AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Newsletter

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The purpose of the Association for Women in Mathematics is

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

IN THIS ISSUE

PRESIDENT'S REPORT

As dark descends outside my window at 4:30 p.m., I am reminded (despite all my efforts to ignore it) that winter is here and the year is drawing to a close. With the year's end approaching, the end of my term as President of AWM is also on the horizon. I will pass the ceremonial Silver Bowl to the new AWM president, Kristin Lauter, at the Joint Mathematics Meetings (JMM) in January. Kristin brings to the role tremendous experience, energy, and enthusiasm, and I look forward to working with her (as Past President) next year.

Looking back over my two years as president, I am pleased that AWM has accomplished several goals set out by previous presidents and begun a few new initiatives. These include creating an AWM Advisory Board with representation from academia and industry, initiating a corporate sponsorship program, establishing several new AWM prizes, actively soliciting nominations for prizes given by other societies, and organizing two major research symposia as follow-ups to the AWM 40th Anniversary Conference. Other AWM programs continue to thrive and grow, including our very popular Essay Contest, our Student Chapters, and AWM booths at the biennial USA Science and Engineering Festivals in Washington, D.C. In addition, the redesign of AWM Workshops, begun during Georgia Benkart's presidency, to be more field-specific and more focused on building networks, has been highly successful and has led to plans for further involvement in encouraging and supporting research-based conferences for women.

All of this could not have come about without the efforts of an amazing cadre of volunteers who serve on AWM committees and help to run AWM programs. In this small space, I cannot list all of the people who have contributed to these efforts (the list of committee members on the AWM webpage is a good place to start), but let me express my tremendous gratitude to every one of you who have worked to make AWM activities a success over the past two years. Through your ideas and your efforts, you have made a real contribution to both the organization itself and to the future of women in the mathematical sciences.

In addition to volunteers, our hardworking staff play an essential role in our operations. My thanks go to Managing Director, Jennifer Lewis, and Membership and Program Coordinator, Matthew Hundley, for their oversight, planning, and attention to a multitude of administrative details. Most of all, my thanks go to Executive Director Magnhild Lien, on whom I have depended throughout for organizational structure, sensible advice, unerring calm, and an occasional laugh.

Service Awards. Two years ago AWM instituted annual Service Awards to recognize some of those who have helped to promote and support women in

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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 announce-ments are welcome.

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

Circulation: 3500.

PRESIDENT'S REPORT *continued from page 1*

mathematics through exceptional service to AWM. The awards are presented each January at the AWM Reception at the JMM. This year I am pleased to recognize four women for their exceptional and sustained work on AWM programs. The award winners are Irina Mitrea, Kathryn Leonard, Elebeoba (Chi-Chi) May, and Christina Sormani.

Irina took a leadership role over many years in AWM outreach activities for young girls, including AWM booths at the USA Science and Engineering Festivals and Sonia Kovalevsky Days. The other three awardees have been key organizers for AWM workshops and panels at the JMM and SIAM Annual Meetings for the past several years. More details about their contributions will appear in the next newsletter. Thank you Irina, Kathryn, Chi-Chi, and Christina for all you have done for AWM!

AMS Fellows. Congratulations to the class of 2015 Fellows of the American Mathematical Society! The new class, announced in November, included seven women out of a total of 63 Fellows. Nearly all of these have been actively involved in AWM in recent years. They include:

- Kristin Lauter, incoming AWM President, current member of the AWM Executive Committee
- Gordana Matic, member of the AWM Awards Committee
- Irina Mitrea, former member of the AWM Executive Committee, recipient of a 2015 AWM Service Award
- Andrea Nahmod, chair of the AWM Sadosky Prize Committee
- Brooke Shipley, organizer of the 2015 AWM JMM Workshop, member of the AWM Committee on Committees
- Christina Sormani, member of the AWM Meetings Committee, AWM panel organizer, recipient of a 2015 AWM Service Award
- Irena Lasiecka

I have occasionally wondered whether asking someone to get involved in AWM would help or hurt their career. (Women are often warned against devoting too much time to service activities.) I think we have the answer.

Nominations for 2016 AMS Fellows will open on February 1 and close on March 31. If you have suggestions for strong female candidates, I urge you to either contact a potential nominator, or send me the candidate's name and I will do so.

Upcoming Events. Two important AWM events are coming up soon. The first is the **2015 SIAM AWM Workshop** that will take place at the SIAM Conference on Computational Science and Engineering (CSE) in Salt Lake City, Utah, from March 14–18. The workshop, organized by FengYan Li (Rensselaer Polytechnic Institute) and Misun Min (Argonne National Laboratory), will feature two sessions of talks, an interactive panel discussion on career development, and a poster session.

The talks will focus on *Mathematical modeling and high-performance computing for multi-physics and multi-scale problems*. The poster session will include graduate students and recent PhDs in a wide range of fields. A prize will be awarded for the best poster. The workshop is supported by a grant from the NSF.

The biggest event of the year is the **AWM Research Symposium 2015**. This is the third in a series of biennial research conferences that began with the AWM 40th Anniversary Conference in 2011. The 2015 Symposium will be held at the University of Maryland on April 11–12. It is supported by grants from the NSA and Microsoft Research. NSF funding is pending. We hope to attract around 200 participants.

The Symposium will feature four distinguished plenary speakers, thirteen special sessions, two poster sessions, a networking event and a banquet. The special sessions span a wide range of topics in pure and applied math, as well as statistics and math education. The banquet will include the presentation of an AWM Presidential Award to Sylvia Bozeman and Rhonda Hughes, the founders the EDGE program. Started in 1998, the EDGE program has been uniquely successful in supporting women graduate students, especially those from minority groups. One of the special sessions will also feature work by EDGE participants.

The poster session is open to graduate students and recent PhDs in all areas of math. Applications for the poster session are currently being accepted through mathprograms.org: https://www.mathprograms.org/db/programs/320. For more information about the Symposium and how to register see https://sites.google.com/site/awmmath/home/awm-research-symposium-2015.

Year-End Fund Drive. Looking back over the 40-some years since I first ventured into the mathematics community, I can see definite changes in the environment as a whole and, in particular, in the way in which the community welcomes graduate students and recent PhD recipients. The plethora of conferences, workshops, student chapters, mentoring and other programs aimed explicitly at young people entering the field was non-existent 40 years ago. I believe that a significant catalyst for this change was the desire to encourage more women to enter the field and the creative efforts of a few established women to find the means for such a change. In the coming years, I hope to see similar efforts directed toward increasing the participation of underrepresented minority groups in the field, as well as towards increasing the participation of women. AWM can and will continue to be a catalyst for change in the community as a whole.

But to do so, we need your help. While various government agencies have been generous in supporting the participants of our programs, this funding does not begin to cover the infrastructure needed to run the organization and its many programs. We depend on memberships and donations for essential support. Only with your help can we maintain and expand our programs and develop new initiatives.

I am pleased to announce that once again this year a generous donor has offered to match up to $5,000 in donations received between December 1 and January 31. Even if you have already donated to AWM this year, please consider giving a little extra this holiday season. Every gift counts, and right now it counts double!

A Final Word. One of the duties of the President that I have enjoyed these past two years is writing the bimonthly reports for the newsletter. In addition to highlighting recent and upcoming events, it has given me the opportunity to

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

Institutional Membership Levels

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

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

Sponsorship Levels

α **Circle:** $5000+
β **Circle:** $2500–$4999
γ **Circle:** $1000–$2499

Corporate Sponsorship
See the AWM website for details.

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

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

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

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

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

share some thoughts on issues affecting women in mathematics. I will close this final report with the following brief reflection.

Forty years ago it was possible for women to succeed and thrive in mathematics. All they needed was to be fearless (I'm not going to worry about what's ahead), clueless (the fact that I'm a women makes no difference), and stubborn (I will do this no matter what). We should all thank AWM for putting out a welcome sign to the rest of the female population!

Happy Holidays, and don't forget to add AWM to your holiday gift list!

Ruth Charney
Waltham, MA
November 24, 2014

Ruth Charney

AWM Regional Conferences for Women

Kristin Lauter, AWM President-Elect

Recently AWM has devoted more energy and effort to supporting and launching research-oriented conferences for women. One format is Research Collaboration Conferences for Women, which are especially focused on creating networks of established researchers who will then enjoy the benefits of the network and pass them on to the younger generation. These topic-specific conferences typically run for a week at a math institute or research center and require extensive funding, planning, organization and time commitment from participants.

A different type of networking opportunity is provided by one-day research conferences held in a metropolitan area or region. They are substantially less expensive and easier to organize, run, and travel to. Building a local community for female mathematicians potentially reaches a wide swath of faculty and graduate students from many research areas and can help to connect with local industry and enhance prospects for research jobs for women. To facilitate the planning of such conferences, the Executive Committee of AWM has created a new position, **AWM Coordinator for Regional Conferences for Women**, who will also serve as a member of the Programs Committee/Portfolio of the AWM. We are delighted to announce that **Ami Radunskaya**, Professor at Pomona College and Co-Director for the EDGE Program, has agreed to serve as the first Coordinator for a three-year term beginning February 1, 2015.

ASSOCIATION FOR WOMEN IN MATHEMATICS

AWM ONLINE

The *AWM Newsletter* is freely available online.

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

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

AWM DEADLINES

AWM Research Symposium Poster Sessions: January 20, 2015

AWM Essay Contest: January 31, 2015

AWM Mentoring Travel Grants: February 1, 2015

AWM Travel Grants: February 1, 2015 and May 1, 2015

AWM-Sadosky Research Prize: February 15, 2015

AWM-Microsoft Research Prize: February 15, 2015

AWM Louise Hay Award: April 30, 2015

AWM M. Gweneth Humphreys Award: April 30, 2015

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Ami Radunskaya

WiMSoCal (Women in Math in Southern California) was launched six years ago by Ami with co-organizers Alissa Crans (Loyola Marymount University) and Cymra Haskell (University of Southern California). This successful series of annual conferences has helped to build community for female mathematicians locally in Southern California and has already been copied in San Diego (Twin WiMSoCal). Chicago has a series now (Midwest Women in Math Symposium: http://www3.nd.edu/~wims/), and another is currently in the planning stages in Montreal. We hope that many of you will be interested in helping to build on the successes engendered by the model of WiMSoCal.

Ami will be happy to help you with organizing one-day regional meetings in your area for women in mathematics, including faculty, researchers, and students. These meetings are relatively easy to organize once you put together a list of female faculty in the mathematical sciences in your region. Host institutions can often be asked to provide a minimal amount of funding for the day to cover coffee breaks, lunch, or a reception. AWM Student Chapters can help to co-organize, and faculty can encourage their students to attend and speak. Ami's facilitation of these conferences will include:

- Collecting information and dates for all regional conferences for listing on the AWM website
- Contacting organizers to assure "in cooperation with AWM" status
- Providing information about AWM and other AWM activities to the conference organizers
- Helping organizers get started with links and materials from past conferences
- Helping connect Regional Conferences with local industry, especially AWM Corporate Sponsors, to recruit industry speakers or facilitate employment opportunities

So please contact Ami at aer04747@pomona.edu if you might be interested in organizing such a conference in your area!

Twin WiMSoCal

Perla Myers, University of San Diego

The most recent example of these regional one-day conferences for women was the second annual Twin WiMSoCal, a one-day symposium for Women in Mathematics in Southern California, held at the University of San Diego on Sunday, May 4, 2014.

Some of the conference co-organizers relaxing at the reception: Amber Puha, Kristin Lauter, Perla Myers, and Magnhild Lien

Mathematics undergraduate and graduate students, postdocs, and mathematicians working in both industry and academia gathered to learn about each other's research, network with other local female mathematicians and discuss issues related to being women in mathematics.

The event included plenary talks by Jocelyne Bruand and Joanna Bieri, a careers panel, small group discussions, special sessions of short talks by many of the attendees, and plenty of opportunities to network and spark future collaborations. The panel discussion had a heavy focus on jobs in industry and featured Karen Acquista (Institute for Defense Analyses),

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Conference participants with Ruth Williams (center)

Jocelyne Bruand (Illumina), Kristin Lauter (Microsoft Research), and Ruth Williams (UCSD).

WiMSoCal has been held in cooperation with AWM annually in Los Angeles for the past six years and had its first meeting in San Diego last year. This year's conference was organized by Magnhild Lien (Cal State, Northridge), Amber Puha (Cal State, San Marcos), Kristin Lauter, Alina Bucur (UCSD), Cymra Haskell (USC), and Perla Myers (USD) and sponsored by Microsoft Research, UCSD, and USD.

ICWM 2014

Kristin Lauter, AWM President-Elect

The International Congress of Women Mathematicians (ICWM) was held in conjunction with the International Congress of Mathematicians (ICM) in Seoul, Korea, and was hosted at Ewha Womans University on August 12 and as part of the ICM activities on August 14, 2014. ICWM, held every four years, is an opportunity for women mathematicians from around the globe to come together to celebrate accomplishments, share experiences, and plan future initiatives on behalf of women in mathematics.

ICWM 2014 was sponsored and organized by the Korean Women in Mathematical Sciences (KWMS) with assistance from the International Mathematical Union (IMU). It was run by an impressive Organizing Committee, chaired by Sunsook Noh from Ewha Womans University, and a core of many dedicated student volunteers, highly visible in yellow shirts to help direct and assist participants. KWMS provided 100 travel grants (Together Project) to women participants of ICWM and ICM, especially from developing countries. The Together Project was coordinated with ICM's NANUM Project, which provided travel grants for 1000 ICM attendees.

Day 1 (Ewha Womans University): Plenary lectures on the first day in the Ewha-Samsung Hall were pre-

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. First presented in 2014, the prize will be awarded every other year. 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. 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.

ceded by introductions and welcoming remarks from IMU President Ingrid Daubechies, Organizing Committee Chair Sunsook Noh, and KWMS President Pyung-Lyun Kang. The Plenary Lecturers were selected and introduced by an international Program Committee including two former AWM Presidents, Barbara Keyfitz (Chair) and Carol Wood; the first female Fields Medalist, Maryam Mirzakhani; and an IMU Vice President, Christiane Rousseau. The lectures represented many areas of mathematics and regions of the world:

- Donna Testerman (EPFL, Switzerland)
- Hee Oh (Yale University, USA)
- Gabriella Tarantello (University Rome Tor Vergata, Italy)
- Laura Demarco (Northwestern University, USA)
- Motoko Kotani (Tohoku University, Japan)
- Isabel Dotti (National University of Cordoba, Argentina)
- Jaya Iyer (Institute of Mathematical Sciences, India)

Spending the first day of the conference at the historic Ewha Womans University in the northern part of Seoul was a bonding experience for participants, starting with the morning bus ride from the convention center to Ewha. The day ended with a Korean traditional dance and percussion performance outside the student center, followed by another bus ride back to the convention center to join the Welcoming Reception for the ICM. Ewha was founded in 1886 and is the largest women's university in the world. There was little time during the day to see the stunning Ewha campus, but plenty of time to enjoy the company of women mathematicians from around the world.

Lunchtime included a lively poster session and a stimulating international panel discussion, "Mathematics and Women: Different Regions, Similar Struggles." Barbara Keyfitz was moderator, while the panelists were Shihoko Ishii (Japan), Soon-Yi Kang (Korea), Marie-Françoise Ouedraogo (Burkina Faso), Maria Ines Icaza Perez (Chile), Marie-Françoise Roy (France), and Dongmei Xiao (China). After the formal presentations from the panelists, many women from the audience stood up to speak about their goals, struggles, and successes in their own countries. It was an inspiring show of solidarity and strength in the face of adversity.

Emily Noether bronze plaquette

ICWM participants

At the same time, a Mosaic Designs workshop was conducted by Reza Sarhangi, an interactive lesson in the fascinating geometry behind many stunning mosaics to be seen in temples in Korea, Persia, and elsewhere. This workshop was especially valuable for participants travelling with their children to the workshop. I know my daughters were fascinated not only by the geometric mosaics, but to see women mathematicians from around the world in full traditional garb explain their posters, and they were proud to bring their Korean friends to a workshop celebrating the intellectual achievements of women.

Day 2 (At the ICM): Day 2 ICWM activities began in the afternoon on August 14, including an exhibition of posters and an awards ceremony for the best posters at the conference. Poster judging and the awards ceremony were led by Sunsook Noh, Pyung-Lyun Kang, and former AWM President Sylvia Wiegand. This was followed by the last two Plenary Lectures and an ICWM Special Lecture by Ingrid Daubechies, who explained some of the deep mathematics currently being applied to problems in the art world related to the restoration and study of master works of art.

ICWM participants joined other ICM participants in the main convention auditorium for the ICM Emmy Noether Lecture by former AWM President Georgia Benkart. Georgia delivered a beautiful lecture to a packed audience of appreciative listeners. ICM 2014 was the first time that the

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ICWM 2014 *continued from page 7*

ICM Emmy Noether Lecture was delivered as a permanent fixture of the ICM; making it so was accomplished in large part due to Ingrid Daubechies during her presidency of the IMU. AWM and EWM played significant roles in establishing this lectureship. Ingrid introduced Georgia's lecture and presented her with a plaquette designed by Stephanie Magdziak. As Ingrid had said earlier: "At the ICM 2014, we will inaugurate the tradition of giving the ICM Emmy Noether Lecturer a small bronze plaquette commemorating the event. (We will send such plaquettes, depicting a beautiful portrait of Emmy Noether, to past ICM Emmy Noether Lecturers as well.)"

ICWM Banquet and Networking Event. Finally, the social program concluded with a fabulous banquet with many pre-dinner speeches from the organizers and the Advisory Committee members. The program celebrated the Together Project and introduced sister organizations worldwide: KWMS, AWM, EWM (European Women in Mathematics), and the recently launched AWMA (African Women in Mathematics Association). The president or representative for each organization spoke briefly, including KWMS President Pyung-Lyun Kang, AWM President Ruth Charney, Marie-Françoise Roy (EWM), and AWMA President Marie-Françoise Ouedraogo. Former AWM President Jill Pipher and IMU President Ingrid Daubechies also spoke, celebrating the launch of a new IMU website, WiM (Women in Mathematics), and a new IMU Committee on Women, charged with promoting international contacts between national and regional organizations for women in mathematics. Ingrid was the driving force behind both these ventures. On a related note, AWM has an affiliate membership agreement with KWMS in place and plans to work towards similar agreements with the other organizations. A highlight of the evening began with a charming plea from AWMA President Marie-Françoise Ouedraogo during her speech that she could express herself better in French, at which point Ingrid jumped up and offered to do simultaneous translation into English, which went flawlessly. Of course the banquet also provided an opportunity to celebrate the first time that the Fields Medal was ever awarded to a woman!

The ICWM website http://www.icwm2014.org/ has an extensive slide-show of images from the event. What an inspiring event and experience! Thanks to KWMS for hosting and organizing ICWM and congratulations on the 10-year anniversary for KWMS!

CALL FOR NOMINATIONS

2016 M. Gweneth Humphreys Award

The Executive Committee of the Association for Women in Mathematics has established a prize in memory of M. Gweneth Humphreys to recognize outstanding mentorship activities. This prize will be awarded annually to a mathematics teacher (female or male) who has encouraged female undergraduate students to pursue mathematical careers and/or the study of mathematics at the graduate level. The recipient will receive a cash prize and honorary plaque and will be featured in an article in the AWM newsletter. The award is open to all regardless of nationality and citizenship. Nominees must be living at the time of their nomination.

The award is named for M. Gweneth Humphreys (1911–2006). Professor Humphreys graduated with honors in mathematics from the University of British Columbia in 1932, earning the prestigious Governor General's Gold Medal at graduation. After receiving her master's degree from Smith College in 1933, Humphreys earned her PhD at age 23 from the University of Chicago in 1935. She taught mathematics to women for her entire career, first at Mount St. Scholastica College, then for several years at Sophie Newcomb College, and finally for over thirty years at Randolph-Macon Woman's College. This award, funded by contributions from her former students and colleagues at Randolph-Macon Woman's College, recognizes her commitment to and her profound influence on undergraduate students of mathematics.

The nomination documents should include: a nomination cover sheet (available at awm@awm-math.org); a letter of nomination explaining why the nominee qualifies for the award; the nominee's vita; a list of female students mentored by the nominee during their undergraduate years, with a brief account of their post-baccalaureate mathematical careers and/or graduate study in the mathematical sciences; and supporting letters from colleagues and/or students. At least one letter from a current or former student of the candidate must be included.

Nomination materials for the Humphreys Award shall be submitted online. See the AWM website at www.awm-math.org for nomination instructions. Nominations must be received by **April 30, 2015** and will be kept active for three years at the request of the nominator. For more information, phone (703) 934-0163, email awm@awm-math.org or visit www.awm-math.org/humphreysaward.html.

AWM Research Symposium 2015
University of Maryland College Park
April 11 – 12, 2015

- **ORGANIZERS:**
  Ruth Charney, Brandeis University
  Shelly Harvey, Rice University
  Kristin Lauter, Microsoft Research
  Gail Letzter, National Security Agency
  Magnhild Lien, California State University Northridge
  Konstantina Trivisa, University of Maryland

- **PLENARY SPEAKERS:**
  Maria Chudnovsky, Columbia University
  Ingrid Daubechies, Duke University
  Jill Pipher, Brown University
  Katrin Wehrheim, UC Berkeley

- **SPECIAL SESSIONS on a wide-range of topics in pure and applied mathematics, statistics and mathematics education:**
  Research from the ''Cutting EDGE"; Many Facets of Probability; Topics in Computational Topology and Geometry; Low-dimensional Topology; Number Theory; Mathematics at Government Labs and Centers; Graph Theory and Combinatorial Optimization; Symplectic Topology/Geometry; Harmonic Analysis, Signal Processing and Compressive Sensing; Algebraic Geometry; Mathematics Education; Statistics; PDEs in Continuum Mechanics

- **POSTER SESSIONS for early career mathematicians:**
  application deadline: January 20, 2015
  https://www.mathprograms.org/db/programs/320

- **NETWORKING EVENT**

- **BANQUET**

For details on registration, housing, and the special sessions visit
https://sites.google.com/site/awmmath/home/awm-research-symposium-2015

Many thanks to our sponsors and funders:

NSF funding is expected but pending

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.

Ceci and Williams Are At It Again

Sarah J. Greenwald

Remember the 2011 "Understanding Current Causes of Women's Underrepresentation in Science" [2], which was critiqued by many, including former AWM President Cathy Kessel and current AWM Executive Committee member and Policy and Advocacy Committee chair Marie A. Vitulli [5]?

As of the date that I am writing this, it has been a week since Stephen Ceci and Wendy Williams published an op-ed in the *New York Times* called "Academic Science Isn't Sexist" [7], which references their latest research paper [1]. Responses have included irate blog posts such as [3] and [8]. Because it was published on October 31, 2014, there is even a question on the social network service Storify asking if the article was a Halloween joke [4] (it isn't).

From the perspective of the *AWM Newsletter* Media Column, I found it especially interesting that Williams' website states: "My key recent outreach effort has been the creation of a video series with accompanying educational modules, designed to both inform and inspire girls and women in science as well as their teachers, parents, and the administrators who run programs for them. (See www.ciws.cornell.edu.)" [6]. The aforementioned site contains an NIH-Funded Video Series at the Cornell Institute for Women in Science, which Williams founded and directs. The video at the top of the page advertises this latest article.

They are certainly trying to get their message out in numerous media formats. What are your thoughts on all this? Let us know (greenwaldsj@appstate.edu).

Endnotes:

[1] Ceci, Stephen J., Donna K. Ginther, Shulamit Kahn and Wendy M. Williams. "Women in Academic Science: A Changing Landscape." Psychological Science in the Public Interest. 15(3), pp. 75–141, 2014. http://www.psychologicalscience.org/pdf/Women-Academic-Science.pdf

[2] Ceci, Stephen J. and Wendy M. Williams. "Understanding Current Causes of Women's Underrepresentation in Science." Proceedings of the National Academy of Sciences of the United States of America 108(8), pp. 3157–3162, 2010. http://www.pnas.org/content/108/8/3157.short

[3] Eisen, Jonathan. "The flawed and offensive logic of 'Academic Science Isn't Sexist' in the @nytimes." October 31, 2014. http://phylogenomics.blogspot.com/2014/10/the-flawed-and-offensive-logic-of.html

[4] @JedidahIslerPhD. 5:48 PM – 31 Oct 2014. https://storify.com/MinorityPostdoc/stillaproblem/elements/2f4515b622f88e011c3d754c

[5] Kessel, Cathy and Marie A. Vitulli. Critique of "Understanding Current Causes of Women's Underrepresentation in Science." 2011. https://sites.google.com/site/awmmath/awm-resources/policy-and-advocacy/critique-of-understanding-current-causes-of-women-s-underrepresentation-in-science

[6] Williams, Wendy. Bio page. http://www.human.cornell.edu/bio.cfm?netid=wmw5

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ASSOCIATION FOR WOMEN IN MATHEMATICS

CALL FOR SUGGESTIONS

In December 2015 we will be electing the following officers: President-Elect, Treasurer and four At-Large Members. Suggestions for candidates may be made to Kristin Lauter or Ruth Charney by **February 15, 2015**; they will pass them along to the Nominating Committee. Your input will be appreciated!

Letter to the Editors

Hi all,

Thank you, Ursula, for telling us about *Mass Effect 3* in your article "Women in STEM on a Spaceship" (September–October 2014). I've never played computer games but felt I ought to learn as I am volunteering—teaching programming to children for Code Club. I'm really enjoying learning *Mass Effect 3* and at last have found a game that interests me.

Code Club is a UK project where volunteers go into primary schools (grade 4 to grade 6, in the USA, I think) for one hour per week to teach computer programming, initially using the language Scratch, to teach the basics via writing games and producing computer art work. It's really taken off and there are now around 2000 clubs in the UK.

Incidentally, I looked through Wikipedia and found a section called "Video games featuring protagonists of selectable gender," so maybe we can find more games with female characters there. It's great expanding the playing of computer games away from the stereotypical male player. Also, the fact that all my programming groups so far have had just about half girls and half boys makes me very optimistic for the future of women in the computer industry. To find out about Code Club and Scratch visit:

www.codeclub.org.uk Twitter: @CodeClub
http://scratch.mit.edu/

Anne Carlill, Leeds, UK

EDUCATION COLUMN

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

Situated Studies of Teaching and Learning: The New Mainstream

Jackie Dewar, Professor Emerita, Loyola Marymount University, Los Angeles, CA

I have previously written about the scholarship of teaching and learning (SoTL) in this column.[1] This time my title is taken from the keynote address at the 2013 ISSOTL (International Society for the Scholarship of Teaching and Learning) Conference, given by Dr. Lee Shulman, President Emeritus of the Carnegie Foundation. *What should count as real research? In higher education, should situated studies be devalued relative to experimental studies with random assignment treatment and control groups?* These are the questions Dr. Shulman examined in his talk. Here I will summarize a few of the points he made and provide some of the references he gave. His entire keynote is available on YouTube at http://www.youtube.com/watch?v=bhvwLW-5zMM.

Shulman argued that the importance of situated studies—the type frequently used in SoTL or "classroom

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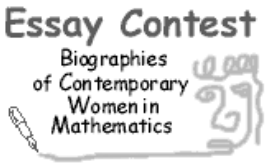
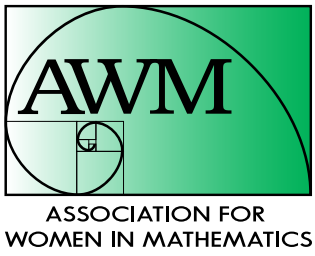


To increase awareness of women's ongoing contributions to the mathematical sciences, the Association for Women in Mathematics holds an essay contest for biographies of contemporary women mathematicians and statisticians in academic, industrial, and government careers. AWM is pleased to announce that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

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 or see the contest web page: 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.)



research"—should not be diminished, as it is no minor accomplishment to "know a small part of the world as it really is." He discussed at some length the idea that in social science and education "generalizations decay over time" because the context changes; this includes the students, the standards, the fields or professions, the way we access information, etc. To emphasize the importance of contexts,[2] using as an example a study of how working at a messy desk is associated with being more creative, he presented a critique, with both humorous and serious elements, of how general conclusions are drawn in some scientific studies[3] and how they are reported in the press.[4]

He reminded those present at the ISSOTL conference that, in 1980, Lee Cronbach (the educational psychologist) told his colleagues that results of empirical studies in social science can rarely, if ever, "identify 'right' courses of action."[5] He even cited problems with clinical trials in medicine.[6] Shulman also described how the key to successfully predicting navigational paths that would avoid German U-boats in WWII involved collecting precise and detailed data and then engaging in a "dialog" between the particularity of the data and the general models they had, not just applying the models. In this and other comments he acknowledged a place for general theories and conclusions in SoTL work, noting that general principles obtained from experimental studies can orient the researcher to new ideas and prompt new questions.

What advice did he offer SoTL investigators? "Do not look for generalizations. Try to figure out what to do tomorrow because it matters." He also urged them to publish more SoTL studies that "modestly report their particularities, their conditions, and their outcomes."

I hope some of these ideas or references will be of interest to readers of the Education Column, or perhaps

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 or 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.

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

I have intrigued you enough to listen to Shulman himself on YouTube.

Endnotes:

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6. Leaf, Clifton. (2013, July 13). So Clinical Trials Work? *New York Times*. Available at http://www.nytimes.com/2013/07/14/opinion/sunday/do-clinical-trials-work.html?pagewanted=1&_r=1&src=recg

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**.

BOOK REVIEW

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

From Eve to Evolution: Darwin, Science, and Women's Rights in Gilded Age America, Kimberly A. Hamlin. The University of Chicago Press, 2014, ISBN 978-0-226-13461-1.

Reviewer: Marge Bayer

First a disclaimer: I am not familiar with contemporary or modern critiques of Darwin's work, so I am not the best person to write a review of this book. However, I found it fascinating and want to share a number of ideas from this book.

Let me start with a quote that sets up the author's position: "Evolutionary science was an unlikely and unwitting ally in the struggle for women's rights." [p. 17] Charles Darwin was not the first naturalist to develop a theory of evolution. In fact, as he started to write up his theory of natural selection as the mechanism of evolution, he discovered that Alfred Russel Wallace was on the same track; they presented two joint papers to the Linnean Society of London in 1858. The following year, Darwin published *On the Origin of Species*. Twelve years later appeared his book *The Descent of Man, and Selection in Relation to Sex.*

At that time in the US, women (when their economic situation allowed it) were expected to devote themselves to family and household, with no professional roles outside the home. According to Hamlin, the prevailing justification for this rested on the story of Adam and Eve. Woman was created from Adam's rib and had caused the fall of humans. She was therefore subordinate and unworthy. "Thy desire shall be to thy husband, and he shall rule over thee." [*King James Bible*] Darwin's theory of evolution, to start with, provided a serious challenge to the literal interpretation of the Christian Bible, thus giving women an opening to challenge cultural norms. Charlotte Perkins Gilman, feminist and social reformer, wrote in 1912 that she had been drawn to the theory of evolution because it refuted the story of Adam and Eve. [p. 121] Indeed, many in the Christian establishment recognized the threat of Darwin's theory. One response was an attempt to introduce a constitutional amendment to declare the US a Christian country.

Of course, the theory of evolution was not necessary in order to question the moral of the Adam and Eve story. In 1790 Judith Sargent Murray suggested that Eve was the stronger character in Eden, because she was motivated by intellectual thirst and was duped by the serpent only with great cunning, while Adam gave in as soon as Eve invited him to share the apple. Decades later, Catherine Waugh McCulloch argued that the theory of evolution showed that life forms become more complex as time passes; since Eve came after Adam, woman is imbued with higher qualities than man.

Darwin's writings do not show him to be a feminist. In *The Descent of Man*, he argued that male competition for female mates contributed to men's greater size and strength and to their more complex skills. I am not sure how that was consistent with Darwin's understanding of evolution

CALL FOR NOMINATIONS

2016 Louise Hay Award

The Executive Committee of the Association for Women in Mathematics has established the Louise Hay Award for Contributions to Mathematics Education, to be awarded annually to a woman at the Joint Prize Session at the Joint Mathematics Meetings in January. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense. The annual presentation of this award is intended to highlight the importance of mathematics education and to evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being.

The nomination documents should include: a one to three page letter of nomination highlighting the exceptional contributions of the candidate to be recognized, a curriculum vitae of the candidate not to exceed three pages, and three letters supporting the nomination. It is strongly recommended that the letters represent a range of constituents affected by the nominee's work. Nomination materials for the Hay Award shall be submitted online. See the AWM website at www.awm-math.org for nomination instructions. Nominations must be received by **April 30, 2015** and will be kept active for three years. For more information, phone (703) 934-0163, email awm@awm-math.org or visit www.awm-math.org.

and genetics. Presumably, as men evolve to have greater intellectual capacity, this would be passed on to female offspring as well as male. Apparently, Darwin and others considered intelligence a secondary sex characteristic. They felt that women's lives should be organized around their primary function: reproduction.

From Eve to Evolution discusses several influential women and the influence of evolutionary theory on their feminist ideas. Antoinette Brown Blackwell was the first woman to be ordained as a minister in a mainstream church in the US, in 1853. Her career as a minister was short-lived. She kept her faith throughout her life, but she moved away from literal interpretations of the Bible as she joined in both scientific study and the women's rights movements. In 1875 she published *The Sexes throughout Nature*, a critique of *The Descent of Man*. Blackwell looked at varying domestic divisions of labor in different animal species and found no analogue of women's exclusion from productive labor in the animal kingdom. Through human evolution, women had attained a level of development that was suppressed by confining her to household activities. Blackwell believed that men's and women's activities, both inside and outside the home, should converge to promote evolutionary progress. She argued that the closer men's and women's pursuits were, the more children they would have and the stronger those children would be.

Charlotte Perkins Gilman, in her book *Women and Economics* (1898), advocated financial self-sufficiency of women and argued that independent women made the best mothers. She referred explicitly to the theory of evolution, saying that "natural selection served as a check against excessive sexual distinction." [p. 116] Like Blackwell, she looked at parental practices and labor divisions in other species and found no justification for the limitations put on women. She advocated professionalizing domestic labor; she proposed a model of groups of families living in an apartment building and hiring staff to do the cooking, cleaning and child-care. Of course, in practice this would mean lower-class women would perform these tasks; the liberation from domestic work would only be for educated women from privileged backgrounds.

One theme of Darwin's *The Descent of Man* was the female choice of mates in the animal kingdom. Based largely on examples from bird species, Darwin described the mechanism of sexual choice: males competed, using ornamentation, strength and vigor, for access to females. Darwin believed that the model of female choice also existed among primitive humans, but that men had eventually wrested this control from women. When women were dependent on men for the basic necessities of life, they had little control in the mating process. Furthermore, Darwin suggested that men came to overvalue beauty and undervalue health and strength in choosing mates. While this theory was apparently rejected by many scientists, some feminist, moralist, and socialist reformers looked to female choice as a remedy

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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. First presented in 2014, the prize will be awarded every other year. 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.

for various societal ills. The 1888 utopian novel, *Looking Backward*, by Edward Bellamy, addressed sexual selection explicitly. In the imagined society of the year 2000, economic dependence of women on men was gone, and women no longer needed to accept men they didn't want. Women were as likely to initiate romantic relationships as men.

According to Hamlin, the birth control movement in the US also owed something to evolutionary theory and the incorporation of its ideas in feminist thought. "By refuting the idea that women had been cursed by God to suffer in maternity, Darwin also opened up new discussions about reproduction, motherhood and female domesticity." [p. 169] Darwin himself opposed birth control, for fear that it would weaken family structure. Margaret Sanger spent a year (1914–15) in England while evading imprisonment for violating obscenity laws with her writing about sexual health and birth control. There she was influenced by C.V. Drysdale and the Neo-Malthusian League, and by Havelock Ellis, author of a four volume collection, *Studies in the Psychology of Sex* (1896–1928). (Volume 4 was devoted to the study of sexual selection.) One theme of the Neo-Malthusians was that evolutionary progress would depend on the rate of infant survival and the quality of the offspring, which in turn depend on both the health and the economic well-being of the mother. Thus, women's economic independence and women's reproductive autonomy, basic goals of the birth control movement, would contribute to human progress.

The participants in the debates about evolution and women's roles were white and economically secure, if not privileged. Evolutionary theory was certainly used to argue for white superiority, just as it was used to justify the repression of women. Some women's rights advocates were guilty of racial blindness or even racism. Some suffragists advocated the vote for educated women, which excluded many blacks and immigrants. Hamlin acknowledges a range of racial views among the Darwinian feminists, but, considering the historical context, concludes that the main weakness of these thinkers was their blindness to their own racial and class privilege.

While opponents of feminism used evolutionary theory to conclude that female inferiority was biologically determined, and hence unavoidable, the ultimate influence of evolutionary theory was progressive. The power of religion in general, and of the literal interpretation of the Bible in particular, decreased as the influence of science on American culture increased. Those working to expand women's roles in the political and economic spheres successfully incorporated ideas from evolutionary theory in their campaigns.

In 2007 we reviewed *To Talk of Many Things: An Autobiography*, by Dame Kathleen Ollerenshaw. I am sad to note the passing of Dame Ollerenshaw, on August 10, 2014, at the age of 101. She was a great inspiration to many women in mathematics, science, and education.

AWM Research Symposium 2015—Poster Sessions

AWM invites early career women to give poster presentations at the AWM Research Symposium 2015 at the University of Maryland, College Park, April 11–12, 2015. This meeting will also feature four plenary talks, thirteen special sessions on a wide range of topics in pure and applied mathematics, a banquet, and opportunities for discussion and networking.

Twenty women will be selected to present posters. AWM has received partial funding from NSA, with additional funding pending, and hopes to be able to offer partial support for expenses for poster presenters. Applications are welcome from women who have received their PhDs within approximately the last three years and from graduate students who have made substantial progress on their doctoral thesis. All such applications should include a cover letter, a title and brief abstract (no more than one or two paragraphs) of the proposed poster, a curriculum vitae, and a *brief* letter of recommendation from a faculty member or research mathematician who knows the applicant's research. In particular, graduate students should have a letter of recommendation from their thesis adviser. Applications should be submitted at https://www.mathprograms.org/db/programs/320 by **January 20, 2015**. Late applications and/or recommendation letters cannot be accepted. Decisions on applications are expected to be made by February 15, 2015.

Women in Mathematics Badge (Yes, an Actual Badge!) for Girl Scouts

Sarah J. Greenwald, Amber L. Mellon and Jill E. Thomley, Appalachian State University

The Girl Scouts of America program provides girls with the opportunity to learn many important life skills, as well as explore a variety of real-world topics. In 2012, the Girl Scout Research Institute released a report about girls in science, technology, engineering, and mathematics (STEM) fields, based on a survey of Girl Scout members. They concluded that girls are interested in STEM topics and that many of them would like to pursue STEM careers, but in order to realize their goals, they need more exposure to what STEM careers may involve as well as adult support and role models [5]. As a result, Girl Scouts has an initiative to create and make available STEM badges at all levels of Girl Scouting, including encouraging leaders to "Create Your Own Badge" [1], which allows local troops to collaborate with experts in their geographic area to investigate topics for which specific badges do not yet exist.

There is no existing mathematics badge per se (a financial literacy badge is the closest), so we created our own Women in Mathematics badge. Sponsored by High Country Girl Scouts and the Mathematical Sciences Department at Appalachian State University, we also obtained "in cooperation with AWM" status. During a Sonia Kovalevsky type of day, girls in grades 6–9 interacted with women mathematicians and learned about their careers and experiences. Speakers included alumni from our university working in industry as well as faculty members. Participants also learned about AWM and Sonia Kovalevsky, and reflected and shared what they learned on the way to earning the badge pictured in the right-hand column.

The different images on our badge showcase the diversity of careers available for people who study mathematics. The die represents probability and statistics, the beakers connect to experimental research, the binary numbers symbolize computers and numerical analysis, and the earth is for research on the world around us. They were the most mathematical of the symbols available. We selected a green background and white lettering for the binary numbers as a nod to the color scheme of AWM, and to help the girls make that connection. Sadly the binary numbers did not show up as well on the physical version as they did in the online model (although they printed well enough on our program that the girls recognized what they were). Next time, we will increase the contrast. We thought it was cool that AWM's green and white color scheme was originally created to match the Equal Rights Amendment (ERA) colors, and we shared this with the girls.

The official colors of Girl Scouts are green (PMS 355), black, and white, furthering the connections. In fact, Girl Scouts encourages anyone building a Girl Scout item to "embrace green" [2]. Our earned badge will be placed on the girls' tunic, sash, or vest, the same as any other Girl Scout badge. Special badges are highly desired, so there is a collectability factor when other girls see this badge that they don't (yet) have.

Every Girl Scout earned badge has five steps. The five steps we created for ours were:

1. Learn about a woman who was not afraid to be a first in the field of mathematics
2. Learn about the Association for Women in Mathematics (AWM)
3. Reflect on experiences in mathematics
4. Learn about careers in mathematics
5. Share what you know

As is typical for badges, we presented our steps in a worksheet format, where each step has activities or goals with checkboxes to complete. See our website for our handouts [3]. For step 1, we focused on Sonia Kovalevsky. For step 2, we included the following checkboxes:

- ☐ What is AWM?
- ☐ Name two AWM mathematicians who were also Girl Scouts.
- ☐ What are two services that AWM provides?

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Did you know that AWM's own Newsletter Editor Anne Leggett and Executive Director Magnhild Lien were Girl Scouts? The girls do now, and we also shared information about Ruth Stauffer McKee (1910–1992), who was involved with Girl Scouts. She was a student of Emmy Noether and she worked for the Joint State Government Commission of the Commonwealth of Pennsylvania [4]. It was on a Girl Scout trip in 1953 that she discovered the job opening that would develop into her fascinating career. The Girl Scout leadership is interested in compiling a list of women mathematicians who were once Girl Scouts, so if you were a Girl Scout, please contact us (greenwaldsj@appstate.edu) and let us know so we can pass it on!

As part of Steps 3 and 4, the speakers shared stories about themselves (e.g., there were once two sisters, one who struggled with mathematics and the other who found it easy … they both ended up in mathematical careers!). We also focused on the diversity of careers in mathematics and the utility and applicability of mathematics in business, farming, the film industry and more. Each application or story related to a speaker. For example, one of our speakers was alumnus Ashley Cox, now a Market Research Analyst at North Carolina Electric Membership Corporation (NCEMC). We included a few interactive mathematical activities that connected to the presenters. One of the more engaging ones was the "Greenwaldian Theorem" on the sphere from *Futurama*, which was another green connection—the girls laughed when they saw the green blackboard with the theorem on it. Others included research questions that statistician Jill Thomley had encountered in her consulting work, and a financial mathematics activity connected to Amber Mellon's research.

"Greenwaldian Theorem" String Activity

Poster Making

With a little bit of support, you too can create your own event, and we would be happy for you to use our badge steps and design [3]. Working with the Girl Scouts has many advantages. For one, it is the largest organization for girls in the nation. The Girl Scout culture of completing these directed activities makes them a very receptive audience for Sonia Kovalevsky types of programs, and we found this invigorating. The girls are also used to paying a small fee for badge events and bringing their own lunches—we charged $6 for the day, most of which went directly to the cost of the badge. Our department provided a room as well as printing and photocopy support, and High Country Girl Scouts paid for the poster supplies and covered any overages. We the organizers split the cost of lunch for the speakers. Our wish list for the future includes a grant that would help us provide travel support and a stipend for the speakers, lunch for everyone and professionally printed pamphlets of the badge steps. However, we found that the program is quite doable without grant funding.

One unexpected problem was that only about half of our preregistered Girl Scouts attended the program. Saturday school requirements for a missed snow day (the hazards of

living in the mountains!) partially explained why we ended up with only seven girls. However, this was a perfect number for a first run of the event. The girls told us they enjoyed the day and we did too. We did have a lot of interest from younger girls for whom we didn't plan, so next October, we will add girls from grade 5 to the mix, since we'll be ready to test the program on a larger audience. What other changes will we make? We found that we have to be very careful about what we ask the girls to do. For instance they researched Sonia Kovalevsky on the web prior to the event, but we needed to be clearer that they should write down what they found and bring it with them.

Girl Scouts Getting to Know Ashley Cox

The requirements for our culminating step were for the girls to chat with one another and with at least one of the speakers, create a poster on what they had learned in the other steps and explore the other posters. Girl Scouts has an eye toward giving back, as with any other badge, so our event ended with the prompt "Now that I've earned this badge, I can give service by …" as well as: "I'm inspired to…." Because the girls have a physical reminder of the day in the form of the badge, we hope that this will help them continue to make mathematical connections in the future.

Thanks to Anne Leggett for helpful conversations.

Earned Badges (with Ashley Cox, Amber Mellon and Sarah Greenwald)

References and Further Readings

[1] Girl Scouts of America. https://www.girlscouts.org/program/basics/science/

[2] Girl Scouts of America. "Girl Scout Brand Cheat Sheet." http://www.girlscoutsgcnwi.org/media/forms/GS_GUIDELINES_poster_200210d.pdf

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MATHEMATICS, LIVE!

A Conversation with Amal Hamad and Rasha Osman

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.*

I had the pleasure of attending the 2nd annual Heidelberg Laureate forum in September. Modeled after the Lindau Nobel Laureate Meetings, it brings together recipients of prestigious awards in mathematics and computer science and young researchers in those areas. A focus of the meeting was the role of mathematics and computer science in the developing world, and I talked to two women there who are working on projects to improve education and technology in some difficult areas. Rasha Osman, who is from Sudan, has a PhD in computer science and is a Research Associate at Imperial College London. Amal Fahad, who is from Iraq, just defended her PhD in computer science at the University of Rochester. We talked about their educational backgrounds, the programs they're working on to help address the needs of their countries, and misconceptions many people, myself included, have about the developing world.

Evelyn Lamb: First off, how did you get interested in math and science and get encouraged (or not) to pursue it as a career?

Rasha Osman: My father is a computer scientist, so we'd do little science experiments. He wouldn't exactly say that this is what I should do, but we'd do little experiments, problem solving, and so on. Plus, in Sudan, the stereotype is that if you're smart, you go into engineering or medicine. To get into engineering and medicine, you have to do science. The smart students end up by default in the science classes, and the lower-level students end up in the humanities classes. You already knew, if you're smart, that's what you're supposed to be. You can't go to the humanities classes. If a smart student were to go to the humanities class, there'd be a problem. They'd call her parents in: "Why does she want to waste her life? She should be a doctor, she should be an engineer, be something!" It was already within the culture that if you're smart, you have to do science.

Amal Fahad: For me, it was kind of similar. I have eight siblings, and I'm the youngest. In Iraq, just like in most of the developing regions, the last year of high school, you do a test. Based on the results you get on the test, and based on what you'd like to do, these two factors decide where you will be going after. According to that, I was supposed to be a civil engineer. But I have a brother who had just graduated from civil engineering, and it didn't sound like something I'd like to do. At the same time, I had a sister who had just finished in computer science. So I decided to switch from engineering to science. Really, my sister was so enjoying the stuff that she was doing: programs, designing games. I thought it sounded really nice. So I decided to switch. When I started, I did face some difficulties, but it was fun.

The other thing is that if you graduated with a computer science degree, there were more job opportunities than other kinds of science, or even some engineering fields. So I had long-term planning in the sense that if I graduated with a computer science degree, I'd have better chances to go join someplace and start working right away. Those were my reasons to go into computer science.

EL: Did both of you do college in your countries and then grad school in a different country?

AF: Yes, I got my bachelor and master's degrees [in Iraq]. I ranked first in the class [for the bachelor's program], so when I graduated, I was able to immediately enter the master's program, which is usually not the case. When I finished, I was given the privilege of teaching in the Baghdad University computer science department, which is the place where I studied and got my degrees. I taught for three or four years and then came to the States.

RO: I did my undergraduate at the University of Khartoum Faculty of Mathematical Sciences. I graduated also as the top student. Then, they had the honors degree, and if you were the top student, the vice chancellor would send you a letter asking you to join the university, instead of you applying. So I was hired as a teaching assistant.

At that time, there was no master's program. I graduated in '95, and in '99 they decided to do a master's program. I was working in the university, and I was working at a software company. I did a master's and was promoted to a lecturer. I continued until 2006, so I taught about 10 years at the University of Khartoum, and then I went to do my PhD at the University of Bradford in the UK.

EL: What was it like, moving to a different country to do that?

AF: Scary! Really scary! I don't know how I did that, honestly. Every time I look back, it's like, how could I actually dare to do something like this? I was actually sent to just take a training course in Harvard. It was supposed to be six months. So I thought, yeah, it's going to be six months, it's not a big deal. But I was traveling by myself, and it was my first time ever leaving the country, the first time going to the States.

I was so excited about being able to go to Harvard. It wasn't something you get every day. I thought, yeah, I know it's going to be difficult, but I can do it. I'm pretty lucky in the sense that I had a chance to get two years of training, moving from one system that's way, way behind to another system that's way up there. Those two years helped. I learned how to go along with the community, the new society, and I made friends. I kind of take things step by step.

Living wise, it was difficult to do at the beginning. It was so normal for people of different genders to live in the same place, and students share apartments. To me, it was like, no, I really can't do that. So finding a place to stay was a nightmare. I was homeless for I think a week, moving from one place to another, until I was able to find an apartment that was affordable and was all girls. After that, going along with everything was easy. Harvard is a mix of everything. I really had a very wonderful experience there. The mentors I was working with used to invite me to their houses and introduce me to their families. I wasn't a student, and I wasn't a faculty member. I was kind of in the middle. It wasn't clear to me which community or society I fit in. So they really were so great, in the sense that they tried to introduce me to as many people as they could. It was really so friendly and supportive.

EL: Did you find a community of other Muslims?

AF: No, not really. I didn't know that there were things like the Muslim Student Association. Then the people I was meeting got me connected with it. But that didn't happen until three or four months in. By that time, I was aware of most of the stuff that I needed. Honestly, when I left Iraq, I pushed myself to meet foreigners and people from different communities. I don't want to limit my network to people just from my own country. My English was so weak, and I wanted to practice speaking to people as much as I could. I was really trying to make new connections. That was what I was focused on. The people I met, they were so patient.

RO: You were lucky you weren't a student. It's impossible if you're a student.

AF: Yes, I wouldn't have been able to make it. My language at the beginning was really poor. I did sit in two or three classes, just auditing classes. That was one way I managed to practice. Because I knew what they were talking about, I just needed to know the terminology. That was something I was able to get from the classes.

EL: What was the Harvard program you were doing?

AF: It was a training course for six months. They invited young researchers to do some kind of exchange experience. I remember when I first visited, I opened the computer and was able to connect to the internet. Wow, it was an amazing thing. In Iraq, we used to use dial-up, which is so slow. Then there was some discussion of having someone design something for the wireless system for Baghdad University. I said, I'm here, I have the experience of using the internet there, and I've seen how the internet is there. I volunteered to take the project. I started working on that project with Professor Matt Welsh, who is currently at Google. We put a proposal together and submitted it to the World Bank, but that was 2006, and we couldn't get the necessary funding. I remember we really worked so hard on that. By that time, it was too tough to go home because 2006 and 2007 were so unstable. For me, being away in the States for almost two years, they wouldn't believe that I was actually taking education training. They would think it was some other kind of training. I applied to the Scholars at Risk program. It's a program that supports scholarships for researchers in life-threatening conditions. They bring them from their own countries to the States and put them in one of the hosting universities to do their research. I got a scholarship from that program, and another scholarship from the dean of Harvard, and during that year, I continued my work on the Baghdad wireless thing. When we saw that we could not actually get it implemented, I started my preparation for the PhD program. I applied and got accepted at Rochester with a full scholarship.

When I started the PhD program, I had already solved some of the problems that any person has when he or she moves from one community to another. Now I had to face another problem, which was getting used to the educational system. My first year, my performance was really, really bad. I think I can say it now, I can admit it, because I just got my PhD! I didn't do well on the qualification exams. I was asked to leave the program with a master's degree. I was like, no. I really felt that the difficulty, and my low performance, weren't because I was stupid. It's just that it was a completely new thing. We had to take four classes first semester, three classes second semester, and then, right after, the qualification exams. I had graduated a while ago, and I had kind of forgotten the background stuff. When I was studying these materials, I was actually catching up on the background things and learning new things. It was really a lot to take. So I submitted a petition. My advisor was so supportive. He said, I feel you are smart enough to pass it. It's just a lot for you. I got a chance to redo my qualification exams, and I kind of redid my whole first year. The second time I took the test, I was able to pass all the exams successfully, and after the second year I continued everything the way it was supposed to be. So the transition was tough, due to the

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differences in the education system. With a little bit of time, I managed to pass it.

EL: How was it for you, Rasha? What was it like moving from Sudan to the UK?

RO: Fortunately for me, my uncle lived in the same town, in Bradford. So I knew where I was going to stay. The University of Khartoum didn't fund me because the tuition and fees in Britain are very high. They said they'd prefer to pay either Malaysian or South African tuition. I said, I don't want to go to Malaysia or South Africa. So I resigned and said I would go on my own. In most of northwest Yorkshire, in England, there's a large Asian population, so it was basically like I was living in Pakistan. I didn't feel I was in a non-Muslim country. I felt at home. I think if I had gone to London, I'd have run. I'm in London now, and it's a completely different story. But Bradford was very nice. The students in the university were mostly from the Middle East, so I didn't even speak English in the labs. We were speaking Arabic.

Bradford was very nice, but London is a bit different. You do feel like a foreigner in London. But I adjusted. If it wasn't for Bradford before, I would have left. It would be extremely difficult, you'd feel like you'd have to leave.

For the education system, Sudan has the same system, the British system. So it wasn't big for me. If there was a PhD in Sudan, it would be done the same way as the British system. I already knew what to expect. Most people [from Sudan] who did PhDs did them in the UK. So you already had the culture of what was in the UK and what the PhD looked like and things like that.

EL: Is Iraq's education system somewhat similar to the US or the UK?

AF: No, no. It has its own system. And the thing is that, unlike in other places, the long wartime affected the education level. So all the people who were teaching were people who just got their master's degree, like in my case. The system is so closed. So people graduate and start teaching and then go to their master's degree, and start teaching, and then go to PhD, all locally. There was zero interaction with the outside world. The only PhD holder we had got her PhD in the UK. She got it in 1981, I think, and she was the only person with a PhD degree. It was good to have her, but she was the only one, and no matter how much she could try to improve things, she wouldn't be able to do it.

EL: Both of you are involved in things to increase access to education and technology in the developing world. Can you talk a little bit about the programs you're involved in?

RO: When I left Sudan, we had a problem in supervising PhDs and doing research in computer science. The idea is that you send someone to do a PhD, they come back, and they're supposed to try to do research, but it never happened. There are about three professors who were the only people who could supervise, based on the regulations of the university. The others were all assistants. So it wasn't very feasible. You can't supervise the whole country. They've tried more than one scheme to try to bring professors to visit and then go back, but it never seems to have worked. This time, they decided instead of moving the students and moving the professors, let's use IC [information and communications] technology. It's easier for the students, and it's easier for the professors.

There's a program at the Sudan University of Science and Technology that started about four years ago, and the idea is that the exams have to be in person at the university, and the evaluation with the supervisor has to be done in person at the university, but all other aspects can be done online.

The students register at the Sudan University of Science and Technology. Some of them are residents of Sudan, some of them are from Saudi Arabia, and some are from neighboring countries. They come, say, in January, they register, and they get online access to web conferencing software, and they go back to wherever they are. They are taught about six courses. And they take the exams in June. So they all have to come to Khartoum in June. They have to pass to start the next phase. In the next phase, the supervisors all come from outside of Sudan and meet the students. So you give a one-hour presentation of your research area, what you're going to teach in the next semester, what research they're expected to do, and so on. Then the students sit and then they talk to you, and you discuss the subject and so on, and each student chooses two supervisors. In September, an online course begins and goes until December. In January, they come to Khartoum again, the students only, and take their exams, and they have to pass if they want to take a PhD with you. After that, you come in June again. The supervisors come every year once a year and then continue supervising online. I started this program with them in August, and I'm currently teaching a course online. I'm preparing them in the basics, reading papers and so on, and they'll have an exam and a report to write, and based on that, I evaluate them and decide which students to work with in which areas.

Now they've graduated some students using this technique, and they have supervisors who have come again for more students. So it seems to be gaining traction. They have about 100 students now and 30 supervisors. I think it's the first time that a PhD actually had structure in Sudan.

Another thing is that most of the students, when they apply their work, they do it on something in Sudan. So one

lady did it on the banking system, using machine learning on banking data. Another did it, also on machine learning, on student applications to universities. So they're actually doing something within Sudan.

I talked to a lady who finished, and she wants to start another project. There's some agricultural data that needs to be input, first of all, into the computer, so they can look at it. It goes on for decades, and they came to the university and said, we have all this data, we want somebody to look at it. If this [PhD program] hadn't happened, no one would have thought to do that. Now she knows she can take something out of this data. What's happening to the wheat? What's happening to the millet? They have a lot of data, but no one knows what's happening. It's almost like a breakthrough because nothing like that happened before. They're having difficulty covering this program because they pay the supervisors in dollars, so you have to exchange the dollars and everything. They're in the red, actually. This year they went to a local bank, and the bank agreed to sponsor five students for $4,000 each. Then they published in the newspaper that there's a PhD program with five scholarships for the best students. It wasn't based on financial need. They wanted to find the students who are smart. They did get very good students, and they are very proud of them. This is the first time there's a scholarship for a PhD in Sudan. Usually they sponsor you to go out. It used to be they sponsored you because you needed the money. Now they sponsor you because you deserve the money, which is very good.

I think this is going to change the landscape of higher education in Sudan. There is a need for research in computer science. We have plenty of research in the other sciences, but computer science was a big issue. I think this is going to be a big help.

EL: And what is your project, Amal?

AF: I told you about the wireless project, and the proposal. Although that didn't get funded, I couldn't just let it go. Then I got a chance to go there [to Baghdad University]. I was working on networking. We wanted to build a test bed, which was a network that we built and used for our own testing. I was supposed to take some devices, small sized routers, basically the access points, from my university, the University of Rochester, and implement it in Baghdad University. I had to go through a lot of discussion and negotiation and bureaucratic issues, and at the end, it was, no, you can't take any devices with you. Because it's the property of the University of Rochester, so you can't take it and leave it there and come back. So that was disappointing.

In the end, when I went to Iraq, I started with a site survey. I decided to implement a small scope of the whole university campus idea and just implement the first part of it. This is how we put it: OK, we'll go with the first step, which is only one department and then expand it to a few departments in buildings that are near each other. And then go to the scope of the whole university. And if that works, we'll go over multiple campuses in Baghdad. I was like, OK, I think I can start with the first part on my own. I started the site survey, which was basically checking signals and that kind of thing. You can't just go and put up wireless signals and assume that they will agree with each other.

That was 2008. I ended up buying some stuff on my own. I did all the wiring and connections and that stuff. I had the first wireless network in the building. I remember when I sent the email to all the people who had helped, at Harvard and U of R. "Yay, this is the first email being sent from the new wireless network at Baghdad University!" I felt so relieved and proud of that. I left these access points. I thought it wasn't going to last, that the whole thing was going to collapse. But three years after, when I went again, I saw that these four routers were still working. People got convinced, and they duplicated the exact same idea across seven other buildings, so seven other buildings also got wireless connections. I was like, wow, I'm really impressed. I think I kind of gave them the incentive, so they could see that it was actually helpful and useful. Researchers and faculty members were able to use their machines for the first time and get internet connectivity from their offices. That was impossible before. The thing is that, in the university, you know that there's always electricity. If you want to do any work, you go there, and the power is on. Once you leave and go home, there are frequently power shortages, so you cannot rely on getting the service from your own home. So I think by having the wireless, I managed to provide the connection to a lot of people who were badly in need of it.

My research, the techniques that I built, the software and hardware that I designed in my research, it was all dedicated to improving internet connection to developing regions. I collected some data from the internet service provider who provided the service to Baghdad University and most of the city, most of the residential areas of Baghdad. I used this data to understand what are the factors and circumstances and how people are getting the service. Delay, bandwidth, and that stuff. After understanding the problem, we were able to design a technique to improve the internet service for them.

EL: The "hot topic" here at the HLF was on mathematics and computer science in the developing world. You've talked a little bit about some of the issues, but what do you

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see as the issues and the misconceptions that people who aren't in the developing world might have about what needs to happen, or what would be the most effective.

RO: I think you need to allow people to identify their own problems. Most of the time, the UN sends a consultant, and he comes with a predefined notion of what the solution is. At the end, they're the ones who decide. If it's something funded, especially, it's the international organization that decides what will work and what will not. This has led to lots of failed projects and lots of money that's just gone to waste that could have been put to better things. Plus it allows people to have more self confidence and the ability to identify their own solutions. Because sometimes their solutions will look completely different because the environment is different, the culture is different.

Money is not the issue. There is money. But where's the good idea? There is money, and they're looking for an idea. When they don't find it, they pour it into something because you just have to spend it.

Another issue is that there are some over-magnified things. If you want to help someone, ask the person, what can I do for you? Instead of saying, here, here's a water purifier. I may not need the water purifier. I'm OK with my water. It doesn't make me sick. Maybe it makes you sick, but it doesn't make me sick. The water running in the pipes in Sudan, people drink it, and it doesn't make them sick. But if someone comes from outside and drinks it, they'll get sick. It's true.

The same thing, when you move to Europe [from Sudan], you will get the flu. It will almost kill you because you're not ready for it. The same thing, if you move from one environment to another, you'll catch the viruses you aren't used to. It's this whole assumption that this is bad, when it's actually normal.

What looks like a poor sorry old hut, it could be he's the richest person in the whole place. You don't know what defines rich. People live in huts, but they own a thousand cows, so they're very rich, and they know they're rich. But they don't want to sell the cows to buy a house or a car. They want the cows because that's what defines money. You define money and power as something else, and you come and say, this is poor, and this is not good.

Accept that people are different. Try to help them with what they want, and listen to them. I think it will work better that way. The international organizations and politicians, if they would accept that people are different and know what works for them, things would be a lot better.

EL: Personally, what do you think some of the priorities are for Sudan, or should be for Sudan?

RO: For education?

EL: For education and development, specifically in science and technology.

RO: First of all, stability. Sudan was stable from 2000 to around the time the country split. There was a lot of economic stability. I was hired in 1996. In that time, the wages would come late because the government had no money. They'd come in the middle of the next month. And you'd take it, and it would basically evaporate from your hand because of inflation. And it's like you don't want to save money. You must spend it now because if you wait until tomorrow, you can't buy the same thing. You have to spend it now. You can't plan, you can't buy, you can't do anything. In 2000 when the economy stabilized, you could breathe. You could save money. You could open a bank account because it made sense. You could save money, you could buy houses, you could buy a car. I started a business. You could start planning. The minute you have instability, whether economic or political, whatever, people think, what do I have to protect? Nothing. Then you get problems. People lose hope. They stop thinking. If they're very qualified, they run. This is how a brain drain happens. During those 10 years of stability, people were coming back. Now they're starting again to leave the country, people with PhDs. I've watched this. It's incredible. I'm living the same thing twice. It usually never happens that you live to see the same thing twice. I'm seeing it all over again.

AF: I think the same thing in Iraq. The unstable condition is preventing people from long-term planning. Probably if things get better, one thing that might be helpful is if these big software companies can open branches there, they can give people the incentive that if you're good enough, you might end up being hired by these companies. People need some encouragement. But you can't ask Google to go and open an office there. No way. I don't expect any improvement in the short term just because of what's happening.

I agree with Rasha. You can't go with a specific mindset and assume that this is actually the way it is. If you go and donate money, this is the worst thing ever because it ends up vanishing. I remember we used to hear that so and so donated this amount of money when I was a faculty member. But nothing ever reached the universities themselves because it's just absorbed. So money is not an issue. My country is so rich. If we could understand how to manage our own resources, we would be able to be self-sustaining. The instability is the main source of all the problems.

The other thing is that unlike other countries, for

example if you talk about Afghanistan, women in Iraq are more than welcome to go to school and get an education. Yes, in rural areas, you'll see girls who finish their primary school and then end up getting married. Their priorities are different. But if you go to cities, you have all the chances to finish the degree if you are willing. Schools are free, colleges are free, even grad level is all free. if you want, you can definitely pursue your education.

I remember once I was at an exhibition. This guy asked me, "So, did you get your education after you came to the States?" I said, I'm sorry if this is going to disappoint you, but actually I got my master's degree when I was in Iraq. "But I thought that…" Yeah, I know, but you have to know that different countries are different. In Iraq, the percentage of women in computer science or these high-tech fields is probably even higher than men. I remember, in the classes I used to teach, 75% of the class were girls. Almost always the top ranks of the class were girls. It's kind of divided: girls go to science, and boys go to engineering. Engineering is highly dominated by guys, and science is highly dominated by girls.

RO: There's a problem in how they [westerners] think women are treated. There's this idea that outside of certain regions, there's a women problem. In Sudan, if there's a boy's school, there's a girl's school. Always. You have to open both schools.

AF: Yes, absolutely. In some of the places, when you cannot afford to open two schools, one for boys and one for girls, you end up with two shifts. For example, guys will go in the morning, and girls will go in the afternoon.

RO: I was in the US when I was a child, and when I went to Sudan, it was nicer. You don't get boy bullying and all that stuff. Girls are very competitive, they're very smart, they're very sharp. Now universities are 50-50 across the board. This PhD program is 50% women, 50% men. Earlier, there was a problem. When they started in 2000 sending people outside of Sudan, some people had children. They couldn't go, they were not willing to take them. So some of the women stayed. And the guys came back with PhDs, and they were assistant professors.

I was sitting under them. I remember a professor who taught me earlier. He said, "Listen here, you're better than them. If you don't go get yourself a PhD, they're going to be your bosses, and you'll never move up. Don't think that they're going to respect you because you taught them." I taught half of Sudan because it was the only computer science department in Sudan for a very long time. He said to me, "They're going to come, and they're going to treat you like they've never seen you before, that you never taught them, that you're not older than them. Go get yourself a PhD." I was shocked. I didn't want to leave Sudan. I was trying to figure out how to do the PhD in Sudan. It was just, there was no possibility because I didn't like the quality I was seeing. I thought I was better than that. But lots of women were stuck, who couldn't go out. It's like a missing generation. This program is perfect: You can sit at home while the kids go to school, open your laptop, and work. No need to go out.

There's a misconception about women. I was surprised in the UK how women were treated. You could feel in the department: stay down. You feel they're not respected like their male colleagues. I've never felt that in Sudan. I had to work, but I walk in, sit down, and get to work. No one demeaned me because I was a woman. They need someone to do the job. It doesn't matter if it's a woman.

EL: Is there anything else you wanted to mention?

AF: You asked in the email about religion, about wearing the scarf. I think that's something important on my side. I've really felt like it's a bonus for me. I've never felt that I've been discriminated against just because I'm wearing a scarf. It wasn't ever the case. As a matter of fact, it's helped a lot. People do respect it. There are always crazy people, but the crazy people are everywhere. In general, it was so helpful. People saw my style, my costume, and started treating me based on that.

If I didn't wear it before, I might have started wearing it there. This morning, I had this discussion with someone who said, "Did you know you can take it off?" It's not like someone asked me to put it on! This is how I am. I love the way people are understanding and respecting that. It wasn't a problem at all.

EL: Really. That's kind of surprising because you hear about that kind of discrimination.

AF: Absolutely. But from my own experience, it wasn't a problem at all. Probably because of the community I'm dealing with, all highly educated people.

RO: Universities are diverse. You already expect to see different people and different cultures.

AF: As a matter of fact, I was teaching them a lot. This is something about the USA: they are so open minded and so willing to learn about other people's cultures, other people's education systems. I would have long conversations with a lot of people, sometimes people I didn't even know. The moment I say I'm from Iraq, that's going to start a conversation right away.

RO: Same as Sudan.

AF: I wanted to mention that just to be fair to all the people who have been so supportive and so nice.

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EL: That's encouraging to hear because you often hear the opposite. I guess "People were nice to somebody" doesn't really make the news.

AF: Absolutely. If everything is good and life is happy, it's no news. I really appreciated all the people who I've dealt with. It's been wonderful.

RO: When I was going to the UK, people [in Sudan] asked, "What are you going to do? They're going to beat you up on the street." There's a misconception on the other side because all you see is the negativity. They think, Muslim women are beat up on the streets, so be careful.

AF: Yes. In Iraq, they say, "Oh, you are going to those cruel Americans." No, they are nice!

EL: Thank you so much.

AF: Thank you. It was really so nice to share.

Planned Giving

Magnhild Lien, AWM Executive Director

Any type of giving helps the Association for Women in Mathematics and is very much appreciated. Probably the most common examples are yearly donations given during the membership renewal period and through the annual giving campaign. However, looking toward the future, one way to ensure that the AWM continues to thrive and run the programs you value is to make a bequest in your will.

Here are a couple of examples of such bequests: In February 2010 AWM received a bequest of $50,000 from the estate of Alice T. Schafer for unrestricted use by the Association. A founding member of AWM and its second president, Alice contributed in countless ways to the organization and to women in mathematics throughout her career, and she continued to contribute through this extraordinary remembrance. Alice died September 24, 2009, at the age of 94. The January–February 2010 *AWM Newsletter* was dedicated to the memory of Alice Turner Schafer.

This year, after mathematician and human rights activist Lee Lorch's death at the age of 98, a bequest of $1,000 from his estate was received by AWM. Lee Lorch, one of AWM's first members, championed our causes from the very beginning and throughout the years. A memorial article for Lee Lorch can be found in the May–June 2014 newsletter.

A bequest of any size is valued. The money from Lee Lorch's estate will help support the 2015 AWM Research Symposium, and he will be honored at that event. People at all income levels can have an impact through planned giving. I understand that AWM is in competition with universities, other professional societies and many other worthy causes for your money. However, I urge you to think about what impact AWM has had on your own career and the lives and careers of women mathematicians in general. In particular if you have personally benefitted from AWM programs in the past, a bequest to support the mission of the Association may take on a special meaning knowing that future generations will be afforded the same opportunities you had.

Alice T. Schafer

Lee Lorch

Please let us know if you have included the Association for Women in Mathematics as a beneficiary through your will. We would love to able to say "thank you" during your lifetime. Of course we understand such a notification is non-binding. We will keep your information strictly confidential unless you give us permission to publicly acknowledge your generosity.

For more information about planned giving to benefit AWM, visit www.awm-math.org.

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AWM is very grateful to those whose donations support its mission of encouraging women and girls to study mathematics and have careers in the mathematical sciences. We extend a special thank you to the individuals listed below who made contributions from July 1, 2013 through June 30, 2014, including those who prefer to remain anoynymous. We also list institutional members and sponsors for the same time period. Thanks to all AWM members and donors!

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- Computer architectures and their predicted evolution
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- Performance measurement and debugging tools
- Data analysis, visualization, and methodologies and tools for Big Data applications
- Approaches to building community codes for HPC systems

COST

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INTERESTED?

1. Visit the ATPESC website to learn more: **http://extremecomputingtraining.anl.gov/**
2. Check out the 2014 agenda and videos to get a feel for future program content: **http://extremecomputingtraining.anl.gov/curriculum/agenda2014** and **http://extremecomputingtraining.anl.gov/2014-videos**
3. Sign up for the mailing list on the ATPESC website to stay informed. Details for the 2015 program will be announced soon.

Sixty-two participants attended the 2014 ATPESC program held in St. Charles, IL, from August 3 - 15, 2014.

CONTACT >> support@ExtremeComputingTraining.anl.gov

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2nd Lake Michigan Workshop on Combinatorics and Graph Theory

March 7–8 2015, University of Notre Dame

http://www3.nd.edu/~conf/lmwcgt15/

Tutorial lectures aimed at graduate students will be given by **Dhruv Mubayi** (University of Illinois at Chicago) and **Mark Daniel Ward** (Purdue University). Funding available; see website for details.

GOING TO GRADUATE SCHOOL? THINK "EDGE" (ENHANCING DIVERSITY IN GRADUATE EDUCATION) — The goal of the EDGE program is to strengthen the ability of women students to successfully complete PhD programs in the mathematical sciences, with particular inclusion of women from underrepresented groups. The 2015 EDGE Summer Session will be held June 1 – June 26 at Howard University, Washington, D.C. The summer session provides two core workshops in analysis and algebra/linear algebra, as well as a shorter workshop in a vital area of mathematical research. EDGE also promotes networking and community through collaborative problem solving and by including facilitators from institutions across the country, speakers from academia and industry, and peer mentors. A follow-up mentoring program and support network is established with each participants' graduate program. Applicants to the program should be women who are either graduating seniors who have applied to PhD programs in the mathematical sciences or recent recipients of undergraduate degrees who are now entering Ph.D. programs. All applicants should have completed standard undergraduate courses in analysis and abstract algebra; final acceptance into the program is contingent upon acceptance to a PhD program in the mathematical sciences. Participants are provided travel, room and board, and a stipend. For application materials and additional details, visit http://www.edgeforwomen.org/ The deadline for applications is **March 2, 2015**.

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. 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. 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 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. 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.

MICHIGAN STATE UNIVERSITY — Tenure-stream open-rank faculty position — The Department of Computational Mathematics, Science and Engineering (CMSE), a department being newly created at Michigan State University, in conjunction with the Department of Statistics and Probability invites applications from outstanding candidates for one tenure-stream open-rank faculty position in the broad area of statistical foundations of data science. While all areas of data science will be considered, a special consideration will be given to candidates with a background in statistics, with focus on theoretical and practical aspects of computation for statistical learning and inference, and working with large or complex datasets preferably in genomics and genetics. This position is part of a committed multi-year effort to build the CMSE department. The position will be joint appointment with the Department of Statistics and Probability with tenure home in CMSE. The anticipated start date is August 16, 2015. A significant area of research focus within CMSE will be on the synergy between forward modeling and data science in physical and biological sciences. The majority of positions within the CMSE will be jointly held with other departments on campus, with tenure home in CMSE. Furthermore, the new department will have a mandate to develop an innovative curriculum at the graduate and undergraduate levels that expands upon the role of algorithm development, heterogeneous computing, and the use of computational tools in problem solving. Faculty in the new unit will normally have a 1-1 teaching load.

Online application is required. This position is posted on the MSU Applicant Page (MAP), posting #0444. To complete the online application please go to https://jobs.msu.edu. The application dossier should include a cover letter, a CV, statements on research and teaching, and at least three letters of recommendation; at least one of the recommendation letters must address the applicant's ability to teach. Applications received by **January 15, 2015** will receive full consideration, but the search will continue until the position is filled. Questions regarding the position may be directed to CMSE-STT-SEARCH@stt.msu.edu MSU is an affirmative-action, equal-opportunity employer and is committed to achieving excellence through diversity. The University actively encourages applications from women, persons of color, veterans, and persons with disabilities. The University endeavors to facilitate employment assistance to spouses or partners of candidates for faculty positions.

MICHIGAN STATE UNIVERSITY — Advertisement for Continuing System Teaching Specialists — The Department of Statistics and Probability, Michigan State University, invites applications for two continuing system teaching specialists with academic year appointments, effective August 16, 2015. More details about MSU teaching specialist position can be found at http://www.hr.msu.edu/documents/facacadhandbooks/academicspecialist/introduction.htm Successful candidates will mainly teach service and undergraduate statistics courses. The teaching load will be equivalent to three courses per semester. MINIMUM QUALIFICATIONS: Qualified candidates should have a PhD degree in Statistics, in conjunction with at least 3 years of university teaching experience of Statistics and Probability at the undergraduate level, with particular emphasis on teaching 'services courses.' Having experience and knowledge of statistical software packages, such as R, Minitab, or SAS, is desirable. Preference will be given to candidates with more years of experience and a consistent track record of demonstrating excellence in teaching that incorporates best practices. REVIEW PROCESS: The review process will begin

January 15, 2015 and continue until the positions are filled. This position is posted on the MSU Applicant Page (MAP), posting #0402. Applications must be uploaded by the candidate to Michigan State University's online job application site, https://jobs.msu.edu, and should include a cover letter, CV, a reflective essay on teaching, evidence of teaching excellence (such as teaching evaluations, peer evaluation of instruction, evaluation by affected groups, teaching portfolios, innovative methods, awards in recognition of teaching, etc.). In addition, the names and contact information of three references who will write letters of recommendation addressing the candidate's teaching potential at the undergraduate level must be provided in the jobs.msu.edu system. MSU is an affirmative action, equal opportunity employer committed to achieving excellence through cultural diversity. The University actively encourage applications and/or nominations of women, persons of color, veterans and persons with disabilities.

THE OHIO STATE UNIVERSITY, Columbus, OH — Eminent Scholar — **Description:** The College of Arts and Sciences at The Ohio State University seeks applications to fill an Eminent Scholar position in Scientific Computation within the Department of Mathematics. The ideal candidate will be someone who will be a leader in in the research field of Scientific Computation and will be able to carry out interdisciplinary research forging new connections with other departments at The Ohio State University and other institutions. It is expected that this faculty member will be significantly engaged with the graduate and undergraduate programs in the Mathematics Department e.g. directing PhD, master's thesis and/or directing undergraduate research. This position is partially funded by Ohio State's Discovery Themes Initiative, a significant faculty hiring investment in key thematic areas in which the university can build on its culture of academic collaboration to make a global impact. **Requirements:** A doctoral degree in Mathematics is required at the time of application. He or she will have an excellent research record in the area of Scientific Computation and evidence of strong teaching ability.

Application Instructions: Applications should be submitted online at http://www.mathjobs.org. If you cannot apply online, please contact facultysearch@math.ohio-state.edu or write to: Hiring Committee, Department of Mathematics, The Ohio State University, 231 W. 18th Avenue, Columbus, OH 43210. **Application Deadline: 01/31/2015**. The Ohio State University is an equal opportunity employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation or identity, national origin, disability status, or protected veteran status.

TEXAS TECH UNIVERSITY — The Department of Mathematics and Statistics (M&S) at Texas Tech University invites applications for four tenure-track assistant professor positions beginning fall 2015. A Ph.D. degree at the time of appointment is required. M&S has active research groups in both pure and applied mathematics and in statistics (see http://www.math.ttu.edu/FacultyStaff/research.shtml). The department fosters a spirit of interdisciplinary collaboration across areas of mathematics and statistics as well as with engineering and the physical and biological sciences. M&S is seeking candidates who will be engaged in nationally visible scholarship, establish externally-funded research programs, interact with the existing research groups in the department, participate in interdisciplinary collaborations and service, involve graduate students in their research, and show excellence in teaching at the graduate and undergraduate levels. One position will be in statistics, with a preference for candidates in probability theory/stochastic processes. The second position will be in biostatistics, with a preference for candidates who will collaborate with researchers in environmental toxicology, biological sciences and/or public health. The third position will be complex analysis and/or applications of complex analysis. The fourth position will be in mathematical and computational modelling, with a preference for candidates who will collaborate with researchers in biomathematics, applied mathematics and/or computational mathematics. Candidates with very strong records who will bring externally sponsored research to Texas Tech will be considered for associate or full professor ranks. Please apply, using the Requisition ID 1818BR, at http://www.texastech.edu/careers/ Include a completed AMS standard cover sheet and a vita.Three letters of reference plus any material in addition to that completed online should be sent to: Alex Wang, Hiring Committee Chair, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409-1042. alex.wang@ttu.edu Review of applications will begin immediately. Texas Tech University is committed to diversity among its faculty. We strongly encourage applications from women, minorities, persons with disabilities, and veterans, and we consider the needs of dual career couples. Texas Tech University is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF CHICAGO — **Position Title:** Associate Professor — Req # 02362 — The Department of Statistics at the University of Chicago invites applications from exceptionally qualified candidates for faculty positions at the rank of Associate Professor. As part of a University of Chicago initiative, we seek individuals with a doctoral degree in statistics, applied mathematics, or related disciplines who are several years beyond the Ph.D. and doing advanced research on the interface between computational neuroscience, statistics and applied mathematics. It is expected that all successful applicants will be recognized leaders in their field and engage in interdisciplinary collaboration. Appointments may be made jointly with another department in the University's Biological Science Division. A demonstrated research excellence appropriate to the rank is essential. Applicants will also be responsible for conducting graduate and undergraduate courses in statistics and applied mathematics and the academic advising of graduate students as requested. Applicants must apply online at the University of Chicago's Academic Jobs website, http://tinyurl.com/odfz7wd, and must upload a cover letter and curriculum vitae including a list of publications. You may also upload research and teaching statements as well as up to three relevant research publications, but they are not required. Review of applications will begin **December 1, 2014** and will continue until all available positions are filled. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age, protected veteran status or status as an individual with disability. The University of Chicago is an Affirmative Action / Equal Opportunity / Disabled / Veterans Employer. http://tinyurl.com/odfz7wd

UNIVERSITY OF CHICAGO — **Position Title:** Assistant Professor — Req # 02359 — The Department of Statistics at the University of Chicago invites applications from exceptionally qualified candidates for faculty positions at the rank of Assistant Professor. We seek individuals doing advanced research in statistical methodology or theory or in related fields. As part of a University of Chicago initiative, applicants could be working in scientifically focused computation or applied mathematics, but hiring is not limited to that initiative. It is expected that all successful applicants will engage in the direction of doctoral dissertations, as well as teaching at the undergraduate and graduate levels. Interdisciplinary collaboration will be particularly valued. While applicants do not need to be specifically trained in statistics, they must have completed all requirements for the Ph.D. by the time of hire in statistics or some field of mathematics or science where statistical concepts play an important role. Appointments may be made jointly with another department in the University. A demonstrated research excellence appropriate to the rank is essential; some teaching experience in the mathematical sciences is preferred. Applicants must apply online at the University of Chicago Academic Jobs website at http://tinyurl.com/lzjhkz9. To be considered an applicant, a cover letter, CV, and three letters of reference are required. Referral letter submission information will be provided during the application process. You may also upload research and teaching statements as well as up to three relevant research publications, but they are not required. Application screening will begin **November 1, 2014**, and continue until all positions are filled or the search is closed.

All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age, protected veteran status or status as an individual with disability. The University of Chicago is an Affirmative Action / Equal Opportunity / Disabled / Veterans Employer. http://tinyurl.com/lzjhkz9

UNIVERSITY OF CHICAGO — **Position Title:** William H. Kruskal Instructor — Req # 02361 — The Department of Statistics at the University of Chicago invites applications for the William H. Kruskal Instructor. We seek recent or expected Ph.D. graduates doing advanced research with a connection to statistical methodology and computation, preferably in relation with a scientific application. It is expected that all successful applicants will engage in teaching two undergraduate Statistics courses and possibly a graduate-level course in their field of interest. The position is for two years, with the possibility of a renewal. While not all applicants need be specifically trained in statistics, they must have completed all requirements for the Ph.D. at the time of appointment in statistics or some field of mathematics or science where statistical concepts or methods play an important role. A demonstrated research excellence is essential, and research interests related to those of faculty in the Department of Statistics (www.stat.uchicago.edu/people/faculty) or other faculty involved in the Computational and Applied Mathematics Initiative (www.stat.uchicago.edu/cami) is preferred. Applicants

must apply online at the University of Chicago Academic Jobs website at http://tinyurl.com/k87zgxl. To be considered an applicant, a cover letter, CV, and three letters of reference will be required. Referral letter submission information will be provided during the application process. Optionally, a teaching and/or research statement and up to three relevant research publications may also be uploaded or sent to the Search Committee. Application screening will begin November 15, 2014, and will continue until all positions are filled or the search is closed. Further inquiry and optional documents may be sent to the Search Committee at search@galton.uchicago.edu or to Search Committee, Department of Statistics, Eckhart 108, University of Chicago, 5734 S. University Avenue, Chicago, IL 60637. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, age, protected veteran status or status as an individual with disability. The University of Chicago is an Affirmative Action / Equal Opportunity / Disabled / Veterans Employer. http://tinyurl.com/k87zgxl

UNIVERSITY OF OREGON — Visiting Assistant Professor (non-tenure related) — The University of Oregon department of mathematics seeks applicants for a post-doctoral Visiting Assistant Professor. This is a full-time position renewable for up to three years and is not tenure-related. Minimum qualifications for the postdoctoral position are a PhD in mathematics, statistics, or closely related field; strong evidence of research potential in an area of active interest in the department; and evidence of teaching ability. Please see http://hr.uoregon.edu/jobs/ for a full position announcement. Applicants should provide a standard AMS cover page, CV, research statement, and three letters of recommendation and apply online at https://www.mathjobs.org/jobs/jobs/6454. First consideration will be given to applications received by **January 31, 2015**. The position will remain open until filled. Candidates should have the ability to work effectively with a diverse community. The University of Oregon is an EO/AA/Veterans/ Disability institution committed to cultural diversity.

UNIVERSITY OF PENNSYLVANIA — Simons Postdoctoral Fellowships in Mathematical Biology — The Departments of Mathematics and Biology at the University of Pennsylvania invite applications for postdoctoral fellowships at the interface of mathematics and biology. These positions are open to candidates who have demonstrated excellence and productivity in research. A Ph.D. or equivalent degree in Biology, Mathematics, Statistics, Computer Science, or related fields is required. Highly qualified mathematicians and statisticians wishing to transition into biology are also encouraged to apply. The fellows will be encouraged to interact and collaborate with various research groups on campus. Funding for the fellowships will be provided by the Math+X Simons Chair awarded to Prof. Yun S. Song, who will join the University in Summer 2015. Applications should be submitted online through https://www.mathjobs.org/jobs/Penn/6569/ and include a curriculum vitae and a research statement. In addition, applicants should arrange to have three letters of reference submitted online. Review of applications will begin **December 15, 2014** and will continue until the positions are filled. The Departments of Mathematics and Biology are strongly committed to Penn's Action Plan for Faculty Diversity and Excellence and to establishing a more diverse faculty (for more information see: http://www.upenn.edu/almanac/volumes/v58/n02/diversityplan.html). The University of Pennsylvania is an EOE. Minorities/Women/Individuals with disabilities/Protected Veterans are encouraged to apply.

WASHINGTON UNIVERSITY IN ST. LOUIS — Open-Rank Faculty in Statistics, Department of Mathematics; Washington University in St. Louis; Department: Mathematics; Employer Type: Academic; Type of Position: Tenure-Track Faculty; Subject Area: Statistics; Geographic Location: Missouri; Application Deadline: January 15, 2015; Contact Person: David Wright, Department Chair; Address: Department of Mathematics, Washington University, One Brookings Drive, Campus Box 1146, St. Louis, MO. 63130; E-mail Address: wright@math.wustl.edu. The Department of Mathematics at Washington University in St. Louis has one opening for an Open-Rank Faculty position in Statistics, to begin in Fall semester 2015. The appointment can be at the Assistant, Associate, or Full-level with rank commensurate with experience and qualifications. The department currently maintains a doctoral program in statistics and two statistics masters degrees. Responsibilities include teaching three one-semester courses per year, maintaining a strong research program, publishing the results of the research, and normal student advising and departmental and university service appropriate with the level of hiring into the department. Statisticians in all areas will be considered. A Ph.D. in statistics, biostatistics, or a closely related field is required. Senior candidates must have an outstanding record of scholarship, graduate training, and departmental leadership. Salary is commensurate with education and experience. Applicants should provide their CV, publication list, research and teaching statements, and arrange for four letters of recommendation to be submitted. Applicants are encouraged to submit these materials using the AMS mathjobs website (http://www.mathjobs.org/jobs/jobs/6306); however they may be sent directly to the Chair, Department of Mathematics. The department will begin reviewing applications on November 15, 2014, and continue until the position is filled. The deadline for completed applications, including letters of recommendation, is **January 15, 2015**. Washington University is an affirmative action/equal opportunity employer and specifically invites and encourages women and other members of underrepresented and minority groups to apply. Employment eligibility verification is required on hire. For more information about the position or the department, visit wumath.wustl.edu. All qualified applicants will receive consideration for employment without regard to sex, race, ethnicity, protected veteran, or disability status.

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