ASSOCIATION FOR WOMEN IN MATHEMATICS

Newsletter

VOLUME 46, NO. 2 • MARCH–APRIL 2016

The purpose of the Association for Women in Mathematics is

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

IN THIS ISSUE

5	AWM at the Seattle JMM
21	Amendments to AWM Bylaws
24	AWM Lunch Table
24	Student Chapter Corner
25	Media Column
27	Book Review
28	Education Column
30	Collaboration and Creativity in Southern California

PRESIDENT'S REPORT

It is a new year and it is now time to welcome the incoming President-Elect, **Ami Radunskaya**, and the new at-large members of the Executive Committee (EC). Ami brings enormous talent, experience, and enthusiasm to the leadership of the organization, and I am thrilled that we will be working together over the next two years. The newly elected Members-at-Large of the EC are **Laura DeMarco**, **Gail Letzter**, **Talithia Williams**, and **Carol Woodward**. We also thank the outgoing Members-at-Large of the EC for their service: **Annalisa Crannell**, **Tara Holm**, **Maura Mast** and **Marie Vitulli**. It is also time to thank outgoing Past President **Ruth Charney** once again and to wish her well. Thank you, Ruth, for all your service and hard work. Your leadership and steady hand will be sorely missed!

JMM 2016. The Annual Joint Mathematics Meetings were once again a great success for AWM: an opportunity to gather, build community for women and support for our mission, attract new members, and show off the accomplishments and contributions of many outstanding women in mathematics. And to celebrate our 45th Anniversary in grand style, with a cake and a song, written by **Ami Radunskaya**, and sung at the AWM Reception and Prize Ceremony! Our Prize Ceremony was attended by the Presidents of AMS, MAA, and NAM, **Robert Bryant**, **Francis Su**, and **Edray Goins**. It was great to see support for our mission from the other professional societies, especially since we gave our Research Prizes, Service Awards, and the Alice T. Schafer Prizes there. The AWM-Microsoft Research and AWM-Sadosky Research Prizes were won by **Lauren Williams** and **Daniela De Silva**. The AWM Service Awards were presented to **Heather Lewis**, **Heather Russell**, and **Rebecca Segal**, and a Lifetime Service Award to **Bettye Anne Case**. The Alice T. Schafer Prizes were given to **Mackenzie Simper** (Winner), **Sarah Tammen** (Runner-up), and **Madeleine Weinstein** and **Kaavya Valiveti** (Honorable Mentions). The AWM Student Chapters were invited to meet with the AWM Executive Committee

Kristin Lauter and Mackenzie Simper

continued on page 2

ASSOCIATION FOR WOMEN IN MATHEMATICS

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

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

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

Circulation: 3500.

PRESIDENT'S REPORT *continued from page 1*

after the awards were given, and there was great support and enthusiasm for our student Schafer Prize awardees!

The Hay and Humphreys awards were given to **Judy Walker** and **Naomi Jochnowitz** at the Joint Prize Session the next day, and everyone enjoyed the wonderful Noether lecture given by **Karen Smith**. There was lively discussion at the AWM Panel on Research Collaboration Conferences for Women organized by **Michelle Manes**. The panelists represented new Research Networks for Women to be supported by our new ADVANCE grant in many areas of math: **Maria Basterra** (WIT), **Susanne Brenner** (WINASC), **Ellen Eischen** and **Kristin Lauter** (WIN), **Kathryn Leonard** (WiSh), and **Ami Radunskaya** (WhAM!). We showed off our Springer Proceedings volumes for WIN, WiSh, and WhAM! and the panel was featured in the AMS JMM blog by our web editor, **Adriana Salerno**. The AWM and AMS Committees on Education co-hosted a panel organized by **Jacqueline Dewar** and **Pao-sheng Hsu**, and this panel will form the basis for a mathematics education volume in our new AWM Springer Series!

AWM Panel on Research Collaboration Conferences for Women

The AWM Workshop on Algebraic Combinatorics, organized by **Gizem Karaali** and **Rosa Orellana**, was the first event funded by our new NSF ADVANCE grant. The AWM Poster Session, organized by **Brenda Johnson**, **Liz Stanhope**, and **Catherine Searle**, showed off the work of 20 graduate students, all of whom have been invited to apply to the NSF Mathematical Sciences Institutes to attend one of their programs. The Best Poster Contest was organized again this year by AWM past president **Sylvia Wiegand**. The prize winners were **Arezou Ghesmati** and **Rohini Ramadas**, and they will each be invited to attend a week-long program at one of the NSF math institutes. Thanks to all the organizers, staff, and participants of AWM events at JMM 2016 and congratulations to all the award winners! Please see the press releases for the award winners and the write-ups for JMM activities on pages 5–21. All in all, a fantastic showing for the 45-year-old AWM!

AWM Advances! Over the past few months I have been working with the AWM ADVANCE Project Director, **Magnhild Lien**, to set up the processes and committees for the new NSF-funded ADVANCE grant, including working with the lead social scientist **Erin Leahey** to design the survey. We now have a Project webpage (http://awmadvance.org/) with a picture of the first workshop participants, a link to the AWM Springer Series, and a listing of the committees and the Research Networks and Collaboration Conferences. The RCCW Committee, charged with helping form new networks by soliciting proposals and working with institutes to launch Research Collaboration Conferences for Women in new areas, consists of:

Chair: **Michelle Manes**, University of Hawaii (WIN)
Sigal Gottlieb, U Mass Dartmouth (WINASc)
Maria Basterra, University of New Hampshire (WIT)
Erin Chambers, Saint Louis University (WiSh)
Trachette Jackson, University of Michigan (WhAM!)

The Research Network Committee is charged with creating networks based on RCCWs that have already been organized, including creating webpages and email lists for each Research Network, forming a Steering Committee for each network, and organizing follow-up conferences and AWM workshops.

Chair: **Sigal Gottlieb**, U Mass Dartmouth (WINASc)
Michelle Manes, University of Hawaii (WIN)
Kristine Bauer, University of Calgary (WIT)
Gizem Karaali, Pomona College (ACxx)
Anita Layton, Duke University (Math Bio)
Noha El-Zehiry, Siemens Corporation (WiSh)
Rebecca Segal, Virginia Commonwealth University (WhAM!)

I wrote an article, to appear in the May issue of the AMS *Notices,* which announces the program and our call for proposals for Research Networks for Women in new areas of math. The next deadline is **July 1**, and proposals should be sent to **Magnhild Lien** and RCCW Committee Chair **Michelle Manes**. The full version of the article describes the program and will be found on our AWM ADVANCE page after its publication.

AWM-MAA Liaison Committee. Last year, the AWM Advisory Board suggested partnering with MAA to help establish a regional presence for AWM to better support women in mathematics and AWM's mission locally. In November, the AWM EC approved a motion from the Programs Committee to create an AWM-MAA Liaison Committee to work on recruiting and appointing AWM Liaisons for each MAA Section. Programs Committee Chair **Heather Russell** presented this information to the MAA Committee on Sections at their meeting at JMM, and the news was met with much enthusiasm and support from the MAA Sections. We have already tested out the idea by hosting AWM Lunch Tables at three MAA Section Meetings in November. We hope to try out having AWM Student Chapter Poster Sessions at several MAA Section Meetings this spring!

AWM Dissertation Prizes! At the January EC meeting, the EC approved a proposal from the Awards Committee to create new AWM Dissertation Prizes, for outstanding PhD dissertations in mathematics by women. Stay tuned for deadlines in the fall to nominate dissertations which were awarded in the preceding two years.

Bylaws. Changes to the Bylaws are needed to remedy some inconsistencies and to clarify the voting rights of the appointed EC members. It is also a good opportunity to move up the closing date of the election to December 1, to allow for better planning for new EC members before the January EC meeting. The changes to the Bylaws proposed by Executive Director and AWM Member Magnhild Lien were approved at the Business Meeting at JMM and now need to be ratified by the membership. Please see detailed information in this issue.

The 2015 Annual Fundraising Campaign was extremely successful, thanks

continued on page 4

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

Institutional Membership Levels
Category 1: $325
Category 2: $325
Category 3: $200

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

Executive Sponsorship Levels
$5000+
$2500–$4999
$1000–$2499

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.

ASSOCIATION FOR WOMEN IN MATHEMATICS

AWM ONLINE

The *AWM Newsletter* is freely available online.

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

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

Web Editor

Adriana Salerno, awmwebeditor@gmail.com

AWM DEADLINES

AWM Louise Hay Award: April 30, 2016

AWM M. Gweneth Humphreys Award: April 30, 2016

AWM Travel Grants: May 1 and October 1, 2016

AWM Workshop at JMM: August 15, 2016

AWM-MAA Falconer Lecturer: September 1, 2016

AWM OFFICE

Magnhild Lien, Executive Director
mlien@awm-math.org

Jennifer Lewis, Managing Director
jennifer@awm-math.org

Matthew Hundley, Membership Director
matthew@awm-math.org

11240 Waples Mill Road, Suite 200
Fairfax, VA 22030
phone: 703-934-0163
fax: 703-359-7562
awm@awm-math.org

PRESIDENT'S REPORT *continued from page 3*

in large part to the new **AWM Advisory Board and Past Presidents Matching Fund**. We are delighted to report that $5,800 was contributed for the Matching Fund drive. The matching challenge was met through member donations, and the total raised in this year-end drive alone was more than $11,600. Thank you everyone, for your ongoing generous support for AWM and our mission! This campaign and these donations truly help to keep the organization solvent year after year.

Social Media Update. Our AWM Facebook page (https://www.facebook.com/awmmath/) has more than 4,000 likes now, and daily content posted by retiring EC member **Marie Vitulli**. The Facebook page allows us to announce events and awards and to post reminders of upcoming relevant deadlines in real time. These past few weeks we have posted many pictures from AWM events at JMM. Our Facebook posts go out on our Twitter feed @AWMmath, and we now have more than 600 followers on Twitter. Finally, check out our AWM Student Chapters Corner in this Newsletter and pictures of students at JMM 2016 on the Student Chapters Facebook page! (https://www.facebook.com/AWMchapters/)

Happy 45th Anniversary, AWM!

(Song by Ami Radunskaya, to the tune of "Michael, Row the Boat Ashore")

The AWM is 45,
Old enough to be wise.
Not newborn but still alive,
Young enough to be strong.

AWM's reach is broad and wide
Old enough to be wise.
We invite you all to join our side
Young enough to be strong.

Nine times five is forty-five,
Old enough to be wise.
Add two zeros to get our size
Young enough to be strong.

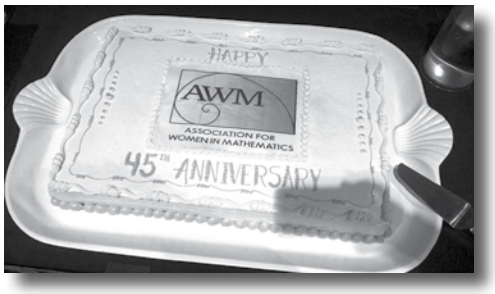
Sisters help to count the change
Old enough to be wise.
Women warriors can't be wrong,
Young enough to be strong.

Best wishes,

Kristin Lauter

Kristin Lauter
January 26, 2016
La Jolla, CA

Singing a happy song for AWM



Kristin Lauter

AWM AT THE SEATTLE JMM

AWM-AMS NOETHER LECTURE

The 2016 Noether Lecture, "The Power of Noether's Ring Theory in Understanding Singularities of Complex Algebraic Varieties," was delivered by Karen E. Smith, University of Michigan. She was introduced by Kristin Lauter, Microsoft Research.

Abstract: In one of the tremendous innovations of twentieth century mathematics, Emmy Noether introduced the rigorous definition of commutative rings and their homomorphisms. One of her main motivating examples was the ring of polynomial functions on a complex algebraic variety. The algebraic study of these rings can have deep geometric consequences for the corresponding variety. In this talk, I hope to explain one example of this phenomenon: namely, how reduction to prime characteristic can give us insight into the singularities of the corresponding algebraic variety. Of course, I will need to convince you that we gain something powerful in reducing modulo p, since we have given up all the tools of analysis in doing so. What we gain is the *Frobenius operator* on the ring, which raises elements to their p-th powers, and is a *ring homomorphism* in characteristic p. I hope to explain how the Frobenius operator is helpful in understanding the singularities. As an application, I will describe some work with Angélica Benito, Jenna Rajchgot and Greg Muller on the singularities of varieties that arise in the theory of cluster algebras in combinatorics.

Citation for Karen E. Smith

Karen E. Smith is the Keeler Professor of Mathematics at the University of Michigan. She received a bachelor's degree in mathematics in 1987 from Princeton University. After a year of teaching high school, she went to the University of Michigan and received a PhD in 1993 with a thesis in commutative algebra.

In 1993, Smith went to Purdue for a year on an NSF postdoc and then became a Moore Instructor at MIT. After being promoted to assistant professor there, she moved to the University of Michigan in 1997, where she has been ever since. She received a Sloan Research Award in 1997 and a Fulbright Award in 2000; she was awarded the Ruth Lyttle Satter Prize in 2001. The prize citation cited her outstanding work in commutative algebra and in particular her work on "tight closure" and its applications to algebraic geometry. In 2014, she was an invited speaker at the International Congress held in Seoul, Korea.

Presentation of Noether Lecture plaque: Karen E. Smith and Kristin Lauter

Smith has served on the editorial boards of eight journals. She has graduated sixteen PhD students, with three more currently, and is the Director of an NSF funded RTG program, which has supported ten PhD students, ten postdocs and five undergraduates each year since 2005.

AWM PRIZES

Louise Hay Award for Contributions to Mathematics Education

AWM established the Louise Hay Award to recognize outstanding achievements and contributions in any area of mathematics education. While Louise Hay was widely recognized for her contributions to mathematical logic and for her strong leadership, her devotion to students and her lifelong commitment to nurturing the talent of young women and men secured her reputation as a consummate educator. 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.

continued on page 6

Judy Walker

Citation for Judy Walker

In recognition of her leadership and contributions as a mathematical scholar and educator, the AWM presents the 2016 Louise Hay Award to Professor Judy Walker of the University of Nebraska. Creating and adapting innovative courses at all levels, Walker has made extraordinary contributions to mathematics education, guiding high school through graduate students, including freshmen and honors non-mathematics majors, as well as practicing teachers. She has received numerous awards for her teaching excellence, including the MAA Haimo Award in 2006.

Walker is a recognized role model committed to nurturing the talent of emerging scholars. Locally, graduate students in her department selected her for the Roger Wiegand Award. Nationally, since 1999, Walker has been involved with the Nebraska Conference for Undergraduate Women in Mathematics, advancing over 250 undergraduate women each year, a feat recognized in 2013 by the AMS Programs that Make a Difference Award. Walker also helped to establish a program to support the transition to graduate study for undergraduates from small institutions and, with a colleague, created a mathematics summer camp for high school girls.

Walker has published over 30 papers and organized 11 research conferences in algebraic coding theory, including 6 special sessions at AMS meetings. She is one of only four women chosen to present the George Pólya Lectures for the MAA.

A mathematician and educator fully in the tradition of Louise Hay, Judy Walker is richly deserving of the 2016 Louise Hay Award.

Response from Walker

My first interaction with the Association for Women in Mathematics was in 1990, when I received Honorable Mention for the first annual Alice T. Schafer Prize. I did not know at that time what a profound effect this organization would have on my career. I feel fortunate to have participated in AWM Workshops as a graduate student in 1996 and again as a recent PhD in 2000, to have received an AWM Travel Grant to attend a conference in my field in 2000, and to have had the opportunity to serve AWM through the Executive Committee (2002–2004), the organizing committee for the AWM Workshops (2004–2006), and, most recently, the Nominating Committee (2015). The AWM plays a critically important role in our profession, and I am truly honored to receive the Louise Hay Award this year.

I am grateful to those who have worked with me on educational endeavors throughout my career. Special thanks go to Jim Lewis, who provided me with countless opportunities and invaluable mentoring; to Wendy Hines, with whom I co-created All Girls/All Math; to Allan Donsig, who co-created the Nebraska Conference for Undergraduate Women in Mathematics with me; to Tom Marley who took the idea for Nebraska IMMERSE and developed it into a fabulous program; and to the many students I have had the privilege of teaching and mentoring. Finally, very special thanks go to my husband, Mark, and to my daughters, Madeline and Becca, for their patience, their support, and their love.

M. Gweneth Humphreys Award for Mentorship of Undergraduate Women in Mathematics

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.

Citation for Naomi Jochnowitz

The Association for Women in Mathematics is pleased to present its sixth annual M. Gweneth Humphreys Award to

Naomi Jochnowitz and Kristin Lauter

Naomi Jochnowitz of the Department of Mathematics at the University of Rochester.

Jochnowitz has been a teacher and mentor for over forty years, devoting herself to the development and support of undergraduate students of mathematics, in addition to her activities with math graduate students and postdocs, with a particular impact on scores of women students. "She offers very demanding courses with the explicit assumption that everyone can succeed and she will provide all the support necessary for that outcome." Student letters, even from students more than thirty years ago, still vividly and passionately recount their experiences: Jochnowitz's students embark on a "math[ematical] journey" together with her, where she "sets high standards, treating even her youngest students like respected colleagues." Her courses are challenging, with exams "notoriously long and difficult," but Jochnowitz is "fiercely devoted to teaching," not leaving evening office hours until everyone's questions have been answered, sometimes past midnight. She "pushes her students to think smarter and achieve more."

Jochnowitz is often cited as motivating young women to take challenging mathematics courses, directly confronting any insecurities or lack of confidence they may have. She encourages students to pursue summer opportunities and advanced degrees, checking in with them regularly after they graduate. Many former students work to emulate her passion for teaching and nurturing students. Jochnowitz cares deeply about her students, and she nurtures them "one student at a time."

The AWM is proud to honor Naomi Jochnowitz's outstanding achievements in inspiring undergraduate women to discover and pursue their passion for mathematics.

continued on page 8

CALL FOR NOMINATIONS

2017 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, 2016** 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.

Response from Jochnowitz

I thank the AWM for this honor, plus Mike Gage, John Harper, and Tom Tucker for nominating me. Seeing letters from so many former students has evoked beautiful memories, and I want to reiterate what every past Humphreys recipient has said in their own way, that "it is my students, not me, who deserve this award."

Women of my generation were allowed to be good in math, but only if we firmly believed that we weren't. I know things are changing, but don't know how fast.

Partly as a result of my own experiences, I feel a special affinity for creatively talented students unaware of their own strengths. I believe I have a kind of radar helping me detect such individuals, often recognizing their potential before others do. I am happy to provide maximal support, since I know with the right encouragement, these students can develop the confidence needed to let their natural creativity shine through, often with rather spectacular results. Sometimes (not always) these students are female, and I see glimpses of myself at a younger age in them. By symmetry, such students identify with me, and I become a much appreciated role model/friend.

My students understand I am always on their side and am not here to judge them, rather to encourage them to do their best. They don't have to prove to me how good they are. Instead it is my responsibility to prove to them how good they can be! In doing this, I am simply repaying a debt for what others did for me.

Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman

In 1990, the Executive Committee of the Association for Women in Mathematics established the annual Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman. The prize is named for Alice T. Schafer (1915–2009), one of the founders of AWM and its second president, who contributed greatly to women in mathematics throughout her career. The criteria for selection include, but are not limited to, the quality of the nominees' performance in mathematics courses and special programs, an exhibition of real interest in mathematics, the ability to do independent work, and (if applicable) performance in mathematical competitions.

AWM is pleased to present the twenty-sixth annual Alice T. Schafer Prize to Mackenzie Simper, University of Utah. Additionally, AWM was pleased to honor Sarah Tammen, University of Georgia, as runner-up and Kaavya G. Valiveti, University of California, Berkeley, and Madeleine Weinstein, Harvey Mudd College, as honorable mention recipients.

Kristin Lauter, Ruth Charney and Mackenzie Simper

Citation for Mackenzie Simper, winner

Mackenzie Simper is a senior mathematics major at the University at Utah where she received the Calvin Wilcox Scholarship, one of the department's most prestigious scholarships. After a flawless academic performance at Salt Lake Community College, Simper transferred to the University of Utah where she has impressed the faculty as a student "with a stellar academic track record, proven ability to do original mathematical research, [who] is keenly committed to excelling in her mathematical career, and is highly praised as a student and a colleague" with "research ability … never witnessed before in someone so young."

In just one year, Simper has participated in three research projects: two at an REU at the University of Utah, one of which derives a "surprisingly general model for the equilibrium distribution of the Bak-Sneppen model of evolution." The results will appear in a paper that is currently in preparation. "Given the mathematical depth and the technical difficulty of the problem, this is an extraordinary achievement for a 17-year-old undergraduate student." Simper also participated in a third REU in the Applied Mathematics Department at Brown University, where her performance was "simply amazing." The resulting paper is also in preparation and expected to be submitted to a top dynamics journal.

Simper's mentors agree that she is "passionate about mathematics and one of the most creative and advanced undergraduates" with whom they have worked.

Response from Simper

I am honored to be selected as the winner of the 2016 Alice T. Schafer Prize and I would like to thank the AWM for encouraging and supporting women in mathematics. Nothing has contributed more to my success than the many wonderful people who have helped me on my journey, including my amazing family. Kyle Costello at Salt Lake Community College was the first to encourage me to pursue math, for which I am tremendously grateful. I am also grateful to the entire math department at the University of Utah, for creating a welcoming and stimulating environment in which to explore this spectacular subject. I very much appreciate everyone involved in the REU at Brown this past summer, for the great experience and all of the advice. Specifically, I am thankful to John Gemmer, for supervising my project, which was an absolute blast, and Professor Björn Sandstede, for creating countless opportunities to learn. Finally, I would like to thank Professor Tom Alberts, who was the first to expose me to the fascinating realm of mathematical research and has continually provided guidance and inspiration since then.

Citation for Sarah Tammen, runner-up

Sarah Tammen is a senior at the University of Georgia where she received the Strahan award, the department's award to honor the outstanding undergraduate mathematics major. She is "incredibly gifted, deeply passionate about mathematics and truly driven to succeed." Her academic performance has been exceptional, including her performance in the graduate-level real and complex analysis courses.

Tammen participated in the SMALL REU program, where she was an "outstanding member" of the SMALL undergraduate research Geometry Group. Her research culminated in a "major theorem" generalizing the isoperimetric inequality in R^n with density r^p. The resulting paper has been submitted for publication. At the University of Georgia, she is currently preparing a longer version of this for her honors thesis. Her mentors describe her as "a mathematics star in the making." Tammen also participated as a teaching assistant/counselor in the SIMUW program for motivated high school students at the University of Washington.

continued on page 10

CALL FOR NOMINATIONS

2017 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 www.awm-math.org/humphreysaward.html); 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, 2016** 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.

Sarah Tammen and Kristin Lauter

Tammen is "very independent and already a remarkably careful and precise mathematician." In addition to her talent for mathematics, she "also has something extra: guts, determination and creativity."

Response from Tammen

It is an honor to be the Runner-up for the Alice T. Schafer Prize. I am thankful for all of the teachers and mentors who have helped me to become the mathematician I am today. I am thankful for Ted Shifrin, who told me, "you should be doing challenge problems," after the first week of his multivariable calculus class. I am thankful for Frank Morgan and for his guidance during the SMALL REU. I am thankful for all of the professors who have taught me at UGA, and I am glad to be representing their students as the Schafer Prize Runner-up.

Citation for Kaavya G. Valiveti, honorable mention

Kaavya G. Valiveti is a senior mathematics major at the University of California, Berkeley, where her "outstanding transcript" reflects "spectacular achievement" and she has excelled in graduate coursework. She has been a "wonderful student, someone you dream to have in your class."

Valiveti has spent two summers at research programs. In 2014, she particpated in the REU at Kent State University. Her work on a Lie algebra version of the Lvov-Kaplansky problem, co-authored with two other students, has appeared in *Linear Algebra and its Applications* and has "already got some serious attention." The paper uses "highly sophisticated combinatorial techniques" and it is "hard to imagine it was written by undergraduate students."

Valiveti spent the summer of 2015 at Cornell's Summer Program for Undergraduate Research working on a project in harmonic analysis on Stiefel manifolds, leading to a result "far exceeding ... expectations on the project."

Valiveti's mentors describe her as a "natural born mathematician" who has "discovered her calling ... it is mathematical research." They laud her "outstanding analytic and logical skills," "knowledge and understanding of mathematics, that is far ahead of what one usually expects from an undergraduate student," and "brilliant research potential."

Response from Valiveti

I am humbled to receive an honorable mention of the Alice T. Schafer Prize from the AWM and thank them for their tireless dedication to fostering gender equality in mathematics over the past five decades. I would firstly like to express my deepest gratitude to Professor Jenny Harrison, whose constant encouragement and infectious passion for mathematics are among the main reasons I am now pursuing the subject, as well as Professors Marc Rieffel, Nicolai Reshetikhin, and Mariusz Wodzicki for the support and mathematical inspiration they have given me at Berkeley. I would also like to thank my REU advisors, Professors Mikhail Chebotar of Kent State and Raul Gomez of Cornell for their tremendous generosity during and beyond the programs and for suggesting such interesting questions to study. Lastly, I thank my family and friends for their unwavering support, without which nothing would possible.

Citation for Madeleine Weinstein, honorable mention

Madeleine Weinstein is a senior mathematics major at Harvey Mudd College. She has been recognized by the faculty with two departmental honors, the Giovanni Borrelli Mathematics Prize and the Robert James Prize. She is "extraordinarily talented, has a great work ethic, is creative, and has remarkable mathematical maturity."

Weinstein participated in three very competitive REU programs: the Virginia Bioinformatics Institute, the SMALL REU at Williams College, and University of Minnesota, Duluth. As a sophomore in the SMALL REU she worked on three different projects: Ramsey Theory, Zeckendorf Decompositions, and Benford's law. Her work resulted in

Kristin Lauter and Madeleine Weinstein

two papers accepted, one paper in revision, and three more under review. At Duluth, she proved stronger invariance properties of the Sprague-Grundy function that encompass three conjectures of Fraenkel and Ho. Her work resulted in a single-author paper submitted to *Integers*. She has given numerous presentations at national conferences and received an Outstanding Presentation Award at the Joint Mathematics Meetings in 2014. She also participated in the Budapest Semesters in Mathematics.

Weinstein's letters emphasize her broad research ability. "She is detail oriented, diligent, and structured. Maddie is ready to question, scrutinize, and work hard to see a project through."

Response from Weinstein

I thank the AWM for providing opportunities to women in math. I am grateful to Steven Miller for his constant support and extreme generosity in devoting time to his students, Nathan McNew for his extraordinarily skillful advising of the Ramsey Theory project, and Caroline Turnage-Butterbaugh for her expert guidance on the Zeckendorf projects. I wish to thank Joe Gallian for building the Duluth research community that has been transformative to the careers of so many young mathematicians. I would like to thank the Harvey Mudd math department, and in particular, Art Benjamin, Dagan Karp, and Talithia Williams, for their dedication to teaching and for making Mudd such a wonderful place to grow as a mathematician. I am grateful towards my kind, gentle friends and brilliant, hard-working coauthors at the SMALL and Duluth REUs. Lastly, I warmly thank the foxes, deer, ducks, turtles, and corvids of the Bagley Nature Area in Duluth for being my research companions.

AWM-Microsoft Research Prize

The Executive Committee of the Association for Women in Mathematics has established the AWM-Microsoft

continued on page 12

CALL FOR NOMINATIONS

The 2017 Etta Z. Faconer Lecture

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

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

The letter of nomination should include an outline of the nominee's distinguished contributions to the mathematical sciences or mathematics education and address the nominee's capability of delivering an expository lecture. Nominations are to be submitted as ONE PDF file via MathPrograms.Org. The submission link will be available 45 days prior to the deadline. Nominations must be submitted by **September 1, 2016** and will be held active for two years. If you have questions, phone 703-934-0163 or email awm@awm-math.org.

Research Prize in Algebra and Number Theory. This prize is awarded every other year, beginning in 2014. The purpose of the award is to highlight exceptional research in some area of algebra by a woman early in her career. The field will be broadly interpreted to include number theory, cryptography, combinatorics and other applications, as well as more traditional areas of algebra. Candidates should be women, based at US institutions who are within 10 years of receiving their PhD, or having not yet received tenure, at the nomination deadline. The AWM-Microsoft Research Prize serves to highlight to the community outstanding contributions by women in the field and to advance the careers of the prize recipients. The award is made possible by a generous contribution from Microsoft Research.

The 2016 AWM-Microsoft Research Prize in Algebra and Number Theory is presented to Professor Lauren Williams, in recognition of her exceptional research in algebraic combinatorics. Williams received her doctorate in 2005 from the Massachusetts Institute of Technology. After appointments at MSRI, Berkeley, and Harvard, she is currently an Associate Professor of Mathematics at the University of California, Berkeley.

Williams is a powerful and broad combinatorialist, whose scientific reach extends into representation theory, algebraic geometry and physics. Her early work on the totally nonnegative Grassmannian is a beautiful and fundamental contribution to our understanding of the combinatorics—and later (with Rietsch), the topology—of this space which has important connections to Lusztig's work on canonical bases in representation theory. Williams is also a leader in the exciting new subject of cluster algebras. She (with Musiker and Schiffler) proved an important special case of the famous Laurent positivity conjecture (now a theorem); their proof is a technical tour de force, which unlike some other approaches, yields a transparent combinatorial rule for the Laurent polynomials in question. Her paper with Ardila and Rincón, in which an old conjecture about realizability of positively oriented matroids is finally established, has been hailed by experts as the "climax of the study of positroids in the past decade." Most recently, her work with Kodama brings her expertise into the entirely new direction of soliton solutions of the KP equation and modeling shallow water waves.

Beyond her outstanding scientific achievements, Williams has assumed many leadership roles in the mathematical community and is a dedicated PhD and post-doctoral adviser. We congratulate Williams for her well-deserved AWM-Microsoft Research Prize!

Lauren Williams

Response from Williams

I am deeply honored to be receiving this award and would like to thank the AWM and Microsoft for their generosity in establishing it, as well as my mentors and colleagues who nominated me for the award. I am profoundly grateful to have had numerous wonderful mentors, from childhood up until now, but I would like to mention in particular my thesis advisor Richard Stanley and my colleague Bernd Sturmfels, as well as Sara Billey and Sergey Fomin. Mathematics is rarely a solitary endeavor these days, and I am happy to acknowledge my many collaborators (now friends), including Sylvie Corteel, Yuji Kodama, Konstanze Rietsch, Federico Ardila and Felipe Rincón, and Gregg Musiker and Ralf Schiffler.

Finally I would like to thank the math department and my colleagues at UC Berkeley, for providing me with such a supportive and welcoming mathematical "home." I don't think that anyone completely understands why women are still a minority among mathematicians. But ever since the Association for Women in Mathematics was established, this organization has played an important role in bringing together the community of women mathematicians and reminding us all that there are many women mathematicians out there doing excellent work. The various activities, meetings, and lectures that the AWM has sponsored have provided a lot of inspiration and support to me personally, as I know they have done for countless others. Thanks again!

AWM-Sadosky Research Prize

The Executive Committee of the Association for Women in Mathematics has established the AWM-Sadosky Prize in Analysis. This prize is awarded every other year, beginning in 2014. The purpose of the award is to highlight exceptional research in analysis by a woman early in her career. The field will be broadly interpreted to include all areas of analysis. 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 has been made possible by generous contributions from Cora's husband Daniel J. Goldstein, daughter Cora Sol Goldstein, and friends Judy and Paul S. Green and Cristina Pereyra.

The 2016 AWM Sadosky Research Prize in Analysis is awarded to Daniela De Silva at Barnard College, New York, in recognition of her fundamental contributions to the regularity theory of nonlinear elliptic Partial Differential Equations (PDE) and non-local integro-differential equations. De Silva´s research centers on the analysis of free boundary problems; PDE problems solved for both an unknown function and an (embedded) unknown surface of discontinuity, like a solid to liquid phase transition or the edge of a drop sitting on a surface. She has done seminal work and obtained outstanding results on one-phase problems and two-phase problems, as well as singular minimizing free boundary

continued on page 14

NSF-AWM Travel Grants for Women (Pending Funding)

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**.

problems. Her originality and depth, as well as enormous technical skills, are evident, for example, in her works with Roquejoffre on thin one phase problems (one of two 2013 best paper awards of *Annales de l'institut Henri Poincaré*); with Savin on a regularity theory for nonlocal free boundary problem; with Ferrari and Salsa on a complete regularity theory for two-phase problems in general media; and with Jerison on the construction of a singular minimizing free boundary. In particular, De Silva's solo paper "Free boundary regularity for a problem with right hand" has been highly praised by world leaders as one whose impact is tremendous and has inspired other distinguished authors to collaborate with her.

Daniela De Silva is an outstanding and talented young analyst whose remarkable work has either answered important outstanding questions or opened new research directions. She richly deserves the recognition of the 2016 AWM-Sadosky Research Prize in Analysis.

Response from De Silva

It is a true honor and a great joy to receive the second AWM Sadosky Prize in Analysis. Though I did not know Cora Sadosky personally, I was lucky enough to hear about her from some of the many mathematicians she mentored, guided, and inspired. Her mathematical talent and her conviction against any discrimination in our profession were truly remarkable.

Daniela De Silva

I am thrilled that the cited results have been so highly praised. I wish to express my deep gratitude to those who collaborated with me on those problems, and to all of my collaborators and colleagues who have helped me shape my mathematical interests. In particular, I am immensely grateful to David Jerison for his early guidance through countless stimulating conversations, to Luis Caffarelli for his inspirational work source of beautiful and challenging questions, to Sandro Salsa for his tremendous support and passion for the subject, and last but not least, to my husband Ovidiu Savin for sharing his life and his mathematical talent with me.

Finally, I would like to thank the Association for Women in Mathematics. In honor of Cora's memory I will continue to work passionately on the beautiful mathematics that has been so highly recognized by this prestigious award.

AWM SERVICE AWARDS

The AWM Service Award, established by the AWM Executive Committee in November 2012, recognizes individuals for *helping to promote and support women in mathematics through exceptional voluntary service to the Association for Women in Mathematics*. The award is given annually to AWM members in recognition of their extensive time and effort devoted to AWM activities during the previous seven years.

This year, a special Life Time Service Award is presented to Bettye Anne Case, Florida State University. Also, from a vast list of volunteers, the 2016 awardees Heather Lewis, Heather Russell and Rebecca Segal were chosen for their extraordinary work and service to the AWM during recent years.

Citation for Life Time Service Award

Bettye Anne Case, Olga Larson Professor Emerita, Florida State University is recognized for her long-term service to the Association for Women in Mathematics. While she has been a strong supporter of and involved with the Association since the seventies, it's in her decades-long role as the Meetings Coordinator that she has had the most profound impact. Bettye Anne's familiarity with AMS and organizing activities at the JMM has been extremely helpful over the years, especially when AWM switched offices or staff. In addition to overseeing the committees that organized the AWM's activities at the JMM, SIAM Annual Meeting and MathFest (formerly the Summer Meetings) every year, Bettye Anne served on the organizing committees for conferences honoring Julia Robinson (1996; member) and Olga Taussky Todd (1999; chair). These stand-alone AWM research

Bettye Anne Case

conferences were precursors to the AWM Research Symposia. The Proceedings for the Taussky Todd conference appeared as a chapter in *Complexities: Women in Mathematics*, co-produced with Anne Leggett. In 1977 and again in 1980, Bettye Anne was elected to the AWM Executive Committee as a Member-at-Large. In 1984 she was appointed as the Meetings Coordinator, a new position created to encompass work she was already doing. Thus her service on the Executive Committee of the Association stretched from January 1978 through March 2015.

Response from Case

I am honored to receive this Lifetime Service award. It was my pleasure to facilitate the contributions made to professional conferences by many amazing mathematicians. The help from our own officers and staff together with those from the other mathematical societies made my efforts look good. I was privileged to help nineteen talented women—awesomely so—during their presidencies. A special bonus was working with ICM organizers and EWM officers to spotlight mathematical accomplishments of women who achieved success in many different cultures and work environments.

Citations for 2016 Service Awards

Heather Lewis, Nazareth College, is recognized for her active involvement with the AWM Essay Contest Committee since 2009. In 2012 she became chair of the committee; she was recently appointed to a third 3-year term on the committee and will continue as its chair. She has been instrumental in revising the online form used to submit the essays and helped set up a system that allows us to recognize the schools and universities whose students have submitted essays. Heather has also been a driving force in revising/updating the Essay Contest page on our website and is a member of the Programs Committee.

Heather Russell, University of Richmond, is recognized for her active involvement with the AWM Programs Committee since 2012. She is the committee's liaison with the Student Chapter Committee. In that capacity she helped design an

continued on page 16

Kristin Lauter, Heather Russell and Heather Lewis

Kristin Lauter, Rebecca Segal, and Ruth Charney

annual survey sent out to student chapters, was instrumental in setting up the Student Chapter Speaker Survey and helped redesign the Student Chapter page on the AWM website. In 2014 she took over as chair of the Programs Committee when there was no EC member available for that position. In 2015 she agreed to serve another 3-year term on the Programs Committee and chair it for one more year.

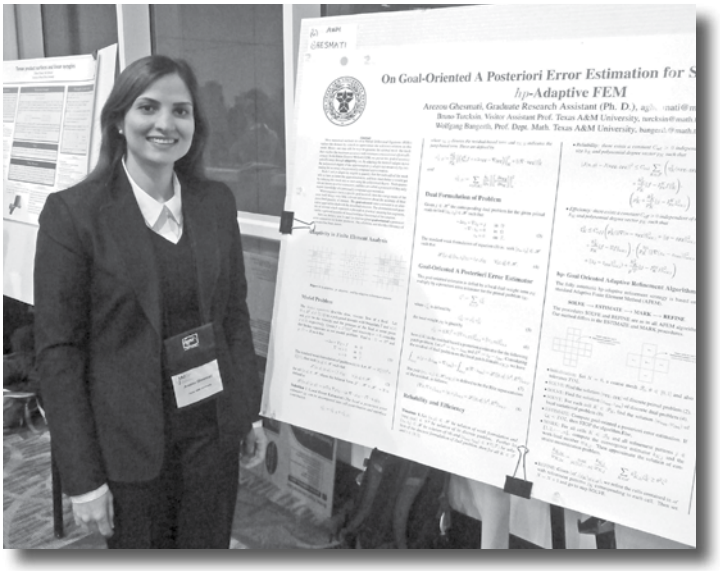
Rebecca Segal, Virginia Commonwealth University, is recognized for her active involvement with the AWM Membership Committee and service on the AWM Executive Committee. She served as the AWM Clerk on the Executive Committee for four years and as a member of the Membership Committee during her last two years on the EC. In 2014, at the completion of her term on the EC, Rebecca graciously accepted an invitation to continue on the Membership Committee for one more year and serve as its chair since there was no EC member available for that position. The one-year term was subsequently extended through 2015.

AWM WORKSHOP

Magnhild Lien, AWM Executive Director

The 2016 Joint Mathematics Meetings were held January 6–9, 2016 in Seattle, Washington. The AWM Workshop and Poster Session, usually held at these meetings, followed the format begun in 2013. The first part took place Friday evening with a reception and a poster session for graduate students. The workshop continued on Saturday with a special session on algebraic combinatorics for recent PhDs and invited speakers, supported by the AWM ADVANCE grant, Career Advancement for Women Through Research Focused Networks. Also on Saturday, there was a mentoring session and luncheon for all the workshop participants. The new format allowed for a larger number of workshop participants, as well as greater exposure of their work presented either in a poster or a talk. Special thanks goes to the workshop organizers **Brenda Johnson**, Union College (poster session), **Gizem Karaali**, Pomona College (algebraic combinatorics session), **Rosa Orellana**, Dartmouth College (algebraic combinatorics session), **Catherine Searle**, Wichita State University (poster session) and **Liz Stanhope**, Lewis & Clark College (poster session). Their dedication and enthusiasm while planning the workshop were instrumental in its success.

At the workshop reception on Friday evening twenty graduate students presented their posters. There was a steady stream of conference attendees coming by—and not just for the refreshments! The session was scheduled for one hour and fifteen minutes, but many people showed up early and stayed later. The graduate students seemed genuinely excited to showcase their work. Prospective employers came to the poster session to meet with potential candidates for positions at their universities. One component of the workshop program is designed for the workshop participants to meet with pre-assigned mentors. For many of the participants the first contact with their mentors was during the poster session. The twenty poster presenters were: **Katie Ansaldi**, University of Notre Dame; **Emily Barnard**, North Carolina State University; **Anastasia Chavez**, University of California, Berkeley; **Ngoc Do**, Texas A&M University; **Eliana Duarte**, University of Illinois Urbana-Champaign; **Arezou Ghesmati**, Texas A&M University; **Kirsten Hogenson**, Iowa State University; **Cara Monical**, University of Illinois at Urbana-Champaign; **Yumeng Ou**, Brown University; **Caitlyn M. Parmelee**, University of Nebraska-Lincoln; **Rebecca Patrias**, University of Minnesota; **Kaitlyn Phillipson**, Texas A&M University; **Anna Ying Pun**, University of Pennsylvania; **Priyanka Rajan**, University of California, Riverside; **Rohini Ramadas**, University of Michigan; **Erica M. Rutter**, Arizona State University; **Sui Tang**, Vanderbilt University; **Caroline Terry**, University of Illinois at Chicago; **Anna Weigandt**, University of Illinois at Urbana-Champaign; and **Bingsheng Zhang**, Texas A&M. For titles and abstracts of the posters see the printable schedule at https://sites.google.com/sites/awmmath/awm-at-jmm.



Poster winner Arezou Ghesmati at her poster

Poster judging, a feature started two years ago, is now a regular part of the workshop. In coordination with the NSF Mathematical Sciences Institutes we are able to offer an

invitation to participate in a week-long workshop at one of the institutes as a prize for the best poster. Twenty volunteer judges evaluated the posters, and the two top candidates were awarded prizes. The winners were Arezou Ghesmati and Rohini Ramadas, who both received an institute prize.

During the two-hour luncheon on Saturday the graduate students and recent PhDs met with their mentors. The winners of the poster judging competition were presented with certificates. The attendees at the luncheon included the workshop participants, the mentors, the workshop organizers, AWM President Kristin Lauter, AWM President-Elect Ami Radunskaya, the poster judging coordinator Sylvia Wiegand and the AWM Executive Director.

This year's workshop talks focused on the field of algebraic combinatorics and encompassed a wide range of topics within the field. The speakers included both senior and junior researchers from across North America. Many of the senior researchers and both of the organizers had participated in a May 2011 workshop on the topic (aptly titled Algebraic Combinatorixx) held at the Banff International Research Institute (BIRS) and were delighted to welcome a new generation of women researchers to the Women in Algebraic Combinatorics community. A continuation of this workshop, Algebraic Combinatorixx 2, organized by Julie Beier, Patricia Brown, Rosa Orellana and Stephanie van Willigenburg will be held at BIRS May 14–19, 2017.

We had five senior speakers at the AWM workshop. The morning session included **Patricia Hersh**, North Carolina State University, who spoke about weak Bruhat order and crystal graphs as posets, and **Georgia Benkart**, University of Wisconsin-Madison, who took us on a walking tour of representation graphs and generalized hyperbolic functions.

Poster winner Rohini Ramadas explaining her poster

The afternoon session started with **Stephanie van Willigenburg**, University of British Columbia, whose talk was on Littlewood-Richardson rules for symmetric skew quasisymmetric Schur functions. Next, **Hélène Barcelo**, Mathematical Sciences Research Institute, spoke on discrete homotopy and homology groups, and **Julianna Tymoczko**, Smith College, discussed the geometry behind permutations and their subwords.

There were seven junior speakers. **Margaret L. Rahmoeller**, Roanoke College; **Lisa Schneider,** Susquehanna University; **Angela S. Hicks**, Stanford University; and **Megan M. Bernstein**, Georgia Institute of Technology, presented their work in the morning session. **Elizabeth Niese,** Marshall University; **Pamela Estephania Harris**, United States Military Academy; and **Laura Escobar**, University of Illinois Urbana-Champaign, were the afternoon speakers. Titles and abstracts of the talks can be found at www.awmadvance.org.

The organizers are pleased not only with the high caliber of research presented but also with the care taken by the speakers to provide a broad overview of their research questions. Both factors contributed to well-attended talks and an engaged audience; we consistently had a mostly gender-balanced audience, 35–70 attendees on average. In order to facilitate the mentoring planned, the workshop organizers had matched one or two junior researchers with a senior researcher, loosely aiming mainly for research compatibility. There were also a handful of graduate student poster presenters in algebraic combinatorics who were also invited into these mentoring groups, which met before and during an intimate lunch. Each mentoring group in the end included women at three different stages of an academic career. The organizers themselves joined some of the mentoring groups and were delighted to see the diversity of discussion topics covered and the enthusiasm of everyone involved.

A special thanks to **Hélène Barcelo**, **Georgia Benkart**, **Naiomi Cameron**, **Patricia Hersh, Brenda Johnson**, **Leila Khatami, Cathy Kriloff**, **Katherine Stange**, **Liz Stanhope**, **Iva Stavrov**, **Julianna Tymoczko** and **Stephanie van Willigenburg** for serving as mentors to the graduate students and the junior speakers in the algebraic combinatorics session. These women shared their varied experiences and provided invaluable guidance to the "younger" mathematicians.

Also many thanks to **Sylvia Wiegand**, the organizer of the poster judging, and the volunteer judges **Sukanya Basu**, **Julie Bergner**, **Randall Cone**, **Meghan DeWitt**, **John Diamantopoulos**, **Ling Long**, **Amy Lu**, **Bozenna Pasik-Duncan**, **Katherine Paullin**, **Pei Pei**, **David Saltman**,

continued on page 20

AWM AT THE SEATTLE JMM

Presidents: Robert Bryant (AMS), Kristin Lauter (AWM) and Francis Su (MAA) at the AWM Reception

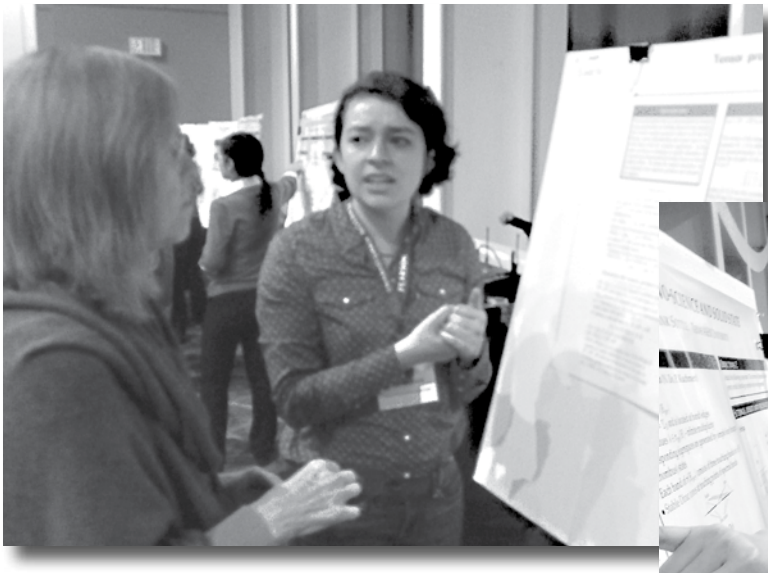
Naomi Jochnowitz with former students at the Joint Prize Session

Graduate students and mentors at the Workshop

Below: Erica Graham, Ami Radunskaya and Alejandra Castillo at the AWM Reception

Kristin Lauter and Judy Walker at the Joint Prize Session

AWM AT THE SEATTLE JMM



Eliana Duarte, Poster Session

Below: Ngoc Do, Poster Session

Nicole Yamson and Anastasia Chavez, Poster Session

AWM presidents, past, present and future:
Ami Radunskaya, Kristin Lauter, Ruth Charney, Jill Pipher, Georgia Benkart, Cathy Kessel, and Sylvia Wiegand

Amanda Schaeffer Fry, **Dave Skoug**, **Karen Smith**, **Donna Sylvester**, **Rodolfo Torres**, **Denise Rangel Tracy**, **Janet Vassilev**, **Oscar Vega** and **Judy Walker**. Sylvia's tireless effort in organizing this event and the volunteers' eagerness to participate, not only doing the judging but also meeting afterwards to tally the scores, made it all run very smoothly. Finally, a special thank you to AWM Managing Director **Jennifer Lewis**, who oversaw the setup of the poster session and helped the judges tabulating the scores for the poster judging.

This workshop was made possible by funding from the National Science Foundation.

Panelists Kristin Umland, Yvonne Lai, Brigitte Lahme, and Curtis Bennett

AWM-AMS Mathematics Education Panel

Jackie Dewar and Pao-sheng Hsu, Co-chairs, AWM Education Committee

Many in the mathematics community in the US are now involved in mathematics education in various capacities. The co-chairs of the AWM Education Committee, Jackie Dewar and Pao-sheng Hsu, organized a panel called "Work in Mathematics Education in Departments of Mathematical Sciences" for the 2016 Joint Mathematics Meetings to illustrate the breadth and range of these activities. Discussions of the AWM Education Committee shaped the proposal for the panel. The panel, which took place on January 7, 2016 in Seattle WA, was co-sponsored with the AMS Committee on Education. Beth Burroughs, Professor, Montana State University, and a member of the Education Committee, moderated the panel. The four panelists listed below discussed their work in mathematics education and reflected on its impact and how it has been received in their respective departments. A lively discussion with the audience of approximately 60 people ensued. Each of the panelists submitted the following summary of his or her remarks at the panel.

Curtis Bennett (Professor and former Associate Dean for Faculty Development and Graduate Studies, Loyola Marymount University)

- We need to make the "teaching commons" as broad as possible, and everyone can contribute. Scholarship of Teaching and Learning is one of the ways for mathematicians who want to contribute to join the discussion.
- There is great value in mathematics classes for future teachers that give those students a voice and allow for them to see themselves as caretakers of mathematics.
- (This point was not made in the talk but in answers to questions.) Mathematicians, mathematics education specialists, and teachers all need to treat each other with respect and as having valid ideas, concerns, and perspectives regarding how mathematics is taught. Mathematicians, in particular, need to realize that past experiences have led to mathematics education specialists and teachers being suspicious. One way for mathematicians to overcome this suspicion is to collaborate respectfully with teachers and mathematics education specialists and to recognize that we have much to learn from others in these discussions.

Brigitte Lahme (Professor and Department Chair, California State University, Sonoma)

- There are a lot of opportunities for mathematicians to become involved in mathematics education activities such as professional development for in-service teachers, content courses for pre-service teachers and curriculum development in K–16.
- Mathematicians can contribute and benefit greatly from collaborations with mathematics educators in departments of mathematics and education, local school districts and county offices of education.
- There are many opportunities to combine mathematics expertise with learning about teaching in school and college classrooms that can benefit your own teaching as well as help others improve their teaching. For example: investigating and discussing with colleagues how to help teachers introduce mathematical modeling to their students gave me a lot of insight into teaching modeling to college students. These include: Modeling has a lot of dimensions; modeling should appear more frequently across the curriculum, not all at once; we can use modeling

to teach content. It's the instructor's job to choose examples carefully and intentionally across different dimensions of modeling, to talk about the work of modeling when we do it, and to provide real modeling experiences.
- Deeply thinking and developing ideas about teaching mathematics content is intellectually challenging and rewarding work.
- Work in mathematics education in mathematics departments is an essential responsibility of the university mathematics community and needs to be recognized as part of the tenure and promotion expectations.
- Work in mathematics education can have a positive impact on teaching in college mathematics departments: pedagogy discussions (e.g., read and discuss NCTM's *5 Practices for Orchestrating Productive Mathematics Discussions*), lesson study, collaborative teaching.

Yvonne Lai (Assistant Professor, University of Nebraska, Lincoln)
- One important form of support is attitude. Your colleagues should welcome results in your field. They should regard your field—be it part of applied math, pure math, or mathematics education—as useful and interesting.
- One set of educational questions can drive different activities, including research and teaching. For example, members of many mathematics departments think about: "What mathematics should we teach prospective teachers? How much overlap is there and should there be between the mathematics we teach to prospective mathematics PhD students and the content we teach to prospective elementary, middle, and high school teachers?" What you produce from thinking about a question for teaching and research can be valuable, and one may influence the other, but they are likely to differ from each other. Valuing work in mathematics education means valuing a broad range of work.

Kristin Umland (Associate Professor, University of New Mexico)
- The mathematics community has a moral responsibility to support mathematics education and a practical interest in improving it.
- It is fun and intellectually challenging.
- Most problems of substance in mathematics education require both mathematical and other kinds of expertise to solve them.
- Scholarly work in mathematics education lies on a spectrum—sometimes it is creative, like writing a task; sometimes it is analytic, like research.
- Departments of mathematical sciences need to reward this work within the tenure and promotion system; some departments have done this, so it doesn't require inventing things from scratch.

To further the discussion begun at this panel, a volume on the topic will appear in the AWM-Springer series (see http://www.springer.com/series/13764). AWM Education Committee co-chairs Jackie Dewar and Pao-sheng Hsu and member Harriet Pollatsek are the co-editors of the book. Their goal is to have it available at the 2017 Joint Mathematics Meetings.

Proposed Amendments to the AWM Bylaws

At the AWM Business Meeting on January 6, 2016 the AWM members present voted unanimously to approve revisions to the AWM Bylaws. After ratification of these changes by the membership, the new version of the Bylaws will take effect.

Rationale for proposing these amendments: There are some inconsistencies and lack of specificity in the language in the current Bylaws in regard to who has voting privileges on the Executive Committee (EC) and more specifically who is eligible to attend and vote in executive sessions. These ambiguities had been clarified much earlier by the EC in its rules and procedures, so that both the elected members of the EC and the appointed members (currently the Newsletter Editor, the Meetings Coordinator and the Web Editor) "managed the affairs of the Corporation," which includes the right to vote. But this inconsistency remained in the Bylaws: in Section 4.1 it states that "the affairs of the Corporation shall be managed by the Directors [the elected members]" and in 4.10.d.2.a it says "The responsibility of the Executive Committee [both elected and appointed members] shall be … to manage the business and affairs for the Corporation."

To avoid further confusion, these inconsistencies have been dealt with by the following revisions to the Bylaws. Text to be removed is overstruck, and new text is in boldface.

continued on page 22

AWM BYLAWS *continued from page 21*

Section 4.1 Qualification and Powers of Directors

The **Board of** Directors shall consist of all **elected and appointed** members of the Executive Committee ~~except for the Newsletter Editor, the Web Editor, and the Meetings Coordinator~~. The affairs of the Corporation shall be managed by the Directors who shall have and may exercise all the powers of the Corporation, except those powers reserved to the members by law, the Articles of Organization or by these Bylaws.

Section 4.10.d ~~Responsibilities~~ **Meetings and Voting**

~~1~~**i.** The Executive Committee shall meet at least once annually in conjunction with the Annual Meeting of members at the Joint Mathematics Meetings in January or otherwise as called by the President. It is a responsibility of Officers to try to attend meetings during their tenure; those who will not be present should notify the President in advance of the meeting. **Officers may attend by conference call.** If a majority of the Executive Committee is not present, members having notified the President that they would be absent will be polled concerning actions. ~~The Executive Committee may go into closed executive session upon majority vote.~~ Any members of the Corporation may attend and participate, without vote, in all meetings of the Executive Committee which are not in closed executive session. Interim matters requiring Executive Committee action and approval may be handled by mail or email ballot of the Executive Committee. **The Executive Committee may go into closed executive session upon majority vote.**

ii. The Newsletter Editor and other appointed members have full voting rights, including when the Executive Committee goes into a closed session, unless there is a conflict of interest (for example when appointments to those positions are approved).

Section 4.10.e Responsibilities

~~2.~~ The responsibilities of the Executive Committee shall be:

~~a.~~**i.** To provide for its own organization and operation and ~~to manage the business and affairs of the Corporation~~ **to oversee the work of the portfolios that structure the Association's major activities;**

~~b.~~**ii.** To create Task Forces and other units of organization of the Association as it may deem advisable to carry out the objectives for which the Corporation was created;

~~c.~~**iii.** To initiate and supervise the services of the Corporation;

~~d.~~**iv.** To act upon proposals affecting the dues structure of the Corporation;

~~e.~~**v.** To plan~~, with the Program Committee,~~ the time, place, character, and scope of general meetings of the Corporation.

Other minor revisions have also been made. For example, elections and other votes are currently held electronically. But ratifying changes in the Bylaws that have been approved at a Membership Meeting must currently be done by mail ballot; this will be changed. Also, the AWM Management Team wished to move up the time when the elected members of the EC choose the appointed members of the EC from the end of the year to the summer in order to give the people appointed (or re-appointed) adequate time to plan their schedules. Finally, the due date for the election ballots has been changed from December 15 to December 1. December 15 is very late to notify people who have been elected to the EC and invite them to attend the January EC meeting. Moreover, appointments to the Portfolio committees are done in early December. Not knowing who the new Members-at-Large will be further complicates that process. All revisions to the Bylaws can be found here: https://sites.google.com/site/awmmath/amendments-to-the-awm-bylaws.

Ballot:

I ratify the Bylaws changes approved by members present at the AWM Business Meeting in Seattle, January 4, 2016.

❑ Yes

❑ No

Use this ballot or a facsimile thereof, or print a copy at www.awm-math.org. Return your ballot to AWM Ballot, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030 by **April 15, 2016**. You must validate your ballot by placing your signature and printing your name on the envelope flap. If you wish, you may enclose your ballot in an inner envelope.

AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND RECENT PHDs AT THE 2017 JOINT MATHEMATICS MEETINGS

Application deadline: August 15, 2016

For many years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent PhDs in conjunction with major mathematics meetings. New in 2016 is that the portion of the workshop pertaining to the recent PhDs is supported by the AWM ADVANCE grant. An AWM Workshop is scheduled to be held in conjunction with the Joint Mathematics Meetings in Atlanta, Georgia January 4–7, 2017.

FORMAT: The workshop will consist of a special session focused on Number Theory and a poster session. The poster session will be open to all areas of research. Participants will be selected in advance of the workshop to present their work. Recent PhDs will be selected to join senior women in a Special Session on Number Theory where they will give 20-minute talks. The speakers in the Special Session on Number Theory will be supported by a National Science Foundation ADVANCE grant: Career Advancement for Women through Research Focused Networks. The graduate students will be selected to present posters at the Workshop Reception and Poster Session. Pending funding, AWM will offer partial support for travel and hotel accommodations for the selected graduate students. The workshop will include a reception and a luncheon. Workshop participants will have the opportunity to meet with other women mathematicians at all stages of their careers.

All mathematicians (female and male) are invited to attend the talks and poster presentations. Departments are urged to help graduate students and recent PhDs who are not selected for the workshop to obtain institutional support to attend the presentations.

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

ELIGIBILITY: To be eligible for selection and funding, a graduate student must have made substantial progress towards her thesis and a recent PhD must have received her PhD within approximately the last five years, whether or not she currently holds a postdoctoral or other academic position. Women with grants or other sources of support are welcome to apply. All non-US citizens must have a current US address.

All applications should include:

- a title of the proposed poster or talk
- an abstract in the form required for AMS Special Session submissions for the Joint Mathematics Meetings
- a curriculum vitae
- one letter of recommendation from a faculty member or research mathematician who knows the applicant's work—in particular, a graduate student should include a letter of recommendation from her thesis advisor.

Applications (including abstract submission via the Joint Mathematics Meetings website) must be completed electronically by **August 15, 2016**. See https://sites.google.com/site/awmmath/programs/workshops for details.

AWM Lunch Table

Talitha M. Washington, Howard University

Mary Gray did a wonderful job facilitating the lunch table at the MD-DC-VA Section of the MAA held at St. Mary's College of Maryland in November 2015. The local institution provided us with a classroom to have our lunch, and we had a whole group discussion. I took a couple of notes at the meeting to provide some feedback. We asked what they would like for AWM to do at the sectional meeting, and also in general.

- The participants did like the idea of the lunch. I think people like the idea of having informal chit-chat as a way to network and connect.
- They recommended a handout or flyer. Some were new to AWM and just kind of dropped in by accident, which was nice. Of course as the discussion went on, they became really interested in knowing more.
- One person recommended that AWM get a LinkedIn page as a company. People can add it as an employee and then we, the AWM members, can "see" each other and know who we are.
- Another person recommended that we link into StemConnector (http://stemconnector.org/stem-directory) and Million Women Mentors (https://www.millionwomenmentors.org/).

Talitha Washington (3rd from left) and officers of the AWM Student Chapter of St. Mary's College of Maryland

- The local student chapter leaders wanted to know: more ideas as to what is AWM, available speakers, what other chapters have done as an idea generator, and how to make their chapter relevant in a small department with a number of math student clubs already in existence. I pressed them to see how they would like to receive this information, and it seemed that a webinar is appreciated. That is, in the fall semester, the AWM holds a webinar with the executive leadership of the student chapters (and a recorded copy for those who wish to see it later) and covers the aforementioned topics.

So I think the MD-DC-VA MAA meeting went well. I really enjoyed the lunch time.

Annalisa Crannell posing with members of the Williams College AWM Student Chapter

STUDENT CHAPTER CORNER

Coordinator: Kathleen Fowler, kfowler@clarkson.edu

Williams College AWM Chapter

Sarah Fleming, Vice President

This year, under the guidance of Haydee Lindo, Gaius Charles Bolin Fellow in Mathematics at Williams College, a group of students started a student chapter of the AWM. We have been working to improve student experiences with the math department through both short-term and long-term projects. Over the course of the past month, we have been holding focus group discussions to collect and discuss student experiences with the math department—particularly experiences of students from marginalized groups—in order

to generate a set of recommendations for the department on how to be more inclusive and supportive of groups that are historically underrepresented in STEM fields. We are working closely with the department to implement these changes, and we plan to continue this work next semester.

In January, we had our first AWM speaker, Professor Annalisa Crannell of Franklin and Marshall College, give a talk, "Math & Art: The Good, the Bad, and the Pretty," on perspective and mapping a three-dimensional world onto a two-dimensional canvas. It was a huge success, and we had a great turnout! Crannell's talk engaged math majors and non-majors alike, and she taught audience members how to draw a perfect cube and how to fully appreciate art in a museum. Afterward, a group of students went out to dinner with her and got the chance to hear about her experiences as a woman in a traditionally male-dominated field, particularly in college and graduate school. Based on the success of this event, we hope to invite more AWM speakers in the future.

Our student chapter has provided a lot of students with a comfortable space to discuss their experiences and build community among women and minorities in math, both through informal social gatherings and through more formal events and discussions. We have had a great first few months, and we look forward to the coming semester!

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.

Project *Mc*^{2}: Whose Project?

Sushmita Chatterjee and Sarah J. Greenwald, Appalachian State University

Project Mc^2 was released on Netflix in August 2015 with a tagline of "smart is the new cool" [5]. The show was reportedly created to encourage more girls to study STEM [2, 3, 4, 7]. The first season is approximately ninety minutes long and was broken up into three segments that follow a single story line. An additional three-minute countdown clip was released on New Year's Eve.

The show focuses on the adventures of four girls, Adrienne Attoms, Bryden Bandweth, Camryn Coyle and McKeyla McAlister. The girls are recruited to save a prince so that he can venture into space. The first three girls each have a talent connected to their last name: chemistry, technology, and mechanical expertise. In referring to the repeating letters in their first and last names (A^2, B^2, C^2) "we're like a super-cute live version of the Pythagorean theorem!" This is one example where science is feminized, and there are many others in the show. For instance, codebreaking isn't referred to as codebreaking: "I love number games" says Bryden Bandweth. A random number generator was useful in that scenario, so scientific terms haven't been completely removed from the show. Other mathematical items in the show include cylinders, physical notions like the connection of angle to velocity, and numerous equations on boards. Each of these is feminized by the use of the color pink or a cutesy context. Everything is cool, fun and silly for the first three girls, and these girls are very giggly. The fourth girl, McKeyla McAlister, has a last name that is more ambiguous. This meshes with her portrayal. She is more of a generalist in terms of her talents, and also is more serious and somewhat less feminine. The show's title *Project Mc*^{2} is named for the repeating Mc in her first and last names.

It was heartening to watch a show meant for young girls and tweens that paid attention to the transnational reality of our lives. There were characters from different countries and cultures as well as a racial diversity to the cast. They showcased a youth style unique to the show, with a mix of patterns and colors. While they each dressed to match their own personalities, such as Adrienne Attoms' pink glasses, there was a certain generalizable focus on high heels and makeup. In addition, shirts often had affirmational messages on them, such as "I am the sharpest pencil in the box." We think this was an attempt at branding to tie into the character dolls one can purchase. Sadly the transnational message is somewhat diffused under the homogenizing sameness of the look. However, isn't that also inescapable in the marketing logic of branding and promoting goods? The show's promotion continues on websites and social media outlets [6], which highlight STEM facts, silly jokes, science experiments, contests, and of course those dolls. Which came first, we wonder, the dolls or the show?

There were irrefutable tensions in many aspects of the

continued on page 26

show such as an interplay between difference and sameness. The show highlighted an upside-down world. Here women rule the world and the girls save the prince. The men are not very intelligent. Girls love math and science and make no qualms about incessantly repeating that they are as smart as one can ever be. So, should we see this show as a feminist vision of empowerment and liberation? Or, a parody of equality? Can both these possibilities serve as a useful catalyst to help us question our stereotypes about girls and science, women more generally, and help create a vision for a more equitable world?

We enlisted the help of a member of the target audience, Sarah's 11-year old niece (who has had a love-hate relationship with math). After watching the first episode, *Project Mc²* could not compete with the lure of yet another round of Harry Potter movies, but the next day she requested we get back to the series. In her words: "Adrienne Attoms was my favorite. She was really cute, smart, and I looooooooved her accent. I really liked the show, and I hope they make another season! They're all great actresses, and the plot was very good!"

We want to come back to the issue of feminization of science as it relates to careers. Science and math careers in the show are framed as girl-friendly, like Bryden Bandweth, who spends much of her time tweeting. Her website profile lists "I'm a 24/7 #DigitalDarling" [6]. These careers are not limited to the teenage characters—Danica McKellar plays the chief intelligence agent. She has helped publicize the show's STEM goals: "you don't have to choose between being the smart girl and being fun and fashionable" [1]. There are also a variety of real-life applications on the show and a focus on the importance of teamwork. One example mentioned many times throughout the series was Adrienne Attoms' self-described talent—she is a culinary chemist. Cooking food is typically seen as a woman's domain and an expertise that contributes greatly to her "properly" feminine virtues. The show does not negate this assumption. Instead it creates a new category: "culinary chemist." We could interpret this overture as a broadening and democratization of the stringent association of women with cooking, especially baking cookies and cakes. On the other hand, is this simply a justification of what is expected of women, and life goes on as usual with the added legitimacy of cooking being portrayed as scientific? A broadening of paradigms doesn't necessarily correlate with progress for gender roles.

Ostensibly, this season of *Project Mc²* wouldn't really pass the Bechdel test as the protagonists are singularly focused on saving the prince, so they discuss a boy most of the time. However, we do need to temper this critique as the prince is portrayed in many ways as the damsel in distress. Thus, a quiet subversive tenor infiltrates this aspect of the show. In fact, many stereotypes are turned topsy-turvy. And many are left untouched. For instance, the show is primarily heterosexual and frames imaginations through a stereotypical view of body type. The girls are skinny and always look fabulous whether doing their science or running in high heels to save the prince. Does this project fuel an alternative imagination of STEM and the world, a different project? Or, is it simply the same old project wearing different clothes? Whose project? Time will tell.

Further Reading

[1] Clements, Erin. "Danica McKellar: Netflix show to help tween girls find 'inner confidence'." *TODAY* August 6, 2015. http://www.today.com/parents/danica-mckellar-netflix-show-help-tween-girls-find-inner-confidence-t37151

[2] Click-A-Brick Toys. "Educational Building Toy Company Click-A-Brick Praises New Netflix STEM Series Aimed At Girls." *MarketersMedia* September 21, 2015. http://marketersmedia.com/educational-building-toy-company-click-a-brick-praises-new-netflix-stem-series-aimed-at-girls/90453

[3] Elber, Lynn. "Tween series 'Project Mc2' puts smart girls in the spotlight." *AP* August 4, 2015. http://bigstory.ap.org/article/2871bb352cec47cf96657447954a20e9/tween-series-project-mc2-puts-smart-girls-spotlight

[4] Moran, Gwen. "Can these dolls—who star in their own Netfix show—make STEM cool?" *Fortune* August 8, 2015. http://fortune.com/2015/08/08/stem-dolls-netflix-show/

[5] Netflix. "Watch *Project Mc²* Online." http://www.netflix.com/title/80058852

[6] *Project Mc².* "Learning Activities, Quizzes and Games for Girls." http://www.projectmc2.com/ https://www.facebook.com/ProjectMC2/

[7] Wilbur, Hayley. "Each of these empowering dolls comes with a fun STEM experiment." *Mashable* August 7, 2015. http://mashable.com/2015/08/07/project-mc-stem-dolls/

BOOK REVIEW

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

Mom the Chemistry Professor, edited by Renée Cole, Cecilia Marzabadi, Gail Webster and Kimberly Woznack. Springer, 2014, ISBN 978-3319060439.

Reviewer: Becky Hall, Associate Professor, Western Connecticut State University, hallb@wcsu.edu

As I read the book *Mom the Chemistry Professor*, I felt like I was sitting in a room filled with 17 amazing women who one by one told me their personal inspirational stories. The stories were told with great honesty and humility. The authors come from many different backgrounds and yet each of their stories felt deeply connected to my own experiences as a mother and a math professor.

Amber Flynn Charlebois writes about her five roles in life. Firstly, she is a mother of three children (one of whom was named based partially on the results of a poll Amber gave to her organic chemistry class). She is an associate professor of chemistry; a wife of a "fellow chemistry geek"; a sister, friend, mentor and aunt; and she is also "Dr. Demo: On Site Science, where [she is] able to share the excitement of chemistry with young children." Amber admits that while sometimes she can successfully juggle these five roles, there are days where she feels she has "failed in all of these roles." Her sense of humor is obvious as she candidly writes about the ups and downs of balancing these roles in her life. Her first son was born in the middle of her very first semester of teaching, and since she had been teaching less than 12 weeks, she was not eligible to use disability for her maternity leave. Amazingly, Amber was back to work ten days after having her son! (I thought I was impressive when I gave a talk at a local conference a week after my second child was born.) She jokes that, "I was feeling great and as long as I did not cough or sneeze, being in front of the classroom was fine." Amber talks about how she managed after two miscarriages and then the birth of her second son and her daughter. She, throughout her chapter, learns to let go and embraces the fact that you can't control everything (although she admits she is a control freak who has to refold towels after her husband folds them "all wrong"). Her story is told with a great sense of humor, but she also discusses a serious topic. Amber describes the "constant disregard and disrespect aimed at [her] and the other untenured woman" in her department. This ultimately led to a move to a new position and later a "lawsuit against the university for A Hostile Work Environment Based on Gender." Amber's story and actions make me grateful that strong women have helped pave the way for me and other women to be where we are today. Amber gives some credit to the Committee on the Advancement of Women Chemists (COACh), which is a "grassroots organization that works to increase the number and career success of women scientists through innovative programs and strategies." She attended their Effective Negotiation Workshop while she was in the hostile work environment and it gave her "the strength to keep going."

Amber's story is just one of the many inspiring yet relatable stories in this book. Despite the very different lives of each author, several common themes emerged. In particular, several of the authors described their naivety in entering the demanding dual-life of motherhood and professor-hood. Most of the authors assured readers that there was no perfect way to do both, but that it can be done. Many of these women, who are exceptional in their field, admitted feelings of inadequacy (which was surprising to me when I looked at their accomplishments, yet somehow comforting since I have felt the same way). Personally, I know that when I am at work I feel like I am neglecting my parental duties and when I'm at home I feel like I'm neglecting my professional responsibilities. So when I read how Amber Flynn Charlebois had to juggle teaching a group of future chemists with a five-year old son's fever and a newborn daughter's MRI, I immediately sympathized with her difficult choice. As Renée Cole wrote, "sometimes I do a good job of finding balance, and other times I feel like I'm on a merry-go-round hanging on for dear life." Just as there is no perfect way to become a Prof. Mother (a title I'll adopt from Nancy E. Levinger, the author of another chapter), there is no perfect time to do it either. Some of the authors in this book became mothers during graduate school and others when they were already professors. Either way, they all seemed to find a way to make it work. The variety of backgrounds in this book means there is likely at least one story that any Prof. Mother (or aspiring one) would relate to.

Another common theme throughout the book was how, despite the fact that many scientists like to have a plan and stick to it (mathematicians certainly can relate to this sentiment), it is often not possible to do this when it comes to motherhood. Curveballs get thrown and we have to learn to deal with them. As Stacy Lowery Bretz writes, "Pregnancy and childbirth are oblivious to our time clocks and planned milestones." For example, Danielle Tullman-Ercek writes about how the "timing was not what we would have planned,

continued on page 28

as [her son] was due just a few months before [her] agreed upon start date at Berkeley." As a mother of two "summer babies" (one named Summer, by the way) I feel a little more grateful now for my luck in the timing of my daughters' births. Several authors also discussed how they dealt with unplanned changes in jobs for themselves or their partners which resulted in moving cities or even countries. Motherhood brings lots of surprises. Gail Hartmann Webster was nursing her three month old just before she had to defend her dissertation. Her daughter "promptly threw up all over [her]" and Gail was forced to take her final oral exam with "barf all over [her] shoulder." Hearing how these women learned to embrace their lack of control of their situations encourages the reader to do the same in their own lives.

Supportive people are a necessity in any mother's life, but as most of the authors in this book explain, they are a requirement for Prof. Mothers. For the women in this book, the support often came from their partners, but also from family and even hired help. (Not all the women in this book were married with supportive partners. There were stories of single mothers too.) Many of the authors offer advice about making sure to have such support available and encourage the readers to ask for help when needed. As Elizabeth Dorland writes, "Choose your spouse carefully … I'm only partly kidding."

Balancing the roles of mother and professor was a part of each author's story, but how they did so was different. Michelle M. Ward elected to stay in a non-tenure track position even though she knew she was "capable of pursuing something more prestigious … [but she] never missed one of [her] son's soccer games, band concerts, formal dance pictures, and the like," while Gail Hartmann Webster writes about missing her daughter's kindergarten graduation, both of her daughter's fifth-grade promotion ceremonies, and one daughter's eight-grade graduation. She accepts giving up "a lot to prove that [she] was worthy of tenure." Whether the authors of this book missed milestones in the children's lives or not, they all brought their love of science home with them. Pamela Ann McElroy Brown talks about how her daughter enjoyed Saturday science fairs and her son liked kitchen table science experiments that Pamela tested on him before demonstrating to her class. Nancy E. Levinger says that her older son learned that having a Prof. Mother meant that if he posed a question, he "would stimulate the Socratic method in [his] mother leading to many more questions than answers." Having a Prof. Mother for Renée Cole's daughter meant that she had the confidence to speak up for herself and a classmate since "she had grown up watching [her mother] and other smart, intense women."

This book was easy to read and hard to put down. It is filled with relatable and inspiring stories, interviews with many of the authors and practical advice for any aspiring Prof. Mother in chemistry (or math, although the very last part of this book would be useful mostly to women in the chemistry field since it addresses safety issues in the lab when pregnant or breast-feeding).

EDUCATION COLUMN

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

2015 CUPM Curriculum Guide to Majors in the Mathematical Sciences

Elizabeth (Betsy) Yanik, Emporia State University and Diana White, University of Colorado Denver

The Mathematical Association of America (MAA) has a rich history of consistently developing resources addressing numerous aspects of mathematics curricular development and improvement. In particular, the MAA Committee on the Undergraduate Program in Mathematics (CUPM) has provided recommendations, combined as *Compendium of CUPM Recommendations* (from the 1960s and 1970s) as well as the 1981 CUPM Guidelines, a 1991 CUPM report and the 2004 *CUPM Curriculum Guide*. The recently released *2015 CUPM Guide to Majors in the Mathematical Sciences*, while reaffirming the principles in the 2004 Guide, has placed a particular emphasis on aspects of the numerous possibilities for mathematical programs and coursework within the major. This effort was led by a steering committee of nine mathematicians chaired by Carol Schumacher and Martha Siegel. The editor of the Guide was Paul Zorn. More than 200 mathematicians contributed directly to the Guide. This work was supported by the Mathematical Association of America, the NSF grant DUE-1228636 and the Educational Advancement Foundation.

The 2015 Curriculum Guide begins with an overview of recommendations for programs in the mathematical sciences, which includes a set of overall cognitive goals that

every type of mathematical sciences major should share. These goals are to have students "develop effective thinking and communication skills," "learn to link applications and theory," "learn to use technological tools," and "develop mathematical independence and experience open-ended inquiry." This portion of the Guide also recommends nine overarching content goals.

There is a printed (abbreviated) version of the introductory part of the 2015 Curriculum Guide, but it is recommended that readers view the much larger version on the website, www.maa.org/cupm. The Guide has three major subdivisions. First, there are 16 individual course area reports that focus on undergraduate course areas (such as linear algebra, calculus, analysis, statistics, and more). Each course area report was written by a committee whose members have substantial experience in that course and contains an introduction to the subject, discussion of possible audiences for a variety of courses in that area, typical prerequisites, learning goals, sample syllabi, and a list of possible textbooks.

Another major component of the 2015 Curriculum Guide is information about a variety of possible program areas in the mathematical major. These reports, also prepared by expert committees, describe programs that might be designed as minors, tracks, or full majors within the mathematics major. There are reports on eleven programs that have connections to mathematics majors such as actuarial science, teacher education, biomathematics, and engineering. These reports also discuss possible student audiences and a variety of required and elective courses that would support a given program. The design of majors in statistics and in applied mathematics closely follow the recommendations of ASA and SIAM, respectively.

The third major component is entitled "Beyond the Curriculum." In this section of the Guide (which appears in the printed version), the following areas are discussed: departmental responsibilities, mathematics as a liberal art, recruitment and retention, articulation and placement, preparation for graduate study, assessment, technology, and undergraduate research as each affects and contributes to the curriculum.

CUPM intends to update portions of each of the components in the 2015 Curriculum Guide on a rotating basis, which should be more manageable than reconstructing an entirely new guide in ten years. AWM members are urged to contact CUPM with examples of innovative courses in existing areas. CUPM welcomes suggestions for additions of new course or program areas. Any suggestions or comments may be sent to Professor Martha Siegel at msiegel@towson.edu.

During the development of the Curriculum Guide, a number of issues arose that best fall under "how to teach" as opposed to "what to teach." As such, the MAA charged its Committee on the Teaching of Undergraduate Mathematics with developing an instructional practices (IP) guide to accompany the Curriculum Guide. Funded through an NSF grant, this IP Guide will be research-based and evidence-based, drawing on the research literature related to specific subjects, as well as more broadly on active learning. Thus far, a planning workshop with attendees from across the mathematical community, including a significant number of researchers in undergraduate mathematics education, came together to make recommendations on the content and structure of the guide; an advisory board and steering committee has been formed and met for the first time at the Joint Math Meetings in January 2016; and writing groups are being formed.

Community input is powerful and necessary. Over the next two to three years, expect focus groups, panels, and related sessions at MathFest and the Joint Math Meetings. More information about the IP Guide may be found in the December 2015/January 2016 issue of *MAA Focus* (see http://www.maa.org/press/periodicals/maa-focus). The leadership team for the development of the IP Guide consists of Martha Abell from Georgia Southern University, Linda Braddy from Tarrant County College, Lew Ludwig from Denison University, and Diana White from the University of Colorado Denver. Please feel free to contact them for additional information.

PAEMST

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) provide the nation's highest honors for teachers of mathematics and science (including computer science). PAEMST nominations and applications for the 2015–2016 cycle are open for K–6 grade teachers. Presidential awardees receive a certificate signed by the President, a trip for two to Washington, DC to attend a series of recognition events and professional development opportunities, and a $10,000 award from NSF. Last year, the most recent cohort of PAEMST awardees even had the opportunity to meet with President Barack Obama.

Please consider nominating a talented science or math teacher at http://www.paemst.org/ today. Nominations close **April 1, 2016**. Applications close **May 1, 2016**.

Collaboration and Creativity in Southern California: An Offering

Gizem Karaali and Ami Radunskaya, Pomona College

2b V ~2b

In a cocoa shop
Is'lated fingerpainter
Sand her medium

Urban: deficient
Deplorable monotone
Infinite in space

Mistletoe matrix
Passionate kernel of truth
Closed and yet open

Imposter comes in
Chaotic transformation
Null identity

Invertible love
Bifurcation of the heart
Asking math or art?[1]

Creative Collaboration

WiMSoCal (Women in Math in Southern California) is a regional conference in its ninth incarnation. The conference is the result of the efforts of Professor Cymra Haskell (USC) to create a supportive local community for women mathematicians. At our first meeting in 2007, a confluence of Ami's EDGE regional cluster and Cymra's WISE group at USC, we socialized, got to know each other and brainstormed about what we, as a group, would like to see happen. It was clear that our younger colleagues wanted to meet as mathematicians, sharing intellectual ideas as well as anecdotes from the trenches.

The first WiMSoCal Symposium took place in April, 2009 at Loyola Marymount University, with 51 participants. Alissa Crans (LMU) was the local host, and she has continued to help organize future events. Since then, it has been hosted at USC, Pomona College, UC San Diego and UC Riverside (see http://www.pomona.edu/events/wimsocal-2015 for schedules and abstracts of past symposia). The most recent symposium had over 120 registrants, including undergraduates, graduate students, mathematicians from industry, and women teaching mathematics at a range of institutions. There is a positive energy at these one-day conferences, and participants enjoy networking, talking about mathematics and current issues, and getting feedback and new ideas for future projects.

One great thing about running a grass-roots conference like this is the flexibility that it allows. Every year, we ask for feedback from participants, and we take what they say to heart. The main focus of the symposium is to promote and support women mathematicians at all stages of their careers. Research talks are standard fare, but how can we build community in a short time period? We have had career panels, breakout sessions that allow people to meet others in their field, provocative prompts to promote discussion, hikes around campus, wine and cheese socials, and

[1] Ashley Simons, Anton Varvak, Fei Xie, Gizem Karaali, at WiMSoCal2015

collaborative problem solving. A key ingredient to the success of WiMSoCal is a conscious effort to vertically integrate the participants: undergraduates should meet graduate students and postdocs, new PhDs should connect with senior women. In this note, we will describe our latest effort: collaborative creativity.

Infinite space calls
Lexicographic surveys;
A ring of planets.

Mentor speaking some
Jargon driving heroes mad
Juicy sandy dreams.

In every gathering where most participants do not know most of the others, the organizers resort to various warmup-and-mingle activities. Get in small groups and tell each other your name, the eye color of your first-grade crush, the most outrageous dish you have ever consumed, etc. Even if one is excited to meet new people, after a while, these kinds of things get a bit tiresome. To keep things fresh or relevant, organizers tend to up the stakes by asking more and more ridiculous questions: the first person you punched, your favorite way to reduce your carbon footprint, the thirteenth prime number you can think of, etc. At the WiMSoCal 2015 meeting, we decided to do something totally different.

Since 2011, Gizem Karaali, through her work with the *Journal of Humanistic Mathematics*, has been organizing poetry readings at the Joint Mathematics Meetings. She finds the notion of mathematical poetry an exciting braid woven out of three seemingly remote strands: mathematics, poetry, and fun. Those of us who are into at least one of the two former strands will know that the third is often a part

Creative Collaboration Group 3

of the team, but even those who like all three do not readily view the full trio as a cohesive group. And yet mathematical poetry offers a lot to those who might be willing to venture into it: pure playful fun, emotional release, intellectual challenge.

After the morning talks right before lunch, there was a mingling session ("Active Socializing with Coffee" according to the program). The next time slot was designated in the program as "Breakout Sessions," but we were thinking of it more as a "Collaborative Creativity/Creative Collaboration" session. Participants were split into small groups, consisting of at least one undergraduate woman, at least one woman at the graduate or postdoctoral level, and at least one "senior" woman, which mostly meant someone who was tenured or advanced on the tenure track. These groups were assigned the task to create a poem using the structure of the English haiku

continued on page 32

WiMSoCal 2015

COLLABORATION AND CREATIVITY *from page 31*

as its formal basis. Each poem was to be composed of stanzas that were haikus in isolation, three lines of 5-7-5 syllabic form. Participants were provided a list of words and were told to use these in their poetry.

Many of the women walked into the activity with some trepidation or at least some reluctance. Some thought they were not artistic at all, that they were the rational type and poetry was beyond their reach. Some thought this was a terribly goofy idea (and maybe they were right, but what is wrong with goofy every now and then?). Some were poetry gourmets and did not recognize the allure of mathematical poetry, and yes, they too had a point, most of the time it is not really very high-brow. But letting go and unleashing creative juices is always fun. Still, all were good natured about it and went along with the plan.

The result was unexpected, at least for those who have never tried this kind of thing before. Letting down one's guard and unleashing creative juices is often surprisingly fun, and almost always stimulating. Pretty soon people were deep in discussion; the excitement in the air was of a child who is solving a jigsaw puzzle on her own (or with a couple good friends) for the first time.

The activity also turned out to be a great way for people to ease into other kinds of conversations. The conspiring organizers had intentionally inserted certain key words in the list (isolated, victim, outlier, mentor, and so on) that made some conversations naturally bubble up.

We leave you with some of the neat and eclectic poetry these women created.

Blá, an outlier
Isolated in a ring
Continuity

Begrudgingly She
Feels closed in chaotic sand
wants Transformation

Seeks connected graph
Iterating to stable
Equilibrium

She generates a
Fundamental network of
Passionate mentors

Notes:

1. Tips on how to host a regional conference will be posted on the AWM webpage. For more information, contact Cymra Haskell at chaskell@usc.edu.
2. Unfortunately, we do not have authors for all of the math-ku presented here. We thank the 2015 WiMSoCal participants for sharing their contributions.
3. The *Journal of Humanistic Mathematics* is a welcoming outlet for poetry. See http://scholarship.claremont.edu/jhm/.

ANNOUNCEMENTS

AWM at USASEF

The AWM will be part of the fourth USA Science and Engineering Festival Exposition, April 16–17, 2016, at the Walter E. Washington Convention Center, Washington, DC. This year's AWM booth activity is called "Euler-gami." Visitors will use origami to explore some math invariants, in particular, the Euler characteristic and a special class of shapes with Euler characteristic two. Please join us for the challenge!

At each of the previous three festivals, the AWM booth had over 3,500 visitors. We need your help engaging this year's math-curious crowds! The AWM is currently seeking enthusiastic volunteers to help staff the booth. If you're in the DC area and interested in participating, please email Tai Melcher at melcher@virginia.edu or Katy Ott at kott@bates.edu.

NSF-CBMS Regional Research Conferences in the Mathematical Sciences

The National Science Foundation has announced support for two NSF-CBMS Regional Research Conferences to be held during 2016. These two bring to 358 the total number of such conferences since the NSF-CBMS Regional Research Conference Series began in 1969.

These conferences are intended to stimulate interest and activity in mathematical research. Each five day conference features a distinguished lecturer who delivers ten lectures on a topic of important current research in one sharply focused area of the mathematical sciences. The lecturer subsequently prepares an expository monograph based upon these lectures, which is normally published as a part of a regional conference series. Depending upon the conference topic,

the monograph is published by the American Mathematical Society, the Society for Industrial and Applied Mathematics, or jointly by the American Statistical Association and the Institute of Mathematical Statistics.

Support for about 30 participants is provided and the conference organizer invites both established researchers and interested newcomers, including postdoctoral fellows and graduate students, to attend. Information about an individual conference may be obtained by contacting the conference organizer.

A listing of all past conferences and published monographs appears at www.cbmsweb.org/NSF. Information about submitting proposals for future conferences may be found at Call for Proposals for the 2017 NSF-CBMS Regional Research Conferences. Institutions that are interested in increasing their research activity and profile are especially encouraged to apply, as are proposals suggesting women speakers. Proposals for conferences to be held in 2017 are due by **April 29, 2016**. Questions should be directed to CBMS, 1529 18th St. NW, Washington, DC 20036; email: rosier@georgetown.edu.

The two conferences to be held in 2016 are listed below.

Discrete Painleve Equations
Nalini Joshi, lecturer
May 16–20 at the University of Texas Rio Grande Valley
Baofeng Feng and Andras Balogh, organizers
956-665-2269, baofeng.feng@utrgv.edu
956-665-3460, andras.balogh@utrgv.edu
sites.google.com/site/nsfcbms2016utrgv

Topological Data Analysis: Topology, Geometry, and Statistics
Sayan Mukherjee, lecturer
May 31–June 4 at the University of Texas at Austin
Lizhen Lin, Peter Mueller, and Rachel Ward, organizers
512-475-8838, lizhen.lin@austin.utexas.edu
512-471-7168, pmueller@math.utexas.edu
979-229-1584, rward@math.utexas.edu
stat.utexas.edu/training/cbms-2016

2016 Experimental Chaos and Complexity Conference

The 14th Experimental Chaos and Complexity Conference (ECC 2016) brings together an international interdisciplinary group involving physicists, engineers, mathematicians, chemists, biologists, and neuroscientists focused on various aspects of Experimental Chaos and Complexity. This meeting, to be held in Banff, Alberta, Canada, May 16–19, 2016, will focus on experimental approaches in physics, engineering, neuroscience, chemistry, and biology, linked together by modern non-linear dynamics.

Topics include: Autonomous systems and robotics, Computational and collective intelligence, Earth sciences including climate change, Energy, Fluid dynamics and turbulence, Information processing and communications, Optics and lasers, Behavioral and cognitive sciences, Data assimilation and applications, Electronic circuits, Experimental complex networks, Geophysics and space sciences, Neurosciences and system biology, Quantum and wave chaos, Bose-Einstein condensates. Other topics within the general scope of ECC 2016 are welcome.

Travel grants will provide partial to full support including airfare (US carriers as specified in NSF rules), registration and housing, depending upon the number of applications.

Eligibility: These travel grants for US scientists are focused on new investigators without funding, postdocs and PhD students, with a special focus on diversity (women, minorities, people with disabilities, institutional diversity).

Applicants should provide an abstract and summary of their proposed presentation, a brief CV, one to three publications, and a letter from a mentor or supervisor in the case of postdocs and PhD students; the letter is optional for others. Applicants should also indicate how much funding is available elsewhere, for example, from their institution.

For more information, or to submit applications, please email Harold M Hastings, Bard College at Simon's Rock, hhastings@simons-rock.edu. See also http://wcm.ucalgary.ca/ecc2016

BHW Scholarship

The BHW Group is excited to announce its Women in STEM academic scholarship.

Amount: $3000

Eligibility:
Women who are pursuing an undergraduate or master's degree and are majoring in science, technology, engineering or mathematicus during the 2016 academic year.

Applications are due each **April 15**, and the winner will be announced on **May 1**. Apply online at https://thebhwgroup.com/scholarship.

INSTITUTE FOR DEFENSE ANALYSES—The Institute for Defense Analyses Center for Communications Research—Princeton (IDA/CCR-P) is looking for individuals in mathematics, computer science, electrical engineering, and related fields to join in exciting research that enhances our nation's security along with our sponsor, the National Security Agency. Individuals that thrive here enjoy solving difficult problems with a wide range of tools, from mathematics, statistics, computational science, and engineering. Rather than recruiting specific specialties, we are looking for smart PhDs who are willing to learn whatever it takes to solve our ever evolving research problems. Some problems require very deep and sophisticated mathematics, others the latest computational and other technologies, and many problems require both. Ours is a superior professional working environment emphasizing cooperative effort. We are located in Princeton, NJ and benefit from the exciting intellectual environment of our immediate area, as well as the benefits of being close to both New York and Philadelphia. U.S. citizenship and a Department of Defense TS//SI clearance (with polygraph) are required. IDA/CCR-P will sponsor this clearance for those selected. IDA/CCR-Princeton is an equal opportunity employer committed to providing a working environment that is free from discrimination on the basis of race, color, religion, sex (including pregnancy and gender identity), sexual orientation, national origin, age, disability, status as a protected veteran, marital status, genetic characteristic or any other legally protected condition or characteristic. Interested individuals should contact Dr. David J. Saltman (Director) at saltman@idaccr.org with a C.V. and a list of references.

UNIVERSITY OF CALIFORNIA LOS ANGELES—DIRECTOR, INSTITUTE FOR PURE AND APPLIED MATHEMATICS—IPAM is seeking its next Director, to begin a five-year term in July 2017 or 2018. Candidates may come from mathematics, statistics, computer science or related fields, and should possess some of the following qualifications:

- Scientific distinction sufficient to be offered a tenured faculty position at UCLA
- Scientific and mathematical interest and vision, and the ability to interact with a wide range of researchers and research topics
- Experience and capability to manage IPAM, including programs, staff, finances and administration
- Ability to reach out to a broad range of constituents, including the math and science communities, the National Science Foundation, and the public, as well as to engage in fundraising
- A commitment to diversity in math and related disciplines, especially the participation of women and under-represented minorities in research.

Salary will be commensurate with the Director's education and experience. For a detailed job description and application instructions, go to www.ipam.ucla.edu/director. Applications will receive fullest consideration if received by **June 1, 2016**. UCLA is an equal opportunity/affirmative action employer.

2015–2016 Individual Membership Form

JOIN ONLINE at www.awm-math.org!

ASSOCIATION FOR WOMEN IN MATHEMATICS

11240 Waples Mill Road
Suite 200
Fairfax, VA 22030
(703) 934-0163
http://www.awm-math.org
awm@awm-math.org

LAST NAME _____ FIRST NAME _____ M.I. _____

ADDRESS _____

CITY _____ STATE/PROVINCE _____

ZIP/POSTAL CODE _____ COUNTRY _____

AWM's membership year is from October 1 to September 30. Please fill in this information and return it along with your DUES to: AWM Membership, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030.

The AWM *Newsletter* is published six times a year. If you have questions, contact AWM at awm@awm-math.org, (703)934-0163, or visit our website at: http://www.awm-math.org.

☐ I **do not** want my AWM membership information to be released for the Combined Membership List.

E-mail: _____ Home Phone: _____ Work Phone: _____

PROFESSIONAL INFORMATION:

Position: _____

Institution/Company: _____

If student, check one:
☐ Graduate ☐ Undergraduate
If not employed, leave position and institution blank.

City: _____ State/Province: _____ Zip/Postal Code: _____ Country: _____

DEGREES EARNED:

	Degree(s)	Institution(s)	Year(s)
Doctorate:			
Master's:			
Bachelor's:			

Individual Dues Schedule

Please check the appropriate membership category below. Make checks or money order payable to: Association for Women in Mathematics.
NOTE: All checks must be drawn on U.S. banks and be in U.S. funds. AWM membership year is October 1 to September 30.

☐ REGULAR INDIVIDUAL MEMBERSHIP (New Members ONLY)	$ 30	_____
☐ REGULAR INDIVIDUAL MEMBERSHIP	$ 65	_____
☐ 2ND FAMILY MEMBERSHIP	$ 30	_____
Please indicate regular family member: _____		
☐ CONTRIBUTING MEMBERSHIP (includes designation of a free student membership)	$150	_____
☐ RETIRED or PART-TIME EMPLOYED MEMBERSHIP or KWMS AFFILIATE *(circle one)*	$ 30	_____
☐ STUDENT or UNEMPLOYED MEMBERSHIP *(circle one)*	$ 20	_____
☐ OUTREACH MEMBERSHIP	$ 10	_____
☐ CONTRIBUTION to the AWM ANNUAL GIVING CAMPAIGN	$	_____
☐ CONTRIBUTION to the AWM ALICE T. SCHAFER PRIZE FUND	$	_____
☐ CONTRIBUTION to the AWM ANNIVERSARY ENDOWMENT FUND	$	_____

AWM is a 501(c)(3) organization.

☐ I **do not** want my name to appear in annual lists of contributors to AWM's funds.

Select preferred newsletter delivery method: ☐ Print ☐ Electronic

Please note that all Student, Unemployed, Outreach, Family, and KWMS Affiliate members and members with non-U.S. addresses receive only the electronic version of the newsletter.

☐ Gift membership from: _____

TOTAL ENCLOSED $ _____

AWM
11240 Waples Mill Road
Suite 200
Fairfax, VA 22030

NON-PROFIT ORG.
U.S. POSTAGE
PAID
WASHINGTON, D.C.
PERMIT No. 827

Printed in the U.S.A.

ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 46, Number 2, March–April 2016

ADDRESS CORRECTION FORM

☐ Please change my address to:
☐ Please send membership information to my colleague listed below:
☐ No forwarding address known for the individual listed below (enclose copy of label):
(Please print)

Name _____

Address _____

City _____ State _____ Zip _____

Country (if not U.S.) _____ E-mail Address _____

Position _____ Institution/Org. _____

Telephone: Home _____ Work _____

☐ I **DO NOT** want my AWM membership information to be released for the **Combined Membership List (CML)**.

MAIL TO:

AWM
11240 Waples Mill Road
Suite 200
Fairfax, VA 22030

or E-MAIL:

awm@awm-math.org