academic year.



[www.awm-math.org/michlerprize.html](http://www.awm-math.org/michlerprize.html)



Cornell University



AWM  
ASSOCIATION FOR  
WOMEN IN MATHEMATICS

bacteriology in 1934, she followed her husband to Yale when he joined the medical school faculty there. Mary Bunting obtained a research assistantship at Yale, but her husband's salary was reduced by the amount of her small salary.

In the late 1950s, Mary Bunting was Dean of Douglas College at Rutgers University. While there she developed a program (funded by the Ford Foundation) to retrain women in math-intensive fields. In recruiting for the program, she received 600 positive responses to a questionnaire that asked

- (1) Have you had two or more years of college mathematics?
- (2) Would you be interested in taking a refresher course?
- (3) Would you be interested in obtaining full- or part-time work requiring mathematical training within the next four or five years?

Bunting went on to be president of Radcliffe College, and to create the Radcliffe Institute for Independent Study (renamed

the Mary Ingraham Bunting Institute in 1978).

The legal context for women in science in the 1960s and early 1970s held some surprises for me, in spite of the fact that I lived through those decades. Congress passed the Equal Pay Act in 1963 as an amendment to the Fair Labor Standards Act (FLSA) of 1938. It mandated equal pay for equal work, but not equal/comparable pay for comparable work. Unfortunately, the FLSA excluded professional and administrative positions until it was further amended in 1972. Title VII of the 1964 Civil Rights Act ([http://www.eeoc.gov/eeoc/history/35th/thelaw/civil\\_rights\\_act.html](http://www.eeoc.gov/eeoc/history/35th/thelaw/civil_rights_act.html)) prohibited discrimination on the basis of sex, as well as race, color, religion and national origin. However it did not at first apply to educational institutions (Exemption Sec. 702). Furthermore, the Equal Employment Opportunity Commission ruled that the law did not prohibit employment ads that specified gender.

*continued on page 20*

## NSF-AWM Travel Grants for Women

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

**Mathematics Education Travel Grants.** There are a variety of reasons to encourage interaction between mathematicians and educational researchers. National reports recommend encouraging collaboration between mathematicians and researchers in education and related fields in order to improve the education of teachers and students. Communication between mathematicians and educational researchers is often poor and second-hand accounts of research in education can be misleading. Particularly relevant to the AWM is the fact that high-profile panels of mathematicians and educational researchers rarely include women mathematicians. The Mathematics Education Research Travel Grants provide full or partial support for travel and subsistence for

- mathematicians attending a research conference in mathematics education or related field.
- researchers in mathematics education or related field attending a mathematics conference.

**Selection Procedure.** All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians and mathematics education researchers appointed by the AWM. A maximum of \$1500 for domestic travel and of \$2000 for foreign travel will be funded. For foreign travel, US air carriers must be used (exceptions only per federal grants regulations; prior AWM approval required).

**Eligibility and Applications.** These travel funds are provided by the Division of Mathematical Sciences (DMS) of the National Science Foundation. The conference or the applicant's research must be in an area supported by DMS. Applicants must be women holding a doctorate (or equivalent) and with a work address in the USA (or home address, in the case of unemployed applicants). Please see the website (<http://www.awm-math.org/travelgrants.html>) for further details and do not hesitate to contact Jennifer Lewis at 703-934-0163, ext. 213 for guidance.

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

In 1975 Senator Ted Kennedy introduced the Women in Science and Technology Equal Opportunity Act. It passed after five years of work, including a conference held by the American Association for the Advancement of Science (AAAS) and funded by NSF, a conference cosponsored by the Association for Women in Science (AWIS) and the New York Academy of Sciences, support by the National Organization for Women (NOW) and by the Federation of Organizations for Professional Women (FOPW), and lobbying by a number of other women's organizations, including AWM. The book describes the creation in the 1970s of the Association for Women in Science (AWIS) and a number of discipline-specific organizations in support of women, including AWM. The women's movement had opened the public in general and members of these organizations in particular to the idea of equal rights for women

as a central goal in and of itself. Many activists among women in science rejected the technocratic feminist approach. But there was a conservative backlash (symbolized by the election of Ronald Reagan), and the campaign for the Women in Science and Technology Equal Opportunity Act chose a strategy that relied heavily on the human resources argument of technocratic feminism.

To what extent have the workforce and national security issues been the main motivation of those using the technocratic feminist argument, and to what extent was this simply part of a strategy employed by those whose main motivation was equal opportunity for women? The author addresses this question only slightly. In the epilogue, she says that "explicit calls for equality ... have also struck some reformers as less safe or less suitably strategic." [p. 179] To this day the arguments of technocratic feminism are used when the audience is expected to deny gender discrimination or resist any suggestion of affirmative action.

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## **MPWR: Mentoring and Partnerships for Women in RUME**

*Megan Wawro, Virginia Tech; Jessica Ellis, Colorado State University; and Hortensia Soto-Johnson, University of Northern Colorado*

Although women are increasingly pursuing advanced careers in mathematics, and STEM fields in general, they are disproportionately represented in these within academia. According to the Department of Commerce's August 2011 report, *Women in STEM: A Gender Gap to Innovation*, women today currently earn 41% of PhDs in STEM fields, but make up only 28% of tenure-track faculty in those fields. The 2011 *Women and Girls in STEM Report* from the Executive Office of the President notes that support systems designed to attract and retain women in the STEM workforce are needed at every career stage. In an effort to address this need, we secured NSF funds (DUE-1352990) to host the *MPWR: Mentoring and Partnerships for Women in RUME* (Research in Undergraduate Mathematics Education) seminar (<http://www.mpwr-seminar.com>). The seminar was designed to (a) provide an environment for women in the undergraduate mathematics education research community to discuss shared concerns and



*Participants at the MPWR: Mentoring and Partnerships for Women in RUME seminar*

(b) informally provide or expose women to mentorship and partnership opportunities among graduate students, junior and senior faculty within that research community. The inaugural seminar was held on February 26, 2014 in Denver, Colorado prior to and in the same location as the 17th annual SIGMAA on RUME Conference. In this brief report, we provide a summary of the structure and participants of the seminar, share feedback from participants about their experiences at *MPWR*, and discuss future work aligned with the seminar.

## Structure of the MPWR Seminar

The seminar was structured around four main themes: (a) *Mentoring + Partnerships*, (b) *Roles + Identities*, (c) *Overcoming Obstacles + Meeting Challenges*, and (d) *Personal + Professional*. We invited twelve prominent female academics from the RUME and other discipline-based education research (DBER) communities to share their experiences related to the four themes. The invited speakers were divided into four subgroups surrounding each theme, and each subgroup facilitated an interactive session with the seminar participants.

Throughout the seminar, our decision to discuss both mentoring and partnerships was purposeful. We view these relationships as vehicles to empower and support women in our community. Mentorships often involve a more junior member, the mentee, and a more senior member, the mentor. These may be formal relationships, such as advisor and advisee, or more informal, such as between an experienced and a novice graduate student. We also encouraged partnerships. Partnerships are relationships between partners—equals. Again, these relationships may be formal, as in with co-authors, or informal, such as between colleagues.

In the opening session of *Mentoring + Partnerships*, our speakers drew on their experiences to describe these relationships: how to foster them, how to maintain them, how to get the most out of them, etc. In the *Roles + Identities* panel session, panelists discussed the many hats women in our field wear in our work and how we come to identify ourselves in these roles—or not. The session on *Overcoming Obstacles + Meeting Challenges* illuminated how we are often

obligated, even implicitly, to be strong and confident in these professional roles. In this session, speakers and participants explored things rarely discussed, taking time to connect through shared experiences and struggles. In the final panel, *Personal + Professional*, the speakers shared how they have attempted to balance family and other personal endeavors with work life.

To conclude the seminar, Annie Selden, PhD, Professor Emerita in the Tennessee Technological University Department of Mathematics and Adjunct Professor of Mathematics at New Mexico State University, delivered the plenary address. Annie has been in the RUME community since its inception in 1996. She spoke about “War Stories from a Career in RUME,” in which she offered many helpful, practical pieces of advice based on her past 40 years in the field.

## Participant Demographics

Table 1 illustrates the demographics of the MPWR participants (including the 45 attendees, 12 speakers, and 3 planners). Participants were from all career stages, from a variety of university departments, and primarily within the RUME community (as shown by their intention to attend the RUME conference).

## Participant Feedback Regarding the MPWR Seminar

A week after the MPWR seminar, we sent an anonymous online survey to the seminar participants. The *continued on page 24*

**Table 1. MPWR Participant Demographics**

	Attendees (45)	Speakers (12)	Planners (3)
<b>Career Stage</b>			
Doctoral Student	19	0	1
Postdoctoral Scholar	3	0	0
Assistant Professor	17	1	1
Associate Professor	2	5	1
Full Professor	2	5	0
Adjunct/lecturer/clinical	2	0	0
Other	1	1	0
<b>Department or College</b>			
Mathematics Education	6	1	0
Mathematics	26	5	3
Education/Curriculum & Instruction	10	2	0
Science (e.g., Physics, Chemistry)	0	3	0
Other	3	1	0
<b>Participation in the RUME community</b>			
Attended the 2014 RUME Conference (or intended to)	42	8	3

survey contained 14 open-ended response questions, such as, “What aspect of MPWR resonated with you the most?” “What did you like and dislike about the structure of the day?” and “In what ways, if any, do you think participating in MPWR will impact your career?” The survey also contained nine Likert-scale questions asking participants their level of agreement to statements addressing specific elements of the seminar and if they should change or not for a following seminar. These hypothetical changes were assembled through actual suggestions we received after MPWR. One such prompt was: “The next MPWR should have more time for people to interact in smaller groups. It was sometimes difficult to have a voice in such a large table.” The survey had a 67% response rate. In the following sections, we discuss themes that arose in these responses.

### **Structure**

One of the primary aspects that we asked for feedback on was the structure of the seminar, including the size, the participant diversity (career stage, field of study, gender), the schedule, the topics discussed, the format, the speakers, and the layout of the room. Overall, participant feedback along these dimensions was positive, and many purposeful decisions we had made with respect to structural aspects of the seminar achieved the intended goals of providing opportunities for beginning discussions and networking.

On the post-seminar survey, *MPWR* participants conveyed that conversations that began during *MPWR* continued during RUME. Participants also said that during RUME they were more apt to talk with seasoned



*Discussion group at MPWR*

RUME community members and attributed this to *MPWR*. For example, in the post-survey one participant remarked:

It was really nice getting to see the women from *MPWR* during RUME. It reinforced the connections we made and I felt like I was more integrated into the RUME community. It also proved a good talking point to share some of the *MPWR* advice with male colleagues.

During the panel discussions we intentionally had participants from a variety of career stages sit at each table so that graduating doctoral students, postdocs, new faculty, and experienced faculty would have opportunities to interact with each other. We rotated the seating arrangement throughout the day, and multiple participants responded that this purposeful seating was beneficial for developing relationships that may influence their future research as well as supporting them in academia in general. In the follow-up survey, one participant remarked:

The assigned seating at tables really helped encourage me to talk to other individuals I may not have been comfortable trying to approach on my own and I met many people that I look forward to trying to keep in contact with.

In addition to appreciating the structure of the day, responses to the post-seminar survey indicated that the *MPWR* seminar was community building, demonstrated that women have similar experiences in balancing roles and identities in academia, highlighted that there are numerous paths to tenure and promotion, and empowered participants.

### **Community building**

Participants indicated that the seminar deepened existing relationships in the community and helped to foster new ones. These relationships were identified both as personal in nature and as more work-related. For example one participant stated:

It deepened the personal relationships I have with many women in the community, especially people I regard as mentors. As such, I feel much more supported in going to these women when I have questions of any sort. I have already started discussing collaborative projects with women I had just met at *MPWR*.

Participants also noted that the structure of the seminar, with panel speakers leading the conversation, fostered a “joint enterprise with all panelists as our leaders” and that this community feel was enhanced by having only women in attendance.

### **Similar experiences**

Multiple participants expressed appreciation for the opportunity to learn that many other women have had experiences similar to theirs while navigating academia. Some of these similar experiences were the “struggles and difficulties of the personal/professional balance,” the imposter syndrome, and “the challenge of others (women and men alike) keeping distant or making negative comments about our successes.”

### **Numerous paths to tenure and promotion**

Participants also expressed surprise and appreciation at learning about the “lack of linearity in women’s career paths.” Participants stated that by becoming aware of how resilient women in the RUME community have been in the face of personal and/or professional “barriers,” they felt more prepared to “define [their] own paths.”

### **Feeling empowered**

A number of participants also said that the seminar left them feeling empowered and increased their confidence:

It has helped me realize that it is ok to ask for what I want. I think participation boosted my confidence to do some things I might not have done before, such as ask someone to nominate me for an award, etc.

Together, these responses suggest that the *MPWR* seminar positively impacted the communities of researchers of undergraduate mathematics education by supporting women at various career stages within these academic disciplines. Speakers not only initiated conversation surrounding difficulties we may have in our field, but also were purposeful in sharing ways that women can support and empower one another. These conversations thus served as both supportive networking opportunities and as professional development opportunities. For example, participants remarked that as a result of the seminar they were able to (a) continue personal and professional conversations from *MPWR* to RUME, (b) recognize that there are various paths to tenure and promotion, and (c) discover leadership roles that they could take on inside and outside of academia.

### **Other feedback**

While many of the comments on the post-survey were positive, we also received comments that will help inform changes in the direction of the next *MPWR* seminar. For instance, participants expressed a desire for more time to talk within their groups and for more structured ways to continue the relationships begun at *MPWR*. As a result, we plan to allow more time for in-group discussions during the next seminar, and we have established a Facebook site to foster ongoing communication among participants. The survey responses document many ways that the *MPWR* seminar helped to foster a community and provided this community with an experience that was needed. The feedback also indicated that the community would like a version of *MPWR* to continue annually.

### **Ongoing and Future Directions**

The leadership team is currently taking all feedback into consideration in order to plan future *MPWR* seminars, and we are in the process of requesting additional funding to support this endeavor. The inaugural *MPWR* seminar began conversations about issues specific to women in RUME and initiated connections to facilitate mentoring and partnerships within this community.

### **Acknowledgements**

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## **Conversations with Evelyn Boyd Granville**

*Interviewer: Evelyn Lamb, postdoc, University of Utah. She blogs about math for Scientific American at Roots of Unity and for the American Mathematical Society at the Blog on Math Blogs.*

Evelyn Boyd Granville was one of the first African American women to earn a PhD in math. I heard her name in a lecture by Patricia Kenschaft at the 2013 MAA MathFest, and of course the name “Evelyn” stood out to me. When I learned that Dr. Granville was still living, I decided to give her a call. We talked twice in April this year, before her 90th birthday on May 1st. This is an edited transcript that combines both of those conversations.

Granville’s curiosity, intelligence, positivity, and energy were inspiring. She worked in pure mathematics, computer science, the space industry, and math education and outreach, always with great success. But one of my favorite things about our conversation was how frank she was about some of her failures, particularly her short-lived stint teaching middle-school computer science. In her words, she “bombed out,” but she laughed as she told me about it. She wasn’t afraid to try something new, and she wasn’t afraid to admit that it wasn’t right for her.

**EL:** First, what was your field in mathematics?

**EBG:** I did my doctorate on Laguerre series in the complex domain. But I didn’t do any math work in functional analysis after my doctorate. I went to work for IBM in ’56, where I was introduced to computers and programming, and I was doing applied mathematics. Eventually I went to California State University in Los Angeles, rather than moving around as the contracts moved around. While I was there, I got interested in mathematics education, especially the new math that would be introduced in schools. I wrote a textbook for teachers who were just getting familiar with the new math and helped make training programs for them. I kind of went across the board in mathematics.

**EL:** How did you get interested in math? Were you encouraged as a child and young woman?

**EBG:** I was encouraged all the way through school. We called it arithmetic in my day, in elementary school. I was always good in arithmetic. I always did well in problem solving and algebra, so I never had a problem with mathematics. But in my high school yearbook, I put myself down as being a French teacher. When I got to college, I started taking

math, and I realized that I was more a mathematician than a literary person. So I stuck with mathematics. When I was at Smith, I did very well with math. My last two years I got into the honors program. That meant I wouldn’t have to attend math classes, I could study on my own. So I stayed with mathematics. Of course since I needed scholarships, I thought I’d better stick with the subjects that I know I can get good marks in. So that was mathematics and mathematical physics. When I graduated from Smith I knew then that I wanted to go on with the study of mathematics. I applied to Yale and Michigan. I don’t think Michigan gave me a scholarship, but Yale did.

**EL:** Those were the only two schools you applied to?

**EBG:** Yes, those were the only two. I chose Yale because they gave me the scholarship. It was only 300-some dollars, but 300-some dollars was money in that time.

But it’s interesting, if I had gone to Michigan, I would have met Marjorie Lee Browne, who along with me was one of the first black women to get PhDs in math. We would have overlapped at Michigan. I didn’t learn about her until later, when they said we were the first two black women to get PhDs in math. [Granville and Browne both earned their doctorates in 1949, and for a while, people thought they were the first African American women to earn doctorates in math. Later, it was discovered that Euphemia Lofton Haynes had earned one in 1943.]

**EL:** So when you were going to school, you didn’t have any idea that you were one of the first to do this?

**EBG:** No, no, not at all. I remember one day my sister said to me, I don’t know where she learned it, “Did you know you were one of the first black women to get a PhD in math?” I said, “No, I didn’t know that.” It never occurred to me to be the first. I just wanted to major in mathematics.

I got good fellowships while I was at Yale. That made it possible for me to go right through. I got a scholarship from Smith to go on to graduate school and a small scholarship from Yale. Altogether I had about \$1100, which was good money in those days. I got my master’s in one year. Then I applied for a Julius Rosenwald fellowship. Julius Rosenwald was a philanthropist, and he made money available to African Americans for graduate study. My second year at Yale, I had a Julius Rosenwald fellowship and help from Yale. The third year I got another Julius Rosenwald fellowship and help from Yale. The fourth year I got an Atomic Energy Commission Predoctoral Fellowship from the US government. That finished up the four years there. So I didn’t have to stop and work and make the money to go to graduate school.

I went to Yale in 1945, right after the war. The young men had been off to war, so we had a very large group of



graduate women at Yale. I never had a problem as far as race was concerned. I guess if someone didn't want to be around me, they just didn't come around. I never experienced any racial problems at Smith or Yale. Or as I tell people, maybe I should have, but I overlooked it or didn't realize it was happening.

When there are very few of us there, it is usually easier to be accepted. Once Smith started admitting more African American young ladies, some problems developed at Smith. So I think that's one thing I didn't experience because when I was at Smith, there were only about five of us. So we were not a "threat." We were hardly noticed.

I had an easy time financially, and I had an easy time being accepted and promoted and helped and encouraged.

**EL:** Were you encouraged even before college to go on in math, or was it mainly in college and graduate school?

**EBG:** Well I grew up in Washington, and I went to segregated schools in Washington. I went to Dunbar High School, which was known throughout the country as an outstanding prep school for "colored people," as we were called then. Because, for the most part, jobs were limited for black people, we had some of the best teachers. Other professions were closed to us. So Dunbar had the advantage of having excellent teachers. Also, we were in a culture, a community, that stressed going to college. We were encouraged to go to colleges in the northeast. The year I graduated, in '41, there was a group of seven or eight of us young women who went to colleges in the northeast. We were always encouraged to do that.

I was in the homeroom of Mary Cromwell. The Cromwells were a well-known family in Washington. Her sister Otelia Cromwell was, I believe, the first black woman to graduate from Smith, in the early 1900s. I was in Mary Cromwell's homeroom, so I was encouraged to go to Smith. I was admitted to both Mount Holyoke and Smith, but the Cromwells talked me into going to Smith. That's how I happened to get there. I had a very pleasant experience at Smith. I graduated summa cum laude in mathematics and was admitted into Phi Beta Kappa.

When I graduated from Yale, I was encouraged to go to the NYU Institute for Mathematical Sciences. Courant was the leader there, and I was there for postdoctoral work. I spent a year there and then looked around for a job. I remember going to Brooklyn Polytechnic Institute. I didn't get hired but later never thought anything about it. Later Patricia Kenshaft said that they thought it was a big joke that a black woman would apply there. But I was interviewed, I was treated pleasantly there. I didn't detect any problems. I didn't

expect to be hired, you know.

As a matter of fact, I was not happy with New York City. It was expensive, it was hard to find a place to live. It didn't bother me at all that I didn't get hired in New York City. Instead I got a job at Fisk University in Nashville, Tennessee. I stayed there for two years. I enjoyed teaching there. In the meantime, I don't remember whether I applied or somebody heard about me, but I was interviewed by a young man to work at the National Bureau of Standards, working with engineers. At that time, they were doing research in the development of missile fuses. This young man—he was an African American—was head of the unit of mathematicians. He encouraged me to leave Fisk and come to Washington. Of course that was home, and it was nice to come home.

Then I was hired in 1956 to work for IBM. This was just the beginning of the computer. I trained at the Thomas Watson lab in New York City, writing programs for the IBM 650. Then I came back to Washington for a couple years. My boss at the time, the head of the program, was transferred to New York City. He asked me to go with him up there to work for IBM. So I went from Washington DC to New York.

I was always working with programming at different facilities, mainly for the government. I stayed in New York just a year. Then the same boss who took me to New York was transferred back to Washington to head up the IBM Space Computing Center in Washington DC. IBM had won a contract with NASA to write programs for the space program. I thought, "Computers and the space program, this sounds exciting!" So I came back to Washington, and I worked on programs for the first space program, Project Vanguard. At that time, the satellite was the size of a grapefruit. We were writing programs for something up in the air the size of a grapefruit! First we were working on Project Vanguard, then Project Mercury, the two men in space.

In '57 or '58, I visited some friends who had moved from New York to California. They introduced me to a young man who lived there. The upshot was in 1960 I married a young man who lived in California, which meant I had to move to California. IBM at that time had no big projects in California, so I wasn't able to transfer to IBM. Instead, I got a position with Space Technology Laboratories, which was also doing space computing, developing programs for tracking satellites and spacecraft. It was right outside of Los Angeles, very convenient for me. At this time, the Cold War was going on. There were lots of jobs in engineering, mathematics, and physics. It was a time when no matter what color you were, if you could do the job, you were hired.

*continued on page 26*

I had several friends in different companies. One friend was at North American Aviation. He headed up a group there. He said to me one day, "Evelyn, we've got some good projects over here. We need mathematicians, we need everybody. Can we lure you over with a little bit more money? We have interesting projects." So I switched over to North American Aviation from Space Technology Laboratories. It sounds like job jumping, but that was the way things were then. The whole field was exploding, and people needed workers. I was always moving on to more money and more interesting work.

One day I got a call from Jane Cahill. We had worked together at the Space Computing Center in Washington. Jane had moved up to be in charge of hiring, and she called and asked if I'd like to come back to IBM. At that time, IBM was "the" company to work for. IBM was a great company. People respected IBM. She said, "We have some interesting projects and new contracts, and we need people." I had enjoyed working for IBM, so I went back to IBM. I stayed there until '67. Then this division of IBM didn't win some of the contracts that they thought they would, so they were going to reduce the force in the Los Angeles area office. They said they could move me to Washington or somewhere else in California. I was going through a divorce at the time, and I decided I wanted to stay and settle the divorce. I did not want to come back to Washington, and the other position in California didn't quite appeal to me.

That's when I decided I was tired of moving around. I had been moving around to different businesses, and I wanted to stay put. I started looking into jobs at the colleges. I applied to several of the California universities in the vicinity. I was offered a job at California State University Los Angeles. I decided, OK, I enjoy teaching, and it gives me a chance to stay right in LA. Even though I was making \$20,000 at IBM, a big salary, I took a job there for \$10,000. I cut my salary in half. You know, \$20,000 was money then! But I had decided, I can make it on \$10,000. I'm going to stop this business of jumping around and take a job that is permanent. So in '67 I took the job at Cal State LA. In the meantime I got a divorce, and later on in '70, I met Mr. Ed Granville. We hit it off big and got married. I stayed there until the spring term of 1984, when I retired. In December of '83 we had moved to Texas because my husband had decided he wanted to retire. But I stayed on one more quarter to get that year of work in. We were on the quarter system, so I left there in March of '84 and joined my husband down in Texas.

So there I was retired in Texas. We bought a house that had two bedrooms, and my husband decided we needed a

third room. He talked to a contractor about adding a third room, and this contractor happened to be on the school board. He and Ed started talking, and Ed always talked about me. He was very proud of me. It turns out this gentleman was on the school board. Texas had just implemented the teaching of computer literacy at the junior high school level. When he found out I worked with computers, he said, "We need a teacher." When I came down in March of '84, I was interviewed, and I thought it would be fun to teach computer literacy to these young students.

Starting in the fall of 1984, I joined the school district, teaching three classes of computer literacy at the junior high school level and one of math at the high school level. Well, to make a long story short, I bombed out. I knew nothing about classroom management, so I was not good at managing the class. I got unhappy, the children got unhappy, everybody got unhappy. About the middle of that fall term, I went to the superintendent and said, "You know, I know, everybody knows, I'm not really happy here, and you're not satisfied. Can you release me at the end of the semester?" He said, "Maybe I can release you sooner than that."

About a month later, he came to me and said, "This is it." We parted happily. I was happy to leave, and I think they were happy to see me go. As I said, I didn't know anything about classroom management, and I bombed out. It's as simple as that. So I said, "That is not my cup of tea."

In the meantime, Ed had met a member of the board at Texas College, which was a historically black college in Tyler, Texas. We were living about 15 miles outside of Tyler. They had just gotten a grant to develop a computer science program at Texas College. When the board member heard about my background, he asked, "Can we get her?" So I was hired there in the math-computer science department. And that was a very good experience for me. I was teaching computer science, programming, and mathematics. I was there 3 1/2 years. Then I said, "Ed, I retired once, maybe I should retire again. I've had this experience, it's been enjoyable, but maybe I should enjoy retirement." My working had meant that our traveling was limited to the summer.

In '88 I left Texas College. In '89, I said, "Oh dear, this is no fun at all. I'm too young." I was in my 60s then. In the meantime, through some friends I had met there, I met a young man who had some connection with the board of regents for the University of Texas system. He said, "You should be teaching at the University of Texas in Tyler." I think they were looking for minority faculty. When I went there, I don't think they had any minority faculty there, or maybe one or two. When he mentioned my field and the fact that I was a minority, I think that piqued their interest. They had an

opening in the math department. So I joined as a visiting professor in 1990, and they even gave me a chair! I was appointed for a first year, a second year, a third year, a fourth year. At the end of the four years, I said to Ed, "If I stay five years, I'll be vested for a pension." He said, "Go for five years!" So I stayed for a fifth year, and then a sixth year and a seventh year, 1997. Then I decided, "Ed, this is it. It's time for me to quit." I was in my 70s now. So in 1997 I retired from UT Tyler. And I thought, "Now I'll really enjoy retirement. Finally."

Then I got a call one day from a public relations person working for Dow Chemical Company: "We're looking for someone who can visit middle schools to talk to children about the importance of mathematics. Would you like to work with Dow Chemical on this project? I said, "That sounds like fun." So in 1998 and 1999 I traveled several times a month to visit middle schools to talk to them about the importance of studying mathematics. The nice thing was that Ed went too. I called Ed my chauffeur and bodyguard. We drove everywhere, and it was wonderful. We met interesting people, it was fun. And Dow Chemical gave me a stipend for doing this. We traveled around east Texas, south Texas, and even Louisiana to visit middle schools and talk about the importance of mathematics. That was really a fun assignment. Ed traveled with me. We enjoyed meeting people, we enjoyed the hotels and the food. Hopefully I got the message across about the importance of mathematics.

At the end of '99, Dow decided that it was the end of the program. Why they stopped it I really don't know. That was really the end of my work experience. I worked until I was 75 years old. After that it was just enjoying retirement, although during the summers I did some summer workshops for teachers in mathematics. I worked a couple weeks. There was a Kilgore College instructor who got grants for teacher training. Then she moved over to Corsicana, where I was living, and I continued working in the summer there in Corsicana. I did that until I left Texas. So I never sat down and had nothing to do.

**EL:** So you weren't very good at being retired?

**EBG:** No, no, no. I do not like sitting around. I'm retired now. After my husband passed, I came back to Washington and found an independent living facility. But I try to stay as busy as possible here.

**EL:** What are you involved with?

**EBG:** For two years I was president of the resident council. All the residents here belong to the resident council. Through the council, we can let the management know what we like or don't like. For two years I was the president and secretary. I finally talked someone else into running for president, and now I remain the secretary. I'm active

in the executive committee, the food committee, and the programming committee. On the programming committee, we suggest programs that the programming director might want to introduce, that we would like to see happen.

I do tutoring. I've tutored a couple of children of the staff and a couple of staff members, particularly the staff members who are going for different nursing degrees. I've done tutoring upon request.

Now the activities director has to go to a seminar, and she asked me to take over the exercise session occasionally. Now I'm scheduled to conduct the exercise class every other week. Whatever I can do to stay busy. We have a very dedicated group who loves Scrabble. That's an activity I enjoy because you have to use your brain. Anything that keeps me busy, I'll do.

Every day here there are activities. We have people who come and give lectures. There's always something going on. If I want to be involved in it, I can be.

**EL:** It reminds me a lot of my grandfather. He's been retired as long as I can remember, but retirement for him still meant taking on new jobs, working, even if it wasn't quite as much as before, and staying active. He just turned 90 in November.

**EBG:** That's right, tomorrow I'm hitting the big 9-0!

**EL:** Do you have any celebrations planned?

**EBG:** Not really. I have a very small family. My sister lives in Washington, and I live right on the outskirts of Washington, but she's housebound. I have a nephew who lives in New York City. We were going to go out to dinner on Saturday with my sister and her three caregivers. But we decided to put off the celebration until my nephew comes down later. Two of my main Scrabble buddies here wanted to take me out to lunch, but we'll wait until the weather clears up. Nothing big.

I've never made much over birthdays. I'm just happy to be here. Happy to be in the land of the living, or as one of our residents says, "I got up this morning on the green side of the dirt." I'm happy to get up every morning on the green side of the dirt.

**EL:** Did you have a favorite type of math to think about or talk about with students?

**EBG:** When I started at Cal State LA, I was doing the traditional things: calculus, real analysis, and functional analysis. But one year they appointed me to teach the class for math teachers at the elementary school level. That was when the "new math" was just blossoming. And I got very interested in the new math. I became familiar with the goals of new math, and I thought, "Wow, this is great." There was another instructor there who was assigned to teach this class as well, and we talked to each other about the topics. When one of my colleagues discovered we were very interested in this math class, he said, "How would you like to write a textbook for new math?" We said, "Sure, we'd

*continued on page 28*

be happy to try our hand at it.” Our first edition came out in ’75. We didn’t make a lot of money on it, but it was fairly successful. And I got promotions out of it. It was successful enough that we did a second edition in ’78. I have those two textbooks to my credit, but by then, new math had fallen into disfavor. The teachers in the elementary school were not prepared to teach the new concepts, so they resisted, and parents didn’t know what was going on. So new math kind of fell by the wayside, and we didn’t do any new editions. It probably stayed in publication maybe three years after that. But then sales dropped off.

While I was at Cal State LA, there was a program for college faculty to go into elementary schools to talk about mathematics. I worked with that program. Along with my teaching at Cal State LA, I would go to the schools to talk to children about mathematics. I did that for three or four years. That threw me more and more into math education. I became very interested in math education and workshops for teachers. Every summer I was somewhere doing a workshop for math teachers. So I guess I drifted from pure mathematics into math education. I’m probably known more for what I did in math education than for any other area of mathematics.

**EL:** Do you have any advice for young mathematicians?

**EBG:** Keep your nose to the grindstone, and never give up. Let’s say I’m in school or in a class and I have a problem to solve, and I just can’t get it. What should I do? The next day, I go back to it and have the answer. That has happened to me throughout my career. There’s something about that brain that keeps working. I wouldn’t purposely sleep on it, it would just happen. Don’t give up. If there’s something you don’t understand, don’t give up, go back to it.

Another thing, I’m always challenging myself. I have a friend Lee Graham, and we play Scrabble three times a week, and of course he always wins. We played Monday night. I won four games and he won two games. This has never happened before! Never, in the whole time we’ve been playing! He almost always wins all games. I’ve never outdone him! Last night we played again, Granville zero, Graham 6. I said, “Thank you, Lee. Thank you for Monday. That was a nice birthday gift. Now we’re back to normal.” He is great with words. Frankly, I play with him because it’s educational for me, even if I never win. He wins almost all the games, but I learn a lot. He worked for the state department, and he’s lived all around the world. He is really savvy as far as language and words. I don’t let it intimidate me at all. I learn from him. After he won all six games, he said “Evelyn, you’ve improved so much!” My goal is to keep this brain of mine intact. I hope my mind will stay intact until the day I die.

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MBI receives major funding from the National Science Foundation Division of Mathematical Sciences and is supported by The Ohio State University. Mathematical Biosciences Institute adheres to the AA/EEO guidelines.



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- Applicants need to provide a curriculum vita, a research statement, and three letters of recommendation. One letter should be from the department chair of the applicant's home institution; the chair's letter should approve of the proposed financial arrangements for the candidate's stay at MBI.

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Inquiries may be addressed to PMU Search Committee Chair, Department of Physics, University of California, One Shields Ave, Davis, CA 95616, or by e-mail to [pmusearch@ucdavis.edu](mailto:pmusearch@ucdavis.edu). Further information about the departments may be found on our websites at <http://www.physics.ucdavis.edu> and <https://www.math.ucdavis.edu>.

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**DARTMOUTH COLLEGE** — The Dartmouth College Department of Mathematics is pleased to announce a tenure-track opening for the academic year 2015-2016. There is a preference for a junior appointment, but appointment at higher rank, with tenure, is possible. The successful applicant will have a research profile with a concentration in applied or computational mathematics. Applicants should apply online at [www.mathjobs.org](http://www.mathjobs.org) – Position ID: APACM #6024. Applications received by **December 15, 2014** will receive first consideration. For more information about this position, please visit our website: <http://www.math.dartmouth.edu/activities/recruiting/>. Dartmouth is committed to diversity and encourages applications from women and minorities.

**INSTITUTE FOR ADVANCED STUDY — School of Mathematics, Princeton, NJ** — The School of Mathematics at the Institute for Advanced Study has a limited number of memberships with financial support for research during the 2015-16 academic year. The School frequently sponsors special programs. However these programs comprise no more than one-third of the membership so that each year a wide range of mathematics is supported. Candidates must give evidence of ability in research comparable at least with that expected for the Ph.D. degree, but otherwise can be at any career stage. Successful candidates will be free to devote themselves full time to research. About half our members will be post-doctoral researchers within 5 years of their Ph.D. We expect to offer some two-year post-doctoral positions.

Up to eight von Neumann Fellowships will be available for each academic year. To be eligible for the von Neumann Fellowship, applicants should be at least five, but no more than fifteen years following the receipt of their Ph.D. The Veblen Research Instructorship is a three-year position in partnership with the Department of Mathematics at Princeton University. Three-year instructorships will be offered each year to candidates in pure and applied mathematics who have received their Ph.D. within the last three years. Usually the first and third year of the instructorship will be spent at Princeton University and will carry regular teaching responsibilities. The second year is spent at the Institute and dedicated to independent research of the instructor's choice. Candidates interested in a Veblen Instructorship position may apply directly at the IAS website <https://applications.ias.edu> or they may apply through MathJobs. If they apply at MathJobs, they must also complete the application form at <https://applications.ias.edu> but do not need to submit a second set of reference letters. Those with questions about the application procedure can email [applications@math.ias.edu](mailto:applications@math.ias.edu). In addition, there are also two-year post-doctoral positions in computer science and discrete mathematics offered jointly with the following institutions: The Department of Computer Science at Princeton University, <http://www.cs.princeton.edu>, DIMACS at Rutgers, The State University of New Jersey, <http://www.dimacs.rutgers.edu> or the Intractability Center, <http://intractability.princeton.edu>. Candidates must apply to both the IAS and to the other institution indicating their interest in a joint appointment. School term dates for 2015-16 are: term I, Monday, September 21 to Friday, December 18, term II, Monday, January 11 to Friday, April 8, 2016. Please note that the School's term II begins and ends one week later than the rest of the Institute. During the 2015-16 academic year, the School will have a special program on Geometric Structures on 3-manifolds, and Ian Agol of the University of California, Berkeley, will be the Distinguished Visiting Professor. Thurston proposed the classification of geometric structures on  $n$ -manifolds. While the spectacular Geometrization Theorem classified the geometric structures on 3-manifolds with compact isotropy group, i.e. locally homogeneous Riemannian metrics, there is a cornucopia of other fascinating structures such as contact structures, foliations, conformally flat metrics and locally homogeneous (pseudo-) Riemannian metrics. The goal of this program is to investigate these other geometric structures on 3-manifolds and to discover connections between them. Additionally, it is important to forge connections between geometric structures on 3-manifolds and other geometric constructs such as gauge theory, PD (3) groups, minimal surfaces, cube complexes, geometric structures on bundles over 3-manifolds, and strengthened structures such as taut foliations, tight contact structures  $pA$  flows, convex projective structures and quasi-geodesic foliations. Many of these do not even have a conjectural classification (in terms of topological restrictions and moduli), and specific examples are still being constructed. The Institute for Advanced Study is committed to diversity and strongly encourages applications from women and minorities. Application deadline is **December 1**.

## ADVERTISEMENTS

**JOHNS HOPKINS UNIVERSITY — Department of Mathematics, Tenure-Track Assistant Professor** — The Department of Mathematics invites applications for a tenure-track Assistant Professor beginning July 1, 2015. A Ph.D. degree or its equivalent and demonstrated promise in research and commitment to teaching are required. The Department is seeking candidates in areas of pure mathematics that fit in with the existing areas of the department. To submit your application, go to [www.mathjobs.org/jobs/jhu](http://www.mathjobs.org/jobs/jhu). Submit the AMS cover sheet, your curriculum vitae, list of publications, and research and teaching statements, and ensure that at least four letters of recommendation, one of which addresses teaching, are submitted by the reference writers. If you are unable to apply online, you may send application materials to: Appointments Committee, Department of Mathematics, Johns Hopkins University, 404 Krieger Hall, Baltimore, MD 21218. If you have questions concerning this position, please write to [cpoole@jhu.edu](mailto:cpoole@jhu.edu). Preference will be given to applications received by **October 31, 2014**. The Johns Hopkins University is an Affirmative Action/Equal Opportunity Employer. Minorities and women candidates are encouraged to apply.

**JOHNS HOPKINS UNIVERSITY — Department of Mathematics** — The Department of Mathematics invites applications for tenured positions at the Associate and Full Professor levels beginning fall 2015 or later. The Department is seeking candidates in areas of pure mathematics that fit in with the existing areas of the department. Preference for the full Professor position will be given to candidates in analysis. Applications may be submitted online at [www.mathjobs.org/jobs/jhu](http://www.mathjobs.org/jobs/jhu) or mailed to: Appointments Committee, Department of Mathematics, Johns Hopkins University, 404 Krieger Hall, Baltimore, MD 21218. Submit a curriculum vitae, including a list of publications. The department will assume the responsibility of soliciting letters of evaluation and will provide evaluators with a summary of policies on confidentiality of letters. If you have questions concerning these positions, please write to [cpoole@jhu.edu](mailto:cpoole@jhu.edu). Applications received by **October 15, 2014**, will be given priority. The Johns Hopkins University is an Affirmative Action/Equal Opportunity Employer. Minorities and women candidates are encouraged to apply.

**NORTHWESTERN UNIVERSITY — Tenure and Tenure-track Positions** — Applications are invited for Tenured and Tenure-track positions starting in September 2015. Priority will be given to exceptionally promising research mathematicians. We invite applications from qualified mathematicians in all fields. Applications should be made electronically at [www.mathjobs.org](http://www.mathjobs.org) and should include (1) the American Mathematical Society Cover Sheet for Academic Employment, (2) a curriculum vitae, (3) a research statement, and (4) four letters of recommendation, one of which discusses the candidate's teaching qualifications. Inquiries may be sent to: [tenure@math.northwestern.edu](mailto:tenure@math.northwestern.edu). The review process starts **November 1, 2014**; applications arriving after this date may also receive consideration. Northwestern University is committed to fostering a diverse faculty; women and minority candidates are especially encouraged to apply. AA/EOE.

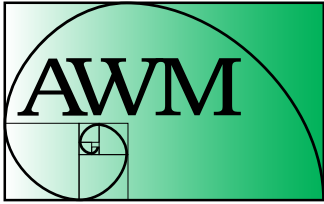
**NORTHWESTERN UNIVERSITY — Ralph Boas Assistant Professorships** — Northwestern University, Ralph Boas Assistant Professor Applications are invited for up to three Ralph Boas Assistant Professorships. These positions are three-year, full-time, non-tenure-track positions beginning September 2015, with a teaching load of four quarter courses per year. Applications are invited from qualified mathematicians in all fields. Candidates should have met all requirements for a Ph.D. by September 1, 2015. Applications should be made electronically at [www.mathjobs.org](http://www.mathjobs.org) and should include (1) the American Mathematical Society Cover Sheet for Academic Employment, (2) a curriculum vitae, (3) a research statement, and (4) four letters of recommendation, one of which discusses the candidate's teaching qualifications. Inquiries may be sent to: [boas@math.northwestern.edu](mailto:boas@math.northwestern.edu). The review process starts **December 1, 2014**; applications arriving after this date will also receive consideration. Northwestern University is committed to fostering a diverse faculty; women and minority candidates are especially encouraged to apply. AA/EOE.

**NORTHWESTERN UNIVERSITY — Lectureships** — Applications are solicited for a 3 year lectureship starting September 2015. This is a non-tenure track, full-time position with a teaching load of six quarter courses per year. We invite applications from qualified mathematicians in all fields and the primary criterion for selection is teaching excellence. Preference will be given to those candidates whose teaching and research interests are compatible with current faculty. Candidates should have met all requirements for a Ph.D. by September 1, 2015. Applications should be made electronically at [www.mathjobs.org](http://www.mathjobs.org) and should include (1) the American Mathematical Society Cover Sheet for Academic Employment, (2) a curriculum vitae, (3) a research statement, (4) a teaching statement, and (5) four letters of recommendation, one of which discusses the candidate's teaching qualifications. Inquiries may be sent to: [boas@math.northwestern.edu](mailto:boas@math.northwestern.edu).

**UNIVERSITY OF CALIFORNIA, IRVINE — Department of Mathematics** — Irvine, CA 92697-3875- Job #02483- Lecturer with Potential Security of Employment position in Mathematics. Applications are invited for a Lecturer with Potential Security of Employment position (LPSOE). The appointment will be effective July 1, 2015, or later. An excellent record of teaching and outreach activities and the Ph.D. degree are required. The LPSOE is a full-time faculty position designed for individuals who wish to focus their careers on teaching, professional and educational activities, and University and public service. These individuals are not evaluated on their research. LPSOEs are members of the University of California Academic Senate and have all the usual benefits of Senate membership, such as eligibility for UCI's attractive faculty housing programs, medical and retirement benefits. Within eight years (or less), LPSOEs are evaluated for promotion to Lecturer with Security of Employment (LSOE), which has the permanence of a tenured position. Specific duties include the development and implementation of new courses and curricula at the undergraduate level and leadership roles in undergraduate activities and advising, in community outreach activities and in improving instructional resources. It is expected that the Lecturer PSOE will be involved in the submission of grants, attend relevant professional meetings, review programs, submit journal articles, and serve as chair in symposia at professional meetings. Completed applications must be submitted electronically through MathJobs ([www.mathjobs.org](http://www.mathjobs.org), PositionID: LPSOE, Position Title: UCI - UCI - Lecturer PSOE.) and must contain: (1) AMS cover sheet (2) Curriculum vita (3) Cover letter (4) Teaching Statement (5) Selected reprints and/or preprints (6) Teaching evaluations (7) Three reference letters. Instructions for the electronic application process can be found at <http://www.mathjobs.org>. Applications are welcome at any time. The review process starts **November 1, 2014**, and will continue until the positions are filled. The University of California, Irvine is an Equal Opportunity/Affirmative Action Employer advancing inclusive excellence. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability, age, protected veteran status, or other protected categories covered by the UC nondiscrimination policy.

**UNIVERSITY OF NEBRASKA-LINCOLN** — The Department of Mathematics at the University of Nebraska-Lincoln invites applications for the following positions: (1) two tenure-track Assistant Professor positions in Algebra and Related Areas. Review of applications will begin **November 10, 2014** and continue until suitable candidates are found. (2) one or more anticipated postdoctoral positions. Review of applications will begin **December 1, 2014** and continue until a suitable candidate (or candidates) is found. Each of these positions begins August 2015. For more information about these positions and information on how to apply for them, please go to: <http://www.math.unl.edu/departments/jobs/>. The University of Nebraska is committed to a pluralistic campus community through affirmative action, equal opportunity, work-life balance and dual careers.

**AWM's 2014–2015 membership years begins October 1st.  
Renew your membership or join at [www.awm-math.org](http://www.awm-math.org).**



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