ASSOCIATION FOR WOMEN IN MATHEMATICS

Newsletter

VOLUME 42, NO. 2 • MARCH–APRIL 2012

The purpose of the Association for Women in Mathematics is

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

IN THIS ISSUE

PRESIDENT'S REPORT

Announcements. It is my great pleasure, and honor, to start working with our new President-Elect, Ruth Charney, Professor of Mathematics at Brandeis University. Ruth is on leave from Brandeis during this calendar year, visiting ETH in Zürich and Mittag-Leffler Institute in Stockholm, so we will be relying a great deal on AV technology!

I am delighted to report that Ellen Kirkman, Professor of Mathematics at Wake Forest University, will be the next treasurer at AWM.

I also have the pleasure of welcoming four new members of the Executive Committee (EC): Annalisa Crannell, Professor of Mathematics at Franklin and Marshall College; Tara Holm, Associate Professor of Mathematics at Cornell University; Kristin Lauter, Principal Researcher and Head of the Cryptography Group at Microsoft Research; and Maura Mast, Associate Vice-Provost for Undergraduate Studies and Associate Professor of Mathematics at University of Massachusetts Boston. AWM is fortunate to have access to the counsel and experience of such a diverse and talented group. Georgia Benkart, immediate Past-President of AWM, and I would like to express our tremendous gratitude to the EC members whose four-year terms just ended: Sylvia Bozeman, Sarah Greenwald, Ruth Haas, and Lisa Traynor. Sarah Greenwald continues her outstanding service to AWM in the role of Associate Newsletter Editor and member of the Policy and Advocacy Committee. She will attend and contribute to the EC meetings, by invitation. Once again, I would like to acknowledge the many years of service in these critical roles to AWM by Holly Gaff and Rebecca Herb.

Congratulations to Ling Long, Associate Professor at Iowa State University, winner of the 2012 Ruth I. Michler Memorial Prize. The AWM web site contains information about Ruth Michler, this prize, and about past winners. See the press release on pages 15–16.

Congratulations to Raman Parimala, Emory University, on being selected to give the 2013 Noether Lecture at the Joint Mathematics Meetings in San Diego.

Report from the JMM. The Joint Mathematics Meetings (JMM) took place in Boston, MA, in the first week of January. At JMM, AWM has an extended Executive Committee meeting as well as a public Business Meeting, hosts an open reception, awards three major prizes, and runs workshops and panels. In this newsletter, you'll find a report on the JMM Workshop and the citations for the winners of the prizes.

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ASSOCIATION FOR WOMEN IN MATHEMATICS

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

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

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

Circulation: 3500.

President's Report *continued from page 1*

The Executive Committee, together with invited guests, met on the first day of JMM with a full agenda. Magnhild Lien, our new Executive Director, gave her first report to the EC, sharing her goals of increasing membership and developing new sources of funding. In her report to the EC, Cammey Cole Manning reflected on her service as Workshop Director and reported that she will not be continuing in this position following the conclusion of the SIAM workshop in July. (I will share with you my own reflections on Cammey's extraordinary contributions to AWM in this capacity in a later report.) The EC had been apprised of this news in November and had already engaged in discussions about the amount of time and resources required to fund and organize these workshops, and to interface with the other professional societies, the participants, the selection committees, and the AWM staff and officers. The 2012 and 2013 JMM Workshops are supported by an NSA grant. The workshops at the SIAM annual meeting have been funded by ONR, but we do not anticipate this support to be ongoing.

Indeed, grant funding has become increasingly difficult to obtain. Federal agencies are looking for new projects and opportunities, while cutting both participant and staff support for some existing projects. The EC is currently re-envisioning the workshop and society meeting activities in order to adjust to the current economic reality, and to be in a position to add new programs and grant-supported events to our roster. Thanks to my co-workers on the Workshop Task Force (Georgia Benkart, Ruth Haas, Magnhild Lien, Cammey Cole Manning, and Irina Mitrea) for developing a proposal involving additional volunteer efforts in more focused theme-based research events and activities. Becky Herb, AWM Treasurer, reported that our projected deficit in FY 2010/2011 was much smaller than had been anticipated. Internal revenue, including memberships, contributions and advertising, exceeded projections. Additional savings came from electronic delivery of the newsletter and staff economies in travel and meeting expenses. I'm very pleased to report that AWM had strong contributions in its 40th anniversary year.

The EC voted to restructure the four main portfolios and their associated committees and charges. This concluded extensive discussions on this topic, beginning at the September EC Retreat, which was held just prior to the 40th anniversary conference at Brown University. There are now five portfolios and associated committees: Awards, Meetings, Membership and Community, Programs, and Policy and Advocacy. These five major committees will be filled, as usual, by both EC members and by external volunteers.

The EC decided to reshape, on a pilot basis, the position of Web Editor. Holly Gaff's extraordinary service to AWM as Web Editor began with AWM's initial web presence and lasted through the transition to the new Google site years later. This position required both technical skills and mature judgment, as well as assistance with the more complex programming needs. After the transition to Google, the task of updating the site became much simpler. At the same time, the job of managing web content seems to be most readily handled by those familiar with the programs, announcements, news items, and policy matters. The EC decided that the job of handling updates should reside in the office of the Executive Director and that proactive reviewing of relevant web content will be built into

the charges of the new committees. We are very grateful to Gerhard Hartl of Old Dominion University, who worked closely with Holly, for his expert and prompt technical assistance over the years.

Following the EC meeting, I had the opportunity to participate in the AWM panel (Managing an Active Research Career through Collaboration) organized by Ruth Haas, Jennifer Lewis, Ami Radunskaya (who also moderated), and Christina Sormani. The panelists included Ruth Haas, Trachette Jackson, and Ulrica Wilson. Christina created a web site both to record the event and to keep the conversation going: https://sites.google.com/site/awmpanel2012/home.

At the Business Meeting, I had the honor of announcing all the Alice T. Schafer Prize awardees. Four brilliant undergraduates were recognized this year: Fan Wei, a senior at MIT, was the winner; Jennifer Iglesias, Harvey Mudd College, was runner-up; and Victoria Akin, University of Georgia, and Meng Guo, University of Illinois at Urbana-Champaign, were honorable mention recipients. To remind you how competitive this prize has become, I mention that Fan Wei's accomplishments include authoring or co-authoring five upcoming papers in four different fields of mathematics.

The AWM reception followed the Gibbs Lecture. This year's reception included a social activity based on the game of SET, which was received with enthusiasm. Thanks to Suzanne Lenhart and Kelly Sturner (NIMBioS) for organizing the fun. We're planning to do it again in 2013.

Barbara Keyfitz, Dr. Charles Saltzer Professor of Mathematics at The Ohio State University, delivered the 2012 Noether Lecture. Her lecture, "Conservation Laws—Not Exactly à la Noether," addressed recent developments in hyberbolic partial differential equations and the relationship between conservation law theory and Noether's famous theorem on conservation laws and symmetry. An AMS Special Session connected to this lecture on nonlinear hyperbolic PDEs was jointly sponsored by AWM. Barbara received her Ph.D. in 1970 at NYU and subsequently spent twenty years at the University of Houston. In 2004, she became the first woman to direct a federally funded North American mathematics institute (Fields Institute in Toronto), and she joined the faculty at OSU in 2008. In addition to her distinguished research career, Barbara's extraordinary impact on the profession includes her participation in editorial boards and her leadership in professional societies: she has served as President of AWM and Vice President for Programs of SIAM and is currently President of the International Council on Industrial and Applied Mathematics (ICIAM) and Vice President of the American Mathematical Society.

At the Joint Prize Session, AWM honored three women: Fan Wei, MIT, winner of the Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman; Bonnie Gold, Monmouth University, winner of the Louise Hay Award for Contributions to Mathematics Education; and Deanna Haunsperger, Carleton College, winner of the M. Gweneth Humphreys Award for Mentorship of Undergraduate Women in Mathematics. Bonnie Gold has worked and published in a wide variety of areas, including assessment and philosophy of mathematics, and has developed and directed New Jersey's Project NEXT. Bonnie also served as founding chair of the Special Interest Group of the MAA on the Philosophy of Mathematics. Deanna Haunsperger co-created in 1995, and has

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Membership Dues
Membership runs from Oct. 1 to Sept. 30
Individual: $65 **Family:** $30
Contributing: $150
New member, affiliate and reciprocal members, retired, part-time: $30
Student, unemployed: $20
Outreach: $10
Foreign memberships: $10 add'l. for postage
Dues in excess of $85 and all contributions are deductible from federal taxable income when itemizing.

Institutional Membership Levels
Category 1: $325
Category 2: $325
Category 3: $200
Category 4: $175
See www.awm-math.org for details on free ads, free student memberships, and ad discounts.

Sponsorship Levels
α **Circle:** $5000+
β **Circle:** $2500–$4999
Other levels available.
See the AWM website for details.

Subscriptions and Back Orders—All members receive a subscription to the newsletter as a privilege of membership. Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for $65/year ($75 foreign). Back orders are $10/issue plus S&H ($5 minimum).

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

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

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

Addresses
Send all queries and all *Newsletter* material except ads and material for media and book review columns to Anne Leggett, leggett@member.ams.org. Send all book review material to Marge Bayer, bayer@math.ku.edu. Send all media column 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.

since co-directed, the Carleton College Summer Mathematics Program, which has brought more than 100 women into mathematics graduate programs. Deanna has also served as co-editor of *Math Horizons* and as Second Vice President of MAA.

Upcoming events and a call for volunteers. If you are in Washington, DC on the weekend of April 28, look for AWM at the USA Science and Engineering Festival (USASEF). Better yet, volunteer to help us staff our booth! This two-day event features over 2000 fun interactive exhibits, over 100 stage shows and 33 author presentations. USASEF is a sponsor of AWM, having waived the exhibit booth fee for two consecutive years. Many thanks to EC member Irina Mitrea, who organized the volunteer efforts at both last year's and this year's USASEF.

The AWM Teacher Partnership Program invites participants to exchange ideas related to educational and gender issues important to teachers and mathematicians. This program has been developed by Pao-sheng Hsu, Suzanne Lenhart, and Erica Voolich and is now ready to acquire new organizers. If you are interested in the opportunity to shape this program, please contact Magnhild Lien, AWM ED.

Jill Pipher

AWM activities at the major annual mathematics professional society meetings are a visible and important means of sharing information, creating supportive and lasting networks, and recruiting new talent. AWM organizes panels, workshops, special sessions, and activities at receptions and exhibits. We invite you to inquire about how to get involved.

I close by asking you to remind your friends and colleagues about the significance of AWM and the impact of its activities for women in mathematics of all ages. And don't forget to "like" AWM on Facebook, and join the conversation!

Jill Pipher
Providence, RI
January 25, 2012

ASSOCIATION FOR WOMEN IN MATHEMATICS

AWM ONLINE

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

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

AWM DEADLINES

NSF-AWM Travel Grants:
May 1 and October 1, 2012

Louise Hay Award: April 30, 2012

M. Gweneth Humphreys Award:
April 30, 2012

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AWM at the Boston JMM

AWM NOETHER LECTURE

The 2012 Noether Lecture, "Conservation Laws—Not Exactly à la Noether," was delivered by Barbara Lee Keyfitz, The Ohio State University. She was introduced by Ruth Charney, Brandeis University.

Abstract:

Emmy Noether's famous theorem connects "conservation laws" with symmetries, and so perhaps the first thing that a speaker should do in a talk bearing her name is to explain that the relation between that theorem and the research area of hyperbolic conservation laws is not very close. That done, I will describe the main features of conservation law theory, beginning with the rule of weak solutions (which break symmetry), and elements of the theory in a single space variable, which is now in a reasonably satisfactory state, and concluding with an outline of the current state of the theory for multidimensional conservation laws. Here there are a few results, most of them very recent.

Citation for Barbara Lee Keyfitz

Barbara Keyfitz is a renowned mathematician who has made important and original contributions to applied mathematics. She has been an outstanding leader of the mathematical community both as a scientist and administrator.

Her research is on nonlinear partial differential equations with emphasis on hyperbolic conservation laws and evolution equations that change type from hyperbolic to elliptic. She had a pioneering role in tackling the most challenging problems in the field and opened up a new research direction by developing a powerful new technique dealing with free boundary problems to further the understanding of transonic shock. Keyfitz also studied bifurcation problems in reaction-diffusion equations, especially in the theory of shock waves. She succeeded in adapting techniques from vector field dynamics to the problem of the admissibility of shock waves, a long-lasting question in applied mathematics. She is currently developing analytical techniques to confirm Guderley Mach reflection, an unexpected singular behavior seen numerically at the formation points of Mach stems. She has mentored doctoral students and postdoctoral researchers, and her co-authors include S. Ani, M. Golubitsky, B. Grossman, E. H. Kim, H. C. Kranzer, R. E. Melnik, R. Sanders, D. Schaeffer, M. Severs and A. Tesdall.

Presentation of Noether Lecture plaque: Barbara Keyfitz and Ruth Charney

Keyfitz is the Dr. Charles Saltzer Professor of Mathematics at The Ohio State University. She was formerly the John and Rebecca Moores Professor of Mathematics at the University of Houston. She was the first woman scientist to receive the Esther Farfel award, which is the highest honor the University of Houston bestows on a faculty member. Keyfitz has also held regular positions at Columbia, Princeton, and Arizona State and visiting positions at Berkeley, Brown, Chinese University of Hong Kong, Duke, the Taiwan National Center for Theoretical Sciences, Université de Nice and Université de St Etienne. From July 2004 to December 2008 she was the director of the Fields Institute in Canada.

Keyfitz has given numerous invited talks on the subject of conservation laws. In 2009, she gave a plenary lecture at the 14th General Meeting of European Women in Mathematics. She was an invited speaker at ICIAM 2007. In 2006 she was a joint plenary speaker at the SIAM Analysis of PDE conference and the SIAM Annual Meeting. She gave the Presidential Address at the 33rd Annual Meeting of the Statistical Society of Canada in 2005.

Keyfitz has served on the editorial board of the *Journal of Mathematical Analysis and Applications,* the *SIAM Journal of Applied Mathematics* and of both the *Proceedings* and the *Transactions* of the American Mathematical Society. She was appointed a Fellow of the American Association for the Advancement of Science in 1992 and serves as chair of their mathematics section. Keyfitz is currently the president of the International Council for Industrial and Applied Mathematics (ICIAM).

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Barbara Keyfitz is the daughter of famed demographer Nathan Keyfitz, who worked at Statistic Canada. She was born in Ottawa and did her undergraduate work at the University of Toronto. Her dissertation, "Time-decreasing functionals of solutions of nonlinear equations exhibiting shock waves," was directed by Peter Lax; she received her Ph.D. in 1970 from Courant University.

In 2005, Keyfitz was awarded the Canadian Mathematical Society's Krieger-Nelson Prize. She has played a prominent role in mentoring women in mathematics and served as the president of the Association for Women in Mathematics from February 2005 to January 2007. By naming her the 2012 Noether Lecturer, the women of mathematics further acknowledge the achievements of this extraordinary woman.

Bonnie Gold and Jill Pipher

AWM PRIZES

Louise Hay Award for Contributions to Mathematics Education

AWM established the annual 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 of her department, 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.

Citation for Bonnie Gold

It is a great pleasure to present the 2012 Louise Hay Award to Bonnie Gold for her long career of dedicated service to mathematics and mathematics education. Trained in mathematical logic (Ph.D., Cornell University, 1976), Bonnie found her true calling not only in teaching university level mathematics but also in writing about and working for mathematics and mathematics education in the areas of

CALL FOR NOMINATIONS:

2012 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, 2012** 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.

assessment and philosophy of mathematics, in developing and directing New Jersey's Project NExT (New Experiences in Teaching), and in serving as the founding Chair of the Special Interest Group of the Mathematical Association of America (MAA) on the Philosophy of Mathematics (POMSIGMAA).

Bonnie has won local and MAA Section teaching awards, has served as chair of two very different mathematics departments, and has developed a huge variety of courses, ranging from calculus for the biological sciences to Platonic Dialogues as Drama. Her publication contributions are similarly wide ranging: from co-editing books on *Assessment Practices in Undergraduate Mathematics* and *Proof and Other Dilemmas: Mathematics and Philosophy* to contributing articles to a variety of MAA publications to writing insightful reviews of numerous books on mathematical philosophy.

Bonnie has given generously and extensively of her time to professional service. In addition to Project NExT and POMSIGMAA, she has served on and chaired MAA committees ranging from the Committee on Assessment to the Coordinating Council for Education and the Committee on the Teaching of Undergraduate Mathematics.

Roger Simon writes eloquently of the "very high standards of quality and thoroughness" that Bonnie brings to all she does. He notes that she has been an outstanding teacher of mathematics, a department chair of two very different departments, a "sustained contributor of service" to the profession, and a "leader in developing departmental assessment techniques," noting that "Louise Hay's career had the same kind of highlights." He goes on to note that her professional work with POMSIGMAA has resulted in "sustained, effective efforts to rekindle mathematicians' interests in the philosophy of mathematics." She has done all this with two major motivations: one is "to get many more mathematicians to think about philosophical issues"; the other "is that she believes that our understanding of what mathematics is affects the way we teach or should teach."

Bernie Madison writes of Bonnie's enormous "contributions to the assessment of undergraduate mathematics" and of their joint work on the MAA CUPM Subcommittee on Assessment. The resulting volume, *Assessment Practices in Undergraduate Mathematics*, which she co-edited, "placed mathematics well ahead of other disciplines in attention of assessment." He cites Bonnie's "good sense, dogged determination, and intimate understanding of undergraduate mathematics."

Annie Selden's letter of nomination summarizes Bonnie's qualifications: "Bonnie has a very wide variety of professional interests in mathematics, philosophy of mathematics, and mathematics education. She has given unstintingly of her time to professional service. Bonnie's dedication, enthusiasm, and friendliness are always evident in abundance…. She is truly deserving of this award."

Response from Gold

I would like to thank the Association for Women in Mathematics, which has done outstanding work, since its founding, publicizing the contributions of women mathematicians to the development of mathematics, as well as encouraging young women mathematicians, for this award. Although the focus of the AWM has primarily been women's

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USASEF

AWM will participate in the second USA Science and Engineering Festival Exposition, April 28–29, 2012, at the Walter E. Washington Convention Center, Washington, D.C. This year's theme at the AWM booth is "The Ubiquitous and Beautiful World of Mathematical Patterns." Visitors of all ages will be invited to partake in hands-on activities exploring mathematical patterns that exist in our everyday lives. Please join us and discover for yourself some beautiful and challenging number, logic, word, and shape patterns!

In 2010, at the inaugural USA Science and Engineering Festival Expo, the AWM attracted over 2,000 visitors to its booth titled "Secret messages, or how to write your journal so your brother can't read it." This year's booth promises to be an even bigger attraction!

The AWM is currently seeking enthusiastic volunteers to help staff the booth. If you are in the DC area and interested in participating, please email Irina Mitrea at imitrea@temple.edu.

research in mathematics, this award recognizes an equally important, though better known, role we play in mathematics, that of training future generations of mathematicians as well as educating the general public about mathematics. I am particularly pleased to receive this award because many of the previous recipients, as well as the person the award is named for, are women I admire and have learned much from—Annie Selden (who nominated me for the award), Pat Kenschaft, and Susanna Epp especially. I feel very honored to join their company. In addition, it combines the influences of both of my parents—my mother, who was a mathematics major at a time when very few women majored in mathematics, and my father, who was a professor of education. Mentors have been very important to me through my career, and while many have been women, three men should also be thanked for their influence on my work. In the early part of my career, I spent many hours talking with Stanley Tennenbaum, one of my teachers at Rochester, about teaching mathematics, as well as about philosophy, which led to my interest in the philosophy of mathematics. I would never have finished my thesis without the encouragement of my thesis advisor, Michael Morley. Most importantly, Sandford Segal, who was my advisor at Rochester and a lifelong friend, first got me involved in the MAA by nominating me to the Committee on the Teaching of Undergraduate Mathematics. This led to my learning about alternatives to lecturing, as we developed *A Sourcebook for College Mathematics Teaching*, and to the development of the Innovative Teaching Exchange, first in *UME Trends* and later on MAA Online. It also led eventually to my involvement in assessment of undergraduate mathematics. I was initially unenthusiastic about assessment—viewing it as an added administrative burden, as many mathematicians do—but got involved to try to prevent high-stakes testing from becoming the standard at the college level, as it has at the K–12 level. However, thanks to my co-editor, Sandra Keith, I learned about classroom assessment techniques, small activities to learn what your students do and do not understand *before* they fail the test. This has led to a considerable improvement in my students' learning. Participating in the national discussion of teaching mathematics also led me to develop a wide range of new courses at Monmouth to improve our future elementary teachers' background as well as the quantitative literacy of our general education students.

There are several substantial rewards for getting involved in organizations such as the MAA that care about teaching. You get to know and work with some wonderful people, and you also have a chance to have an impact beyond the university you teach at. So, when a junior colleague of mine was not included in one of the first Project NExT cohorts, I started a state version in Indiana, NExTIN, that did include him and many others who, for one reason or another, were not able to participate in the national project, and then, when I moved to New Jersey, I started NJ-NExT as well. I found little activity at mathematics meetings related to my interest in the philosophy of mathematics (beyond foundations). So when Ed Dubinsky started the first SIGMAA, RUME, I was inspired to start the SIGMAA for the Philosophy of Mathematics—which is sponsoring three major activities at this meeting and co-sponsoring a fourth. My point is, if you care about teaching, getting involved in one of the national organizations and helping develop programs to improve the experience of students and faculty is personally rewarding at the same time that it allows you to contribute to society. I am grateful for all the opportunities I have been given, and encourage young faculty to become more involved beyond their own institutions.

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 Ph.D. 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 Deanna Haunsperger

In recognition of her outstanding mentoring of undergraduate women in mathematics, AWM presents the M. Gweneth Humphreys Award to Professor Deanna Haunsperger of the Department of Mathematics, Carleton College.

Haunsperger's nomination letters describe the amazing community of women in mathematics that she has created and nurtured for many years. She is a dedicated mentor,

Jill Pipher and Deanna Haunsperger

going out of her way to help young women make connections in the mathematical world.

Together with Stephen Kennedy, Deanna Haunsperger conceived of the Summer Mathematics Program (SMP) to mentor talented women early in their undergraduate studies. They have directed it nearly every summer since 1995, with Deanna playing the primary role in mentoring the participants. This program is different from other mathematics programs for women because it is intended for mathematically talented students in their first or second year of college who are uncertain about their future mathematical trajectory. Many are from small colleges from which few students go on to earn a Ph.D. in mathematics. The program gives these students a community of women who are serious about mathematics, and in the end many pursue graduate studies in mathematics.

Haunsperger has brought her energy and leadership to other projects as well. Colleagues at Carleton credit her with helping to build and sustain the strong community of math majors there (the number of majors has doubled in the 17 years since her arrival). She served as co-editor of *Math Horizons*, as Second Vice President of the MAA, and as chair of a key strategic planning group on MAA activities for students.

The nomination letter describes Haunsperger's extraordinary efforts, first to connect with each and every student at SMP using devices such as "Deanna Chats" and ultimately to continue to be a mentor, friend, and resource long after the program has ended. "The participants know that throughout the rest of their undergraduate years, during graduate school, and beyond, they can always contact Deanna, and she will encourage, support, and advise them." More than 50 SMP graduates already have Ph.D.'s and 50 more are currently in mathematics graduate programs. Her enthusiasm and dedication make the program and community the great success they are.

Five women mathematicians who have been involved with the program at many levels wrote supporting statements for the nomination. They reveal much about Deanna's impact: "Because of her charismatic personality and personal experiences and knowledge regarding graduate school and academia … she is everyone's first-choice source of advice and guidance." "At a professional meeting she has always taken a moment to introduce me to whomever comes over to greet her (and she knows *everyone*!)."

About the community she's built and nurtured: "It is difficult to imagine us not knowing one another, and we will forever be grateful to Deanna for the creation of the SMP community as it enabled our close friendships to form." "Deanna's constant, selfless acts on behalf of cultivating the careers of young women mathematicians have inspired us to dedicate our energy to what she has so naturally taught all of us through her actions—to pass along the same mentoring and opportunities to those around us."

The AWM is pleased to honor Deanna Haunsperger for her wonderful achievements and unwavering efforts over decades in the mentoring of undergraduate women in mathematics, in particular in attracting them into the study of mathematics and creating a thriving community which supports them throughout their mathematical careers.

Response from Haunsperger

I am deeply honored to receive AWM's M. Gweneth Humphreys Award for Mentoring. I have long known that the AWM recognizes the importance of mentorship; I myself received mentoring when I participated in an AWM graduate student paper session twenty years ago. I appreciate the AWM for supporting the mentoring of young members of our profession and for giving me this honor.

Mentoring is truly its own reward—the relationships I have formed with current and former students at Carleton and participants in the Carleton College Summer Mathematics Program for Women over the past 20 years have been the most meaningful part of my career. Stephen Kennedy and I

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began with a shared vision for a summer program to mentor women in 1995, and, supported by the NSF, NSA, and Carleton College, it has grown into an entire community of nearly 300 women scholars. Some of these women have made our summer program part of their professional careers, and have repeatedly taught for us—Erica Flapan, Karen Brucks, Judy Kennedy, Margaret Robinson, Pam Richardson, Laura Chihara, Katherine Crowley—or are frequent visitors to help mentor the young folks and build this vibrant community—Alissa Crans, Jen Bowen, Karen Lange, Becky Swanson, Della Fenster, Emily Ognacevic, Becky Patrias. All these women, along with other fantastic people too numerous to mention, have made my life richer for knowing them, and to them I am eternally grateful. I am inspired by the women who realize the importance of reaching a hand backwards to mentor younger people as they themselves are scaling new heights.

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-second annual Alice T. Schafer Prize to **Fan Wei**, MIT. Also, **Jennifer Iglesias**, Harvey Mudd College, is recognized as runner-up, while **Victoria (Tori) Akin**, University of Georgia, and **Meng Guo**, University of Illinois at Urbana-Champaign, receive honorable mentions.

Citation for Fan Wei

Fan Wei is a senior at MIT who distinguished herself both by her outstanding coursework and by the excellence and unusually broad range of her research. She has authored or co-authored five upcoming papers in fields as diverse as number theory, combinatorics, statistics, and tropical geometry. She has participated in multiple undergraduate research projects at MIT and in two summer REU programs.

Schafer Prize recipients with the AWM President: Fan Wei, Jennifer Iglesias, Jill Pipher, Meng Guo, and Victoria Akin

Of the latter, the first was at Williams College (Summer 2010), where she co-wrote a paper investigating the properties of Rikuna polynomials. The second one was at University of Minnesota–Twin Cities (Summer 2011), where she produced two papers: one on a connection between the evacuation of Young tableaux and chip-firing, and the second on tropical properties for general chain graphs. The latter paper is single authored.

Fan has already presented her results at two conferences: Young Mathematician's Conference, Ohio State University, 2010, and Permutation Patterns, Dartmouth College, 2010. Her work is being described as "elegant," "intricate," "very creative," "quite surprising," and "having stirred up a lot of interest [in the area]." According to her mentors, she is expected to have a very successful career as a research mathematician because "she learns very quickly" and has "an excellent instinct for seeing what needs to be done and then doing it." In addition to her varied research projects, her coursework at MIT is absolutely outstanding: she has earned the top grade in 21 advanced mathematics courses, five of which were at graduate level. Her MIT instructors describe her as "incredibly bright," "truly outstanding," "one of the best students I have ever had in the course," and "destined to excel."

Aside from her research and coursework, Fan was part of a Meritorious Winner Team for the Mathematical Contest in Modeling (2010), she is a mentor for the Girl's Angle Math Club in Cambridge, and she has served on the board of MIT's Society of Women Engineers. For her outstanding research abilities, as well as the breadth of her research interests, the excellence of her academic work, and the service she provides to the mathematical community, Fan Wei is the winner of the 2012 Alice T. Schafer Prize.

Response from Wei

I am very honored and grateful to receive the Alice T. Schafer Prize. It is a great encouragement for me and I would like to thank AWM for providing this award. First and foremost, I want to thank my parents for their constant love, understanding, and tolerance. My home has always been and will continue to be my motivation. My gratitude goes to my mentor and nominator, Richard Dudley. His meticulous research style is exemplary of the rigor of mathematics, and he continues to inspire me.

I want to thank my first research supervisor, Richard Stanley, for introducing me to the world of mathematical research. Furthermore, I want to express my gratitude to the hosts of UMN REU—Gregg Musiker, Victor Reiner, and Pavlo Pylyavskyy—and the hosts of Williams College SMALL REU, especially Allison Pacelli, for providing me with two memorable summers. I am also grateful to the MIT math department, especially Professor Artin, Professor Edelman, and Professor Kim for their great help, patience, and support. Lastly, I want to thank all my friends for giving me a second family. I am lucky to know all of them.

Citation for Jennifer Iglesias

Jennifer Iglesias, a senior mathematics major at Harvey Mudd College, has been "blazing a bright mathematical trail" since middle school, when she discovered her aptitude and passion for proofs at MathPath. In high school, Iglesias was twice selected as a member of the US team participating in the China Girls Math Olympiad (CGMO), where she earned a gold medal in her senior year. At Harvey Mudd, she earned the math department's highest honor, the Giovanni Borrelli Mathematics prize for an outstanding senior mathematician. She continues to excel at mathematics competitions, scoring

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NSF-AWM Travel Grants for Women

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

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

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

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

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

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

in the top 200 of the Putnam exam as a junior and placing 80th out of over 300 participants at the International Mathematics Competition in Bulgaria.

In addition, Iglesias has done mathematics research at two REU programs, where her work has led to a total of four separate manuscripts either in preparation or already submitted. Her recommenders note that each of these papers will "almost certainly lead to publication in research journals." One of her research mentors exclaims that she is "heads and shoulders above any other undergraduate I've had the pleasure to know," and another describes discussing mathematics with her as "like talking to a colleague." Iglesias has presented talks on her research at the Nebraska Conference for Undergraduate Women and at the 2011 Joint Mathematics Meetings.

Iglesias also devotes considerable energy to working with the next generation of talented mathematicians. She earned high praise from her recommenders for the quality and breadth of her teaching and mentoring activities, from teaching at MathPath, to serving as a student coach for the US CGMO team, to working at the Mathematics Olympiad Summer Program.

Her recommenders enthuse that Iglesias is "the ideal student who just happens to know everything," someone capable of producing "beautiful mathematical results," and call her an "exceptional mathematician" with "extraordinary potential."

Response from Iglesias

I am deeply honored to be the runner-up for the Alice T. Schafer Prize. I would like to thank the AWM not only for this award but also for their devotion to mentoring and nurturing women mathematicians. There are many people who have helped and encouraged me to pursue mathematics, and I can't possibly thank them all here. I first became interested in math when I joined my middle school math team; unfortunately I was the only girl and one of the youngest students. I am extremely appreciative of Mr. Chuck Linneman, as he was the middle school teacher in charge of the math team program and the first to really encourage me to pursue and enjoy mathematics. I also want to thank Prof. Micheal Orrison who has enthusiastically taught some of my favorite classes and provided me with my first research opportunity. I am truly grateful for all the Harvey Mudd professors for all their awesome teaching and support. Thanks to Prof. Garth Isaak and Prof. Glencora Borradaile, my two amazing REU advisors, who constantly supplied me with interesting problems and advice on graduate schools. Lastly, I would like to thank my major advisor, Prof. Andrew Bernoff, for all the times I have run into his office worried about one thing or another; he always manages to make all my worries vanish.

Citation for Victoria Akin

Victoria (Tori) Akin is a senior mathematics major at the University of Georgia. She has taken numerous honors and graduate mathematics courses with a near-perfect grade point average. Her professors give high praise to her innovative approaches to challenging mathematics problems, her leadership in problem-solving with classmates, and her clear expository style. She is a Goldwater Scholar and has also been awarded a prestigious University of Georgia Foundation Fellowship.

Akin's research experience is already extensive. Her work includes two summer REUs: one in 2010 with Charles Johnson at William and Mary on a project involving the completable patterns of TP_k matrices, and another in 2011 on an inverse Galois problem with Jorge Morales at Louisiana State University. Akin has also been a research assistant on an ongoing project simulating influenza virus dynamics in lung tissue. This highly quantitative research was done under the supervision of Andreas Handel in the Department of Epidemiology and Biostatistics at UGA; she will be first author on the resulting research paper.

Response from Akin

I am extremely humbled and grateful to be selected as an Honorable Mention for the Alice T. Schafer Prize. I am thrilled to be honored by an organization that supports and encourages women in mathematics. I would like to offer my deep thanks to the University of Georgia mathematics department, particularly Dr. Ed Azoff, Dr. Brian Boe, and Dr. Ted Shifrin. I would also like to express my gratitude to Dr. Andreas Handel for his relentless support. In addition I am very grateful to Dr. Charles Johnson and Dr. Shahla Nasserasr for their invaluable guidance at the William and Mary REU, as well as Dr. Jorge Morales for his inspiring instruction at the Louisiana State University REU.

Citation for Meng Guo

Meng Guo is a senior at University of Illinois at Urbana-Champaign, where she is a James Scholar, as well as a recipient of the Mathematics Department Selma Wanna Award for the best continuing junior and of the Roy Brahana Prize for the most exceptional undergraduate mathematics career. Her coursework is absolutely outstanding: she has aced a total of

7 graduate level mathematics courses and is on track to raise that number to 15 by the time she graduates. Her instructors describe her as "outstanding," "extremely impressive, bright, and ambitious," and "the most phenomenal undergraduate student I have known in 25 years," who "by force of will … is shaping her own destiny, and that destiny is to be a mathematician."

In addition to her exceptional coursework, Meng has been involved in a number of independent study and research projects at UIUC and has been a top performer on the local math contest scene, as well as in the Putnam Competition. Meng's professors have "great enthusiasm for her future prospects" and expect that she is "headed towards a stellar academic career."

Response from Guo

I am honored to be selected as an honorable mention for the Schafer Prize. It is a great encouragement for me and I would like to thank AWM for their invaluable effort and dedication in supporting women in mathematics. I am grateful to many people, particularly at UIUC who helped and nurtured me in mathematics. Thanks to Matthew Ando who guided me into topology and shaped my interest in math and whose advice and care inspired me. Thanks to Eugene M. Lerman who instilled in me a passion and confidence for mathematics and made working on research with him a joy. Thanks to Charles Rezk whose mathematical insights gave me a deeper understanding and whose teaching and help encouraged me. Further thanks to the UIUC mathematics department for offering many interesting courses and providing a wonderful mathematical environment. Finally, I want to express my thankfulness to my parents for their love, understanding and tolerance, which always supported me.

AWM WORKSHOP

Magnhild Lien, AWM Executive Director, and Cammey Cole Manning, AWM Workshop Director

The 2012 JMM was held January 4–7, 2012 in Boston, Massachusetts. The AWM Workshop for Women Graduate Students and Recent Ph.D.'s took place on January 6 and 7 and was organized by **Alissa Crans**, Loyola Marymount University; **Rachelle DeCoste**, Wheaton College; **Kirsten Eisentraeger**, Pennsylvania State University; and **Susan Williams**, University of South Alabama. This dedicated group of women was an energetic committee who had many great ideas and brought a variety of perspectives to the conversations during the planning of the workshop.

AWM Workshop Reception (Franziska Hinkelmann, Bernadette Boyle, Phyllis Chen, and Brianna Foster-Greenwood)

The workshop reception was held on Friday evening. This was the first opportunity for graduate and postdoctoral participants to meet with their mentors. Some mentors and mentees had already met before the reception, but for most this was their first meeting. Judging by the energy in the room this was a great success. Most participants were there right at the start and were matched up with their mentors as they arrived. The President, the Past-President, the Executive Director, a couple of former presidents and a few other friends of AWM mingled with the workshop participants, pausing occasionally for some refreshment. People stayed to the very end and some would have stayed even longer had it not been for other commitments.

The workshop continued on Saturday with talks by recent Ph.D.'s, poster presentations by graduate students, a lunch, and a career panel. Lunch was served for the workshop participants, their mentors, workshop organizers and the panelists. This gave the graduate students and postdoctoral participants another opportunity to connect with their assigned mentors and other senior women mathematicians, as well as the panelists. The focus of the career panel was "Career Options: Industry, Government, and Academia." The panelists included **Jennifer Chayes**, Microsoft Research; **Melissa Choi**, MIT Lincoln Laboratory; **Navah Langmeyer**, National Security Agency; and **Peter March**, The Ohio State University. The topic of the panel discussion was clearly a hit. After each of the panelists described a typical day in their current job, the audience was invited to ask questions of the panelists. The questions ranged from, what are the qualities you are looking for in a candidate for a job in your company/institution, to, should one negotiate salary and other perks.

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AWM at the Boston JMM *continued from page 13*

The highlight of the workshop was the presentations by workshop participants. Eight recent Ph.D.'s presented diverse research talks during two sessions, one in the morning and one in the afternoon. The presenters and the titles of the talks were:

Franziska Hinkelmann, Ohio State University
Algebraic theory for discrete models in systems biology
Elena Pavelescu, Occidental College
On Legendrian graphs
Heather M. Russell, University of Southern California
Springer's representation via sl(3) webs
Radmila Sazdanovic, University of Pennsylvania
Categorification of the polynomial ring
Lynn C. Scow, University of Illinois at Chicago
Theories without the independence property
Cristina Tone, University of Louisville
A functional central limit theorem for empirical processes
Anna Zemlyanova, Texas A&M University
A fluid-structure interaction problem for a supercavitating elastic curvilinear foil

Career Panel (Melissa Choi, Jennifer Chayes, Navah Langmeyer, and Peter March)

Twelve graduate students presented posters during a well-attended poster session. The presenters and their poster titles were:

Bernadette M. Boyle, University of Notre Dame
On the unimodality of pure O-sequences
Briana Foster-Greenwood, University of North Texas
Reflection groups: Comparing length and codimension
Ellen K Gasparovic, University of North Carolina at Chapel Hill
Extending the analysis of the Blum medial axis to multiple regions

CALL FOR NOMINATIONS:

2012 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 Ph.D. 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.

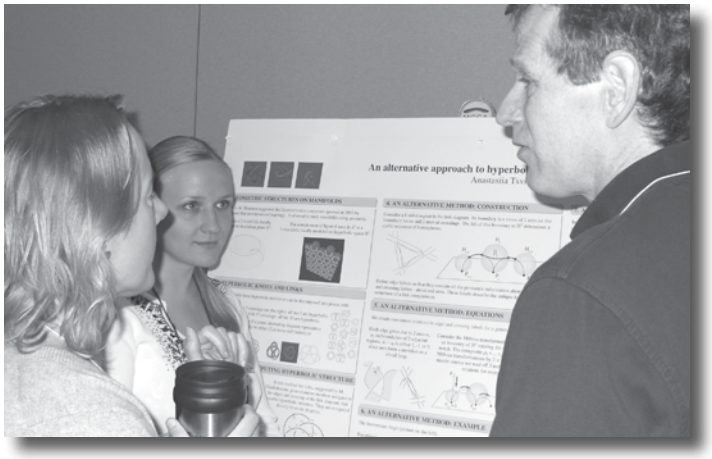
The nomination documents should include: a nomination cover sheet (available at www.awm-math.org/humphreysaward.html); a letter of nomination explaining why the nominee qualifies for the award; the nominee's vita; a list of female students mentored by the nominee during their undergraduate years, with 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, 2012** 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.

Aleksandra Gruszka, Louisiana State University
Tracking control and robustness analysis for PVTOL aircraft under bounded feedbacks
JiYoon Jung, University of Kentucky
The topology of restricted partition posets
Eunkyung Ko, Mississippi State University
Uniqueness and multiplicity results for classes of infinite positone problems
Robin M. Lassonde, University of Michigan
Splittings of non-finitely generated groups
Michelle A. Lastrina, Iowa State University
Sum-list-coloring and sc-greedy graphs
Hui Li, University of Minnesota
The von Kármán theory for incompressible elastic shells
Katherine Morrison, University of Nebraska – Lincoln
Equivalence and duality for rank-metric and matrix codes
Megan Patnott, University of Notre Dame
Hilbert functions and graded Betti numbers of arithmetically Gorenstein points on general surfaces in P^3
Anastasiia Tsvietkova, University of Tennessee, Knoxville
An alternative approach to hyperbolic structures on link complements

This workshop was made possible by funding from the National Security Agency.

Many thanks to **Christine Heitsch**, who participated in almost all of the AWM Workshop events on Saturday in spite of a bad fall early that morning. (Christine attended the talks and luncheon, and only later learned that she had fractured her elbow!).



Poster Session (Genevieve Walsh, Anastasiia Tsvietkova, and Colin Adams)

A special thanks to **Margaret (Marge) Bayer**, **Phyllis Chinn**, **Katie Gurski**, **Shelley Harvey**, **Christine Heitsch**, **Efstratia (Effie) Kalfagianni**, **Julia Knight**, **Constance (Connie) Leidy, Cathy O'Neill**, **Bozenna Pasik-Duncan**, **Ami Radunskaya, Karen Saxe**, **Sarah Spence-Adams, Genevieve Walsh**, and **Hongkun Zhang** for serving as mentors. These women shared their varied experiences and provided invaluable guidance.

More Next Issue

Citations and responses for prizes and awards given by other societies at the JMM will appear next time, as will more photos from AWM events.

Ling Long

Ling Long Wins Ruth I. Michler Memorial Prize

The Association for Women in Mathematics and Cornell University are pleased to announce that Ling Long, Iowa State University, will receive the 2012–13 Ruth I. Michler Memorial Prize.

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

Ling Long was selected to receive the Michler Prize because of her wide range of mathematical talents. In 1997 she earned a B.Sc. from Tsinghua University, Beijing, China, majoring in mathematics with a minor in computer science and engineering. Long received her Ph.D. in mathematics from the Pennsylvania State University (PSU)

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Ruth I. Michler Memorial Prize

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in 2002. She studied modularity of elliptic surfaces under the direction of Wen-Ching Winnie Li from PSU and Noriko Yui from Queen's University.

Before coming to the Iowa State University in 2003, where she is currently an Associate Professor in the Department of Mathematics, Long spent a year as a postdoctoral fellow at the Institute for Advanced Studies.

Long's research involves modular forms for finite index subgroups of the modular group. These groups play an important role in Grothendieck's program of *dessins d'enfants* (children's drawings). Her work is partially funded by the National Science Foundation.

At Cornell, Long plans to work with Ravi Ramakrishna on Galois representations attached to noncongruence modular forms based on the pioneering work of Anthony Scholl and her joint work with Oliver Atkin, Winnie Li, and Tong Liu. The Langlands philosophy predicts that the *L*-functions of these Galois representations should be expressible in terms of *L*-functions of automorphic forms. Such a connection has far-reaching impact on the arithmetic of modular forms. Long also looks forward to potential collaborations with other faculty members at Cornell.

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

BOOK REVIEW

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

Getting the Most of Your Mentoring Relationships: A Handbook for Women in STEM, Donna J. Dean, Springer 2009, ISBN 978-0-387-92408-3

Reviewer: Tasha R. Inniss, Department of Mathematics, Spelman College

This book is Volume 3 of the Mentoring in Academia and Industry Series, which has an aim of "providing guidelines for improving academic and career building skills…." Though the disciplinary focus is biology, this handbook is chock-full of information that is beneficial for anyone in a STEM area.

The author, Dr. Donna J. Dean, trained in biochemistry and past president of the Association for Women in Science (AWIS), has a rich legacy of mentorship and leadership in effecting positive change in science policy for women and scientists of color. Because of her experience, she is well-qualified to write a handbook that is chock-full of great advice, ideas and resources. It is evident that Dean dedicated a great deal of time in conducting the research and doing the "legwork" to provide a useful handbook.

Initially, the title captured my attention because as a mathematician who is a woman of color, I strongly believe in the value of mentorship and its effect on students' career trajectories. One of my mentors (Dr. Sylvia Bozeman) and I recently received a grant from the Division of Mathematical Sciences at the National Science Foundation to implement a program entitled "Mathematics Research and Mentoring Program (Math RaMP)." I am excited about this award because I get to co-direct it with one of my longtime mentors and I am able to expose mathematics majors to the varied and beautiful career opportunities available to those who pursue the mathematical sciences. I was very eager to read this handbook to glean ideas that I could use in implementing Math RaMP.

The first thing you will notice is just how detailed and informative the Table of Contents is. As a matter of fact, the author said that this book was not intended "to be read from cover to cover," but to be used for targeted information based on your position in your career. And unlike other books on mentoring, this book is not for the mentors, but for the "mentee," whom the author refers to as the "protégé."

Truth be told, this handbook really could be broken into two books because Chapters 3 through 7 really provide excellent advice and strategies for the protégé. Chapters 8 and 9 are particularly helpful for any woman who is considering pursuing a career path in STEM. Chapter 10

is a smorgasbord of information related to professional development and civic responsibility. Chapter 11 is intended for women who are well-established in their careers and want to tackle the problem of inequity of women and people of color in STEM. It is a chapter that focuses on science policy. I especially like the inclusion of the last chapter "Resources," which gives links to many organizations related to a particular topic that may be of interest to you.

Now that I have given an overview of the chapters, I will provide specific details about some of the chapters that may be of use either to someone looking for a good mentor or for established mentors who are looking for innovative ideas to add to their mentoring toolbox.

The author begins by summarizing what she feels is the definition of a mentor, which she states is "a wise and trusted counselor or teacher." She feels that by calling a mentee a protégé, you are conveying the thought that a "mentor is guiding, protecting, and promoting the protégé's career, training, and overall wellbeing." Just as a true scientist would, she includes these definitions in Table 2.1 (page 4) and provides the benefits of mentoring in Table 2.2 (page 5). Dean also relates being mentors to being role models: "a mentor may be very close to a role model of what you wish to be or to become."

In each of the chapters, the sections begin with a quote and end with "Points to Ponder." The subsections are succinct and thought-provoking. A great aspect of the book is the inclusion of the points to ponder. Not only are the bulleted items to be pondered, they are also to be employed because they are concrete action items. For example, at the end of Section 3.2 (page 15), one of the points to ponder is to "identify your most critical concerns at your current career stage."

The three sections in Chapter 3 are "Identifying Your Mentoring Needs," "Mentoring Models," and "Techniques and Tools for Starting a Mentoring Relationship." What I found most interesting in this chapter is the list of "Ten Myths about Mentoring" in Table 3.1 (page 12). The other tables in the chapter really give protégés questions to ask themselves and specific guidelines for formulating successful mentoring relationships. I was most impressed with Table 3.3 (page 16) because although it is described as a list of responsibilities for the protégé, anyone who desires to be successful in her/his career could employ them. These responsibilities include "set goals and have a plan to accomplish them," "ask questions and be an excellent listener," and "always maintain a positive attitude." Chapter 3 provides a very thorough gameplan for the protégés seeking meaningful and beneficial mentoring. For example, in Section 3.3, protégés are given a list of what I refer to as "starter" questions, which can be asked of a prospective mentor during an initial meeting.

Chapter 4 (Mentoring Relationships) is an interesting chapter because the majority of it consists of actual statements from different protégés and mentors in STEM. Therefore the chapter provides personal anecdotes of mentoring experiences from the perspective of the protégé as well as the mentor. The first section of this chapter is unlike anything you would find in another book because it provokes the reader to really consider very personal and delicate issues. The author states that the title of Subsection 4.1.1 (Be Yourself and Do Well by People in All Your Interactions) is "both a call to be truthful and honest in your dealings with others and an ideal to strive for in all aspects of your life and career." Dean deals with the issues of trust, integrity, and unwritten rules.

The subsection that discusses the viewpoints of the protégés includes a numbered list of 11 items they want from their mentoring relationships and 10 things they do not want. What is most interesting is the inclusion of a story from a woman who felt she missed out on the benefit of mentoring (pages 26–27).

The subsection that is the "voices of the mentors" begins with the questions that were posed to the mentors. The two questions out of the 14 that I pondered myself were "what was the best advice given to you?" and "what would you consider an effective mentoring relationship?" In my opinion, those questions could be answered for each phase of your professional career (from the perspective of a graduate student, a postdoctoral student, a new faculty member, and a post-tenure faculty member). In this chapter, Dean addresses the facts that "Mentoring is Colorblind" (page 32) and "Age Doesn't Matter" (page 34). At the end of this chapter, one of the points to ponder is the statement "being mentored is a lifelong endeavor." I wholeheartedly agree with this sentiment.

Chapter 5 (Changing Dynamics, Changing Needs) was the most beneficial for me since I am trying to implement the most effective mentoring strategies for our students in Math RaMP. The three sections are entitled "Mentoring for Underrepresented Groups," "Mentoring in Cyberspace," and "Life-long Mentoring." In this chapter, the author discusses how to use blogging, podcasts and social networking for the purpose of mentoring women in STEM. I appreciate Dean's statement that "the academic environment has a continuing need for programs directed toward recruiting and training more underrepresented minorities in STEM Careers." She provides specific online resources that are used to mentor

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students of color, which include MentorNet, Yahoogroups, Facebook, and LinkedIn.

Chapter 6 (Career and Life Transitions) addresses "Work-Life Balance," "Coaching or Mentoring? What Do I Need Now?" and "Transitioning into a Different Career Pathway." As women in STEM, we sometimes find it hard to have balance in our lives because we strive to be excellent scientists, cooperative colleagues, great friends, and dedicated family members. Section 6.1 provides specific advice on how to achieve some semblance of balance, but also encourages one to have a realistic view of what that means for someone in STEM. Overall, this chapter was really motivating; thus I call it the "cheerleading" chapter.

When we think of mentoring relationships, we usually think of successful, productive and healthy relationships. Chapter 7 (Navigating Interpersonal Contexts), which is based on the "strategies for addressing inappropriate behavior" from Bernice R. Sandler, discusses not only how to "identify problematic behavior," but also how to prevent such behaviors and address them should they occur. Strategies for addressing inappropriate behaviors are provided for the protégés, the mentors, and the institutions. What I found most impressive about this chapter was the section on "Intervention Strategies" for others who may observe problematic behaviors.

Chapters 8 (Starting Out with the Right Education) and 9 (Moving Toward Career Success) are based on interviews of 42 women in STEM at different stages of their careers. The interviews were conducted by AWIS and funded by the National Science Foundation. Chapter 9 is most useful for graduate students in STEM, in my opinion. The sections "Making the Connections," "Leaping Barriers and Achieving Goals, "Timing and Choices," "Facing the Gender and Diversity Issues," and "Staying the Course" are all topics that women graduate students have to face when trying to persevere to the goal of the doctorate. This chapter could be expanded into a handbook of its own for women graduate students in STEM.

Chapter 10 (Voices of Experience) is geared primarily towards professionals who are at the dissertation phase or have just completed the doctorate. It is a chapter that really helps with professional development and transitioning from a protégé to a mentor. The sections are "Women Speakers: Making the Most of Your Moment," "Things Your Professor Should Have Told You," "Applying for Fellowships or Research Grants," "Keys to Success in Graduate School and Beyond," "Building Confidence and Connection," "Helping Those Who Follow," and "Professional Responsibility."

Chapter 11 (Provocative Thoughts for a Better Future) does not fit into the overall theme of mentorship, but it does provide well-established women in their careers food for thought in terms of science policy as it relates to women and people of color.

Overall, I felt that this handbook was well-written and full of a multitude of themes and strategies that could be used by either protégés or mentors and women at any stage of their career pathway in STEM. As someone who is mentored and who mentors, this handbook provides valuable guidance of things to consider for establishing and maintaining effective mentoring relationships. I indeed agree that it should not be read cover to cover as I did, but used as a resource to promote thoughtful reflection and action.

Minority Participation in Science and Engineering

http://www.nap.edu/catalog.php?record_id=12984#description

Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads (EUMP) explores the role of diversity in the science, technology, engineering and mathematics (STEM) workforce and its value in keeping America innovative and competitive. According to this book published by the National Academies Press, the U.S. labor market is projected to grow faster in science and engineering than in any other sector in the coming years, making minority participation in STEM education at all levels a national priority.

EUMP analyzes the rate of change and the challenges the nation currently faces in developing a strong and diverse workforce. It suggests that the federal government, industry, and post-secondary institutions work collaboratively with K–12 schools and school systems to increase minority access to and demand for post-secondary STEM education and technical training.

The book also identifies best practices and offers a comprehensive road map for increasing involvement of underrepresented minorities and improving the quality of their education. It offers recommendations that focus on academic and social support, institutional roles, teacher preparation, affordability and program development.

The Pipeline and the Trough

Cathy Kessel

The following statistics about women in Ph.D.-granting mathematics departments appear in adjacent columns of a table in Patricia Hale's January 2012 article "How Far Have We Come?"[1]

Women as percentage of	2000	2005	2009
Tenure-track faculty	9%	11%	13%
Ph.D.'s	29%	27%	29%

Source: American Mathematical Society annual surveys as given in *AWM Newsletter* 42(1), p. 15.

As discussed in the article, comparison of row 1 and row 2 may seem like clear evidence of a loss of women between Ph.D. and academic positions. The difference between 13% and 29% is quite large.

To me, these statistics are useful but don't tell the whole story. In particular, they do not tell me that there is a major loss of women between Ph.D. and academic positions. I know that I am not alone in making this type of observation. However, I have not found any such remarks in print and it seems like a good idea to remedy this scarcity.

In reading the table above, it's helpful to know that "tenure track" means "tenure-eligible or tenured." I discussed this terminology at the Joint Meetings with Hale and others, and found out that "tenure-track position" has two meanings:[2]

1. a tenured position or an untenured position that may lead to tenure.
2. an untenured position that may lead to tenure.

To avoid ambiguity, I will call people in positions that satisfy description 1 "ladder faculty." Positions that satisfy description 2 will be called "tenure-eligible."

In looking at the table above, it's useful to be aware that members of the ladder faculty (the 9%, 11%, 13%) were hired sometime between the 1970s and the present. Each year, a few leave due to retirement or death. (Recent AMS statistics put this percentage between 2.5% and 1.5%.) A few leave for other jobs. A few may not get tenure. And a few join as new hires.

Thus, in comparing statistics for recent Ph.D.'s and ladder faculty, it seems useful to consider a collection of ladder positions (e.g., a math department) as a trough fed by the Ph.D. pipeline. Each year, the Ph.D. pipeline feeds a few people into the trough. And each year, a few leak out. Many people stay employed in ladder positions for 30 or 40 years. Departmental change is slow, even when women are hired in proportion to their representation as recent Ph.D.'s.

Here's an illustration of what might happen inside a trough during one decade. The dates and numbers are chosen to make calculations easy. The assumptions are chosen to maximize the potential increase in women while not departing much from current statistics.

In 1999, at Huge Hypothetical University, an immense Ph.D.-granting mathematics department of 100 ladder faculty was 9% female (consistent with the percentage for 2000 in the table above). Over the next ten years, 21 faculty members retire or die (about 2% each year, consistent with the larger percentages reported by AMS) and the others stay in the department. To maximize the number of women, let's suppose that all of the 21 are male. (This isn't a very far-fetched assumption. During that period, men were about 90% of Ph.D.'s, and due to the hiring practices of the 1970s, are likely to be an even larger percentage of faculty members close to retirement at Ph.D.-granting institutions.) To further maximize the number of women, suppose that each faculty member who left was replaced by a new Ph.D. and that 33% of the new hires were women, reflecting the peak percentage for female Ph.D.'s during the decade. (AMS and CBMS survey percentages suggest that 33% would have been an exceptionally large percentage of female hires at a Ph.D.-granting department during this decade.) Assume further that no one left, except to retire or die. In particular, everyone in the HHU math department who came up for tenure is assumed to have gotten it.

In 1999, this hypothetical math department had 91 men and 9 women. By 2009, 21 of those men have left. They have been replaced by new Ph.D.'s, 14 men and 7 women.

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[1] These are comprised of the departments described as Group I, II, III, and Va in AMS reports. Each U.S. doctorate-granting department of mathematics is assigned to one of these groups according to "scholarly quality of program faculty" as reported in the 1995 publication *Research-Doctorate Programs in the United States: Continuity and Change.* See http://www.ams.org/profession/data/annual-survey/groups_des.

[2] *Ed. note:* At Loyola University Chicago, both meanings are used in different internal documents. Perhaps this is not unusual?

The department now has 84 men and 16 women, with women as 16% of the ladder faculty. If 11 (just over half) of the new hires had been women, women would have been 20% of the ladder faculty.

This scenario could certainly be refined to correspond more closely to current statistics. In particular, the number of tenure-eligible positions has diminished recently. Consistent with this, AMS reports that the current percentage of retirements is smaller than 2%. And I have given overall percentages of Ph.D.'s in mathematics and statistics, not just mathematics. However, I hope that my little story serves to illustrate why statistics about tenure-eligible positions are relevant in describing the situation of women in academic mathematics.

Here are some of those statistics for Ph.D.-granting mathematics departments, along with the entries from the previous table. These come from the CBMS surveys for 1995, 2000, and 2005, and the AMS report for 2009. Because tenure-eligible positions don't always lead to tenure, I've also included statistics about tenured faculty.

Women as percentage of	1995	2000	2005	2009
Tenured faculty	7%	7%	9%	11%
Ladder faculty	9%	9%	11%	13%
Tenure-eligible faculty	20%	22%	24%	26%
Ph.D.'s	23%	29%	27%	29%

Between 1995 and 2000, the percentage of women in ladder and tenured positions did not change. (This suggests leakage, but may also be due to the nature of the sample.) Between 2000 and 2009, although women's percentages of Ph.D.'s were more or less constant, there was an increase in percentages of tenure-eligible women (reflected later in percentages of tenured women). By 2009, women's proportion of tenure-eligible positions was still not the same as their percentage of Ph.D.'s, but the gap had narrowed. Looking at percentages of women earning Ph.D.'s in mathematics only (as opposed to mathematics and statistics combined) might result in a smaller gap between Ph.D. and tenure-eligible positions.

There is more that could be said about this topic, but I will not say it here—except to mention that percentages of women are higher in departments that do not grant Ph.D.'s.[3] Instead, I would like to return to the theme of comparing the pipeline and the trough. Variations on this theme occur in psychologists' writings about women in mathematics and related fields. Some compare the pipelines for some fields with the troughs in others.[4] And, some just give a selected trough, e.g., "ladder faculty at elite universities."[5]

The pipeline and trough metaphors might also refer to STEM workforce and STEM degrees. As with the examples from psychologists, recent publicity focuses on trough rather than pipeline statistics. Some examples are: "Women hold about 27 percent of jobs in computer and mathematical occupations, according to the Bureau of Labor Statistics."[6] "While women comprise roughly half the US work force, they hold just 24% of science, technology, engineering and mathematical (STEM) jobs according to the Department of Commerce."[7]

[3] In particular, 50% of the permanent mathematics faculty in two-year colleges are women. More statistics (new and old) appear in David Bressoud's December 2011 Launchings column and the 1990 CBMS survey report, both available on the Web.

[4] See first paragraphs of Ceci & Williams, 2010, Sex differences in math-intensive fields, *Current Directions in Psychological Science, 19*(5); Ceci & Williams, 2011, Understanding current causes of women's underrepresentation in science, *Proceedings of the National Academy of Sciences, 108*(8).

[5] See Table 2, Halpern et al., 2007, The science of sex differences in science and mathematics, *Psychological Science in the Public Interest, 8*(1); book jacket and publisher's description of the *Mathematics of Sex.*

[6] The Gender Gap in Math and Science, National Mathematics and Science Initiative fact sheet, recently removed from the Web. NMSI now uses the slightly smaller figure from the Department of Commerce, www.nationalmathandscience.org/solutions/challenges/closing-gender-gaps.

[7] January 2012 press release, Association for Women in Science.

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.

WIMM Watch: *Warehouse 13*'s Mathematical Artifact

Sarah J. Greenwald, Appalachian State University and Amy Ksir, United States Naval Academy

Warehouse 13's main characters Myka and Pete turn a corner on the Syfy channel's December 6 episode called "The Greatest Gift." The warehouse aisle that is lined with supernatural artifacts stretches out straight in front of them. They turn around and run back the other way but they do not make any progress because the aisle dilates further and further away from them in both directions. They stop to consider their options.

Myka: We're kind of trapped in an infinity band here, right…. [making a figure eight shape with her hands]

Pete is confused and Myka further explains and formulates a plan:

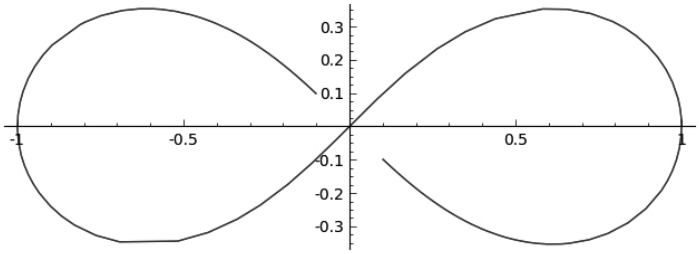
Myka: … a lemniscate, it's a term in algebraic geometry. It's a figure eight shaped curve that never meets itself on that…. You know what, I'll explain it later. Listen, if we both move, well if we run as fast as we can in opposite directions, we might be able to kind of snap ourselves out of it.

It is nice to see a female television character mentioning algebraic geometry, and Myka's escape plan succeeds. However, the visual scene seemed better indicated by a varying metric on a straight line, rather than a lemniscate—there's nothing visually to suggest the "figure 8" shape.

On the other hand, a lemniscate can be written in parametric equations, in such a way that the metric does expand as you go and the curve never does quite meet itself, as Myka claims! The parametric equations

$$x = \frac{t + t^3}{1 + t^4}, \quad y = \frac{t - t^3}{1 + t^4}$$

give an ∞ shaped curve called the Lemniscate of Bernoulli, where one branch at the middle is at $t = 0$, but the other branch is approached on both sides as $t \to \pm\infty$.



EDUCATION COLUMN

Another Mathematics Honor Society: Kappa Mu Epsilon

Elizabeth (Betsy) Yanik, Emporia State University

Last year an AWM education column, "FUN with Mu Alpha Theta," described the activities of this national honor society for high school and two-year college students. This article highlights Kappa Mu Epsilon (KME), which is a mathematics honor society for colleges and universities. Pi Mu Epsilon, another undergraduate mathematics honor society, is perhaps the best known undergraduate mathematics honorary society. However, it is particularly appropriate to present information about Kappa Mu Epsilon in this newsletter since the founder of KME was a woman, Dr. Emily Kathryn Wyant, a graduate of the University of Missouri.

While Pi Mu Epsilon traces its beginnings to Syracuse University in 1914, Kappa Mu Epsilon began in the Midwest, specifically at Oklahoma State Teachers College in April of 1931. The objectives of this organization are:

- To further the interests of mathematics in those schools that place their primary emphasis on the undergraduate programs;
- To help the undergraduate realize the important role that mathematics has played in the development of western civilization;

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Education Column *continued from page 21*

- To develop an appreciation of the power and beauty possessed by mathematics, due, mainly, to its demand for logical and rigorous modes of thought;
- To provide a society for the recognition of outstanding achievement in the study of mathematics at the undergraduate level;
- To disseminate the knowledge of mathematics and to familiarize the members with advances being made in mathematics.

Kappa Mu Epsilon has 149 active chapters and over 75,000 members. Ten years after its founding, KME began publishing its journal, *The Pentagon.* It is published semi-annually in December and May. This journal contains mathematical articles that are accessible to mathematics undergraduates. In fact most of the articles are written by students. *The Pentagon* also provides short summaries of some of the activities of individual KME chapters.

The society hosts a national convention in odd numbered years and a regional convention in even numbered years. KME has six regions: Western, North Central, South Central, South Eastern, Great Lakes, and New England. Students present papers at each of these conventions. Many of these will later appear in *The Pentagon*.

To provide an insight into a KME club, I will describe some of the activities of Emporia State's KME chapter. Our KME members have adopted several service projects. Each semester, they organize a calculator workshop for students who are in mathematics general education classes and are unfamiliar with graphing calculators. They also assist with several departmental outreach programs such as ESU Mathematics Day, a day long high school mathematics competition; Expanding Your Horizons in Science and Mathematics, a statewide Saturday outreach program to encourage young women in middle school to continue their interest in these subjects; and the Emporia Middle School Math Trail, a fun evening event consisting of a variety of mathematical games for middle school students and their families. Our chapter meets monthly and these meetings might involve such activities as a presentation by an invited speaker, a bowling night, a special celebration of Pi Day, a trip to Kansas City to visit the Linda Hall Library of Science, Engineering, and Technology to peruse a collection of rare mathematical manuscripts, a board game night, a movie night (if there is a movie with some sort of mathematical connection), or a student mathematics jeopardy game.

This student organization has been a wonderful way in which students become better acquainted with each other and with faculty members. It is a great asset to our department and I highly recommend starting such an organization (or an AWM Student Chapter or a Pi Mu Epsilon chapter) if your school does not currently have such a group.

Some of the information provided in this article is taken from the KME website, www.kappmuepsilon.org.

Women in Numbers 2

Katherine E. Stange, Stanford University

In November 2011, in the snow-covered mountains of Banff, Alberta, Canada, forty-one women number theorists gathered to begin new collaborations. Women in Numbers 2, hosted at the Banff International Research Station (BIRS) and organized by Chantal David of Concordia University, Matilde Lalín of Université de Montréal, and Michelle Manes of University of Hawai'i, was the second conference in an ongoing series designed to bring together senior and junior researchers and graduate students in number theory to start new collaborative research groups. The conference was made possible by the generous support of BIRS, the Pacific Institute for the Mathematical Sciences, Microsoft Research and the Number Theory Foundation.

Participants spent five days together at BIRS, which is located on the campus of the Banff Centre in the Canadian Rocky Mountains. The women were organized before arriving into groups of five or six participants with similar interests. Each group was led by two senior researchers who gave introductory talks on their subjects during the first few days. Groups met to work on research projects during the week, and toward the end of the program, the participants presented progress reports and future plans. Almost every participant had the opportunity to present briefly.

This year's groups were as follows: Elliptic surfaces and Mahler measure, led by Marie-José Bertin (Université Paris VI) and Matilde Lalín; Square-free values of sequences related to reductions of elliptic curves over finite fields, led by Chantal David and Heekyoung Hahn (McGill University); Statistics for D_4 curves over finite fields, led by Alina Bucur (University of California at San Diego) and Melanie Matchett Wood (American Institute of Mathematics and University of Wisconsin–Madison); Arithmetic geometry, led by Alina Carmen Cojocaru (University of Illinois at Chicago) and Alice Silverberg (University of California,

Participants in WIN2

Irvine); *K*-theory and algebraic number theory, led by Wieslawa Niziol (University of Utah) and Sujatha Ramdorai (University of British Columbia); Zeta functions of Artin-Schreier varieties and Hodge polygons of exponential sums, led by Rachel Pries (Colorado State University) and Hui June Zhu (State University New York at Buffalo); Ramanujan supercongruences and complex multiplication, led by Ling Long (Iowa State University) and Gabriele Nebe (RWTH Aachen University); and Arithmetic intersection formulas, led by Kristin Lauter (Microsoft Research) and Bianca Viray (Brown University).

The Women in Numbers conferences are designed to promote collaboration, mentorship and networking among women in the field and to highlight the research of women number theorists. The conference also provides a chance for researchers at small colleges to participate in the training of graduate students. As Kristin Lauter says,

> There are so few female invited speakers at number theory conferences that female researchers' presence in the field is nearly invisible at the top levels of research. A research collaboration conference gives a chance for senior women to attract other number theorists to their research programs, and gives students and junior women the chance to expand their research agendas and network of potential collaborators and mentors. (Plus it's fun!)

It is expected that the collaborations begun at WIN2 will produce research over the next few years; several projects begun at the original WIN conference, held at BIRS in November 2008, are still ongoing and have resulted in numerous research papers. Organizer Michelle Manes reports that after the conference, many number theorists commented on how unusually many papers appeared on the arXiv with 3–6 women co-authors. The conference produced a refereed proceedings volume entitled *Women in Numbers: Research Directions in Number Theory* published by the Fields Institute and containing sixteen papers organized into five broad topics.

Project leader Melanie Matchett Wood writes, "WIN2 was a unique conference because it started collaborations

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Holly Swisher lecturing

between people who didn't have prior mathematical connections. By bringing these people together to work on specific problems, it not only increased participants' research networks, which is especially helpful for students, postdocs, and young faculty, but also brought together a range of different mathematical points of view and expertise to tackle the problems."

Manes writes, "I learned a lot in a very short time, worked with some really spectacular people, and I'm thrilled at the idea that I'm going to actually publish a paper in something so far removed from my usual stream of research."

Rachel Davis, a graduate student participant, felt the effect of the conference extended well beyond the week at BIRS. She writes,

> One thing that I especially liked about the WIN2 conference was that the research groups and projects were assigned before the conference. I learned so much from the suggested papers to read and from the other members in my group. I enjoyed that the conference also encouraged ongoing research collaboration.

The participants had ample time to make lasting connections within their groups and with the larger community at the conference. Everyone shared meals at the Banff Centre, and on a free afternoon many enjoyed hikes in the mountains. In the evenings the lounge was lively with conversation, and participants shared advice, stories and opinions about their mathematical careers.

Jackie Anderson lecturing

Renate Scheidler, Kristin Lauter, Sharon Garthwaite, Cassie Williams and Rachel Pries hiking on Tunnel Mountain during the free afternoon

Manes writes, "The facility at BIRS is just so unique in terms of what it offers ... the beauty of the area, the fact that we all live in the same building and eat meals together and such. I think the same style workshop held in another place wouldn't be quite so successful."

The success of WIN so far has prompted the continuation of the series, as well as plans for conferences following the same model in Asia and Europe. There are clearly a great many young number theorists who will benefit from these future conferences: the organizers of WIN2 received approximately twice as many applications as there were available slots for junior researchers.

Participants at WIN2 pooled their expertise in a group discussion to brainstorm new ways to encourage the growth of women's research in number theory, including a website, listserv and Facebook page. More information about past and future conferences, about the WIN email listserv, and for and about women in number theory generally is now available at http://womeninnumbertheory.org.

Lauter adds, "We hope that a similar model for research collaboration conferences for women will work in many other areas of mathematics where women are underrepresented at the top levels of research. A similar conference took place at BIRS in 2011, Algebraic Combinatorixx, and a proposal has been submitted to BIRS by women in topology (WITS)."

Acknowledgement: The author would like to thank Michelle Manes for help in preparing this article.

It's My Vote: I Will Be Heard

AAUW, February 2012

The American Association of University Women (AAUW) Action Fund has launched "It's My Vote: I Will Be Heard," a nonpartisan voter education and turnout effort aimed at maximizing the electoral power of women in the 2012 election.

As the largest generation since the baby boomers, today's 18- to 30-year-olds present the strongest opportunity to increase voter turnout among women. Millions of young women will be eligible to vote for the first time this year, and many others have yet to establish the habit of voting. As part of this national campaign, the AAUW Action Fund is providing grants to 15 target states to help them increase the influence of women in shaping public policy through grassroots outreach and voter registration.

"AAUW stands on a rich history of civic engagement and voter education," said AAUW Executive Director Linda D. Hallman, CAE. "We recognize the power of a single vote, and we will do everything we can to encourage all citizens to cast an informed ballot. Women must get involved in the political process to ensure that the issues they care about get the attention they deserve."

In addition to mobilizing young women, the My Vote campaign will also focus on critical issues that affect women's everyday lives, such as jobs, college affordability, and health care, including access to birth control.

"This campaign takes an approach that is unique to AAUW," said Seth Chase, AAUW's national field director. "We have hundreds of branches across the country with ties to their local communities and college campuses. Our members have the opportunity to establish lasting relationships with young women, to engage them on the issues, and to encourage them to vote and be heard."

As part of the My Vote campaign, AAUW is also sponsoring "Every Four Years: Presidential Campaigns and the Press," an interactive exhibit at the Newseum in Washington, D.C. The exhibit includes historical information about the suffrage movement, particularly how candidates' wives became more influential in elections after women won the right to vote in 1920. The exhibit will also feature campaign ads, artifacts used by the press and candidates on the campaign trail, and an interactive voting booth where visitors can cast "ballots" for the 2012 presidential election. The exhibit will be updated throughout the 2012 campaign and will run through Inauguration Day 2013.

AAAS Fellows

Edward Aboufadel, Secretary, Section A (Mathematics), AAAS

The American Association for the Advancement of Science (AAAS) recently announced the election of six new mathematics Fellows. Fellows of the AAAS are recognized for meritorious efforts to advance science or its applications. The six new Fellows were officially welcomed in February at the AAAS Annual Meeting in Vancouver, British Columbia.

Ingrid Daubechies of Duke University and Claudia Neuhauser of University of Minnesota are being honored for their outstanding mathematical research. The Fellows citation for Daubechies reads: "For her seminal work in wavelets, as well as significant contributions in the areas of signal processing, quantum mechanics, discrete geometry, and applied mathematics." Neuhauser's citation is as follows: "For distinguished contributions to the field of mathematics, particularly in spatial stochastic process with applications to the life sciences."

Richard A. Tapia of Rice University and Roger Temam of Indiana University are being lauded for their mathematical research and their attention to younger colleagues in the profession. Tapia's citation states: "For significant contributions in optimization theory and numerical analysis and extraordinary efforts to foster diversity, inclusiveness and excellence in the mathematical sciences." Temam's citation reads: "For distinguished contributions to applied mathematics and fluid mechanics, and extraordinary mentoring of young mathematicians throughout the world."

Mark Alber of the University of Notre Dame and Mark L. Green of UCLA are also being recognized as 2012 Fellows. Alber's citation says: "For distinguished contributions to the mathematical and computational modeling of dynamic biological processes, in particular, blood clot formation and swarming of bacteria." Green's citation is as follows: "For outstanding research in several complex variables, commutative algebra, Hodge theory, and algebraic geometry, and for co-founding the Institute for Pure and Applied Mathematics."

ANNOUNCEMENTS

Mathematical Physics Symposium

Funding is anticipated from the US National Science Foundation for a block grant to support the participation of young researchers at US institutions in the XVIIth International Congress on Mathematical Physics and the Young Researchers Symposium both to be held in Aalborg, Denmark, during the period August 3–11, 2012. This grant will provide support for travel, lodging, and local expenses. Applicants must have a position (graduate student, postdoc or assistant professor) at a US institution and be not more than five years beyond the Ph.D. Preference will be given to those without other sources of funding. Co-funding from an applicant's institution is encouraged. Women and members of under-represented groups are especially encouraged to apply.

The deadline for applications is **March 15, 2012**. Announcements of awards will be made by April 15, 2012. Applications and questions should be sent to Peter Hislop at icmp2012@hotmail.com. Additional information and the application procedure can be found at http://www.ms.uky.edu/~hislop/icmp2012.html.

Project NExT

Project NExT (New Experiences in Teaching) is a professional development program for new and recent Ph.D.'s in the mathematical sciences (including pure and applied mathematics, statistics, operations research, and mathematics education). It addresses all aspects of an academic career: improving the teaching and learning of mathematics, engaging in research and scholarship, and participating in professional activities. It also provides the participants with a network of peers and mentors. In 2012, about eighty faculty members will be selected to participate in a workshop preceding the Mathematical Association of America (MAA) 2012 summer meeting, in activities during the summer MAA meetings in 2012 and 2013, in the Joint Mathematics Meetings in January 2013, and in an electronic discussion network. Faculty for whom the 2012–2013 academic year will be the first or second year of full-time teaching (post-Ph.D.) at the college or university level are invited to apply to become Project NExT Fellows.

Applications for the 2012–2013 Fellowship year are due **April 13, 2012**. For more information, see the Project NExT website, http://archives.math.utk.edu/projnext/, or contact Aparna Higgins, Director, at Aparna.Higgins@notes.udayton.edu. Project NExT is a program of the MAA.

A list of Project NExT sponsors, further information about Project NExT, and links to application instructions and the online application form, can be found on the Project NExT web site http://archives.math.utk.edu/projnext/.

Topology and Groups–Berlin 2012

The conference Topology and Groups–Berlin 2012 will be held June 25–29 and will be preceded by a summer school held June 18–22. Both events will take place at Freie Universität Berlin. See http://www.math.fu-berlin.de/top/ for further information.

AWM Conflict of Interest Policy

A conflict of interest may exist when the interest (financial or other) or concerns of any member of AWM, or the member's immediate family, or any group or organization to which the member has an allegiance or duty, may be seen as competing or conflicting with the interests or concerns of AWM.

When any such potential conflict of interest is relevant to a matter requiring participation by the member in any action by AWM or any of its committees to which the member belongs, the interested party shall call it to the attention of AWM or the committee and such person shall not vote on the matter. Moreover, the person having a conflict shall retire from the room in which the organization or its committee is meeting (or from a conference call) and shall not participate in the final deliberation or decision regarding the matter under consideration.

The foregoing requirements shall not be construed as preventing the member from briefly stating her position in the matter, nor from answering pertinent questions of other members, as her knowledge may be of great assistance.

The minutes of the meeting of the organization or committee shall reflect when the conflict of interest was disclosed and when the interested person did not vote. When there is a doubt as to whether a conflict of interest exists, and/or whether a member should refrain from voting, the matter shall be resolved by a vote of the organization (or its committee), excluding the person concerning whose situation the doubt has arisen.

A copy of this conflict of interest statement passed by the AWM Executive Committee, Vancouver, 8/16/1993, shall be published once a year in the *AWM Newsletter*, and any member serving as an officer or on a committee shall be advised of the policy upon undertaking her duties.

2011–2012 Individual Membership Form

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Individual Dues Schedule

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ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 42, Number 2, March–April 2012

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