AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Newsletter

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The purpose of the Association for Women in Mathematics is

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

IN THIS ISSUE

PRESIDENT'S REPORT

Georgia Benkart

The Mathematical Association of America has termed MathFest 2009 a "smashing success." Fearful of what the recession might do to attendance, the MAA held its breath only to have a record crowd of 1517 register for the meeting. The plenary talks at MathFest were expertly crafted to appeal to one and all. As Ravi Vakil illustrated in the first of his three Hendrik lectures, even something as simple as a blob drawn on paper can lead to deep mathematics. Take a doodle, any doodle, and trace a shape all the way around it, say half an inch from the perimeter of the blob. Keep doing this and eventually a circle forms. It may not be readily apparent, but as Vakil described in his talk, there is sophisticated mathematics taking place in this process.

Kate Okikiolu's AWM-MAA Falconer Lecture at MathFest revealed the inherent beauty and usefulness of the trace of the inverse of the Laplacian. Besides giving the sum of the eigenvalues, the trace provides the sum of the squares of the wavelengths of the surface in this setting. So it yields fundamental information about the shape of the surface and relates its geometry to natural frequencies. The topic is connected to Mark Kac's well-known question, "Can you hear the shape of a drum?" No drums sounded during the lecture, just Okikiolu's note-worthy demonstration of different frequencies.

Cryptography involves the transfer of sensitive information between two individuals, who are often assigned the names Alice and Bob in lectures and the literature. So it was fitting that Alice Silverberg, an AWM Executive Committee member, spoke at MathFest on "Cryptography: How to Keep a Secret." She, the Alice (lecturer, sender and receiver of information, and owner of Ceilidh the cat, who also had a paw in secret message transfers during the talk), showed how prime numbers, arithmetic modulo various numbers, and elliptic curves are key ingredients in the encryption of information. The vast majority of ATM users may be completely unaware of the important role cryptography plays in electronic commerce, but now MathFest attendees have a better understanding of that thanks to Alice (and Bob and Ceilidh).

A perfect shuffle is one in which a deck of cards is divided into two equal parts of 26 cards each, and then the cards from each half are exactly alternated. It is referred to as an out-shuffle if the top card remains on top during the shuffle. Eight perfect out-shuffles restore a deck of cards to its original order. Stanford professor Persi Diaconis in his Pi Mu Epsilon J. Sutherland Frame Lecture at

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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.

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PRESIDENT'S REPORT *continued from page 1*

MathFest not only performed eight perfect shuffles in front of a packed audience (an amazing feat in its own right), but also related the group generated by the out- and in- shuffles in a striking fashion to a group of reflections.

Parental leave, childcare, and work for spouses were featured topics at the engaging AWM panel "Family Matters" at MathFest. Moderator Maura Mast and panelists Naiomi Cameron, Jennifer Quinn, David Richeson, and Beth Schaubroek emphasized that there is no perfect shuffle, no perfect solution for achieving a successful family-work balance. They shared many valuable words of wisdom, among them "hire people to do things, [your] time is precious"; "take your children along"; and echoing Annalisa Crannell's advice, "sit down and write out who the people are to go to for help" (when children are ill or other crises arise). Arlie Hochschild's book *The Second Shift* was cited by the panel. Although written over 20 years ago, it is still highly regarded as a relevant articulation and analysis of the many issues two-career families face. Not just academics, but parents throughout the workforce struggle with how to work one shift at the office and share the second shift at home. Hochschild remarks that individuals who say they "help around the house or help with the children" are not, in general, equal co-sharers in the second shift. She found, in many interviews with couples, a prevalent view that men "have careers" while women "work." Has that changed in the 20 years since her study?

Parental leave policies vary widely from college to college, but many fear taking leave because of the burden it usually places on colleagues. In the AWM panel, Richeson, who was one of the first to take paternity leave at Dickinson College, described his reluctance to do so, until his friend, who just happened to be departmental chair at the time, encouraged him to. In the lively discussion that followed the panelists' presentations, audience members urged job seekers to ask about parental leave (and negotiate leave if necessary) during job interviews. As one put it, "It is important to understand the benefits at your university. Many schools have their policies on the web, and it is essential to have them in writing. If they aren't there, talk to people on the faculty senate." Another member of the audience commented, "My wife was very pregnant during her job interview." When she asked about the parental leave policy, the interviewer replied, "Have your child during summer."

On October 1, Barbara Keyfitz became the president-elect of the International Council of Industrial and Applied Mathematics (ICIAM), a worldwide organization for professional societies in applied mathematics, of which AWM is a "small associate member." A former President of AWM (and currently the chair of its Long-range Planning Committee) and a former Director of Fields Institute, Keyfitz is the first woman to be elected to this distinguished position. For many of her eight years as treasurer of ICIAM, she has been one of only two women on the over 40-member ICIAM board. Congratulations to Barbara on this groundbreaking event, and congratulations to ICIAM on its excellent choice! ICIAM's response to statements by Lawrence Summers in 2005 affirmed its commitment to women in mathematics. The ICIAM President at the time, Ian Sloan, wrote, "As an international organization representing the world's applied mathematicians, ICIAM is committed to removing the educational inequalities in mathematics that exist in many parts of the world, and to improving the access to careers in the mathematical sciences for all men and women." ICIAM recently made the Olga Taussky Todd Lecture a permanent feature at its international congresses, another affirmation

of its commitment to furthering the careers of women. This lecture was started in 2007 by the joint efforts of AWM and the European Women in Mathematics.

In August, the Association for Women in Science (AWIS) received a three-year grant from the National Science Foundation for a new project "Advancing Ways of Awarding Recognition in Disciplinary Societies (AWARDS)." The goal of AWARDS is to establish a framework for more equitable recognition of women and members of other underrepresented groups in scientific communities. From 1981 through 2007, women received just 12% of all scientific awards for which both men and women were eligible. For over half (54%) of these 1066 awards, women were the recipients less than 10% of the time. As markers of achievement and recognition, awards and prizes are often critical for career advancement.

Project partners in AWARDS include the American Chemical Society (ACS), American Geophysical Union (AGU), American Mathematical Society (AMS), American Statistical Association (ASA), Mathematical Association of America (MAA), Society for Neuroscience (SfN), and Society for Industrial and Applied Mathematics (SIAM). The partner societies have a combined membership of 329,000 and sponsor nearly 400 awards. MAA's and SIAM's inclusion in the project was catalyzed by AWM, which has agreed to collaborate in this project by recruiting AWARDS task force members from its membership. That the major U.S. mathematics and statistics societies are willing to have their award processes reviewed and evaluated is very welcome news.

Often women are not even considered at the first step of the awards process—nomination. Yet societies generally advertise their prizes and nominating procedures on their own websites. In addition, the University of Illinois Urbana-Champaign Mathematics Department has a comprehensive list of mathematics awards on its website (http://www.math.uiuc.edu/People/math_awards.html) as does the International Mathematical Union (http://www.mathunion.org/general/prizes).

So consider nominating a deserving woman for an award!

There is much speculation about whether 2010 will finally be the year that a woman receives a Fields Medal. At the 1924 International Congress of Mathematicians in Toronto, a resolution was adopted stating that at each subsequent congress, two gold medals should be awarded to recognize outstanding mathematical achievement for existing work and for the promise of future achievement. Professor John Charles Fields, a Canadian mathematician who was secretary of the 1924 congress, later donated funds to establish the medals, which were named the Fields Medals in Mathematics in his honor. The first Fields Medals were awarded at the ICM in Oslo in 1936. However, World War II intervened, and no ICM was held (and hence no Fields Medals were given) again until 1950. In 1966, it was agreed that, in light of the great expansion of mathematical research, up to four medals could be awarded at each congress. Women have fared no better with the Wolf and Abel Prizes; in the 30-year history of the Wolf Prize and in the 5-year history of the Abel Prize, no woman has won either award.

Discover magazine in its article "Fame Passed Them By" noted, "History has not always been kind to women scientists. Many have passed long days and nights in the lab stirring noxious concoctions or gathering piles of data only to see the credit for their discoveries awarded to a male colleague." Indeed the Nobel (No-Belle?) Prize record is very sparse on women. From 1901 to 2008 there have been 36 female Nobel laureates out of 789 individuals: 13 in chemistry, medicine, and

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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.

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physics (counting Marie Curie twice for her two separate awards in chemistry and physics); 12 in peace; and 11 in literature. No woman has won the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel (often dubbed the Nobel Prize in Economics) since its inception in 1969. The total of 789 includes the economics winners but not the 10 institutions that have won the Nobel Prize. The most recent female recipient in either chemistry or physics was over 45 years ago.

Lise Meitner (1878–1968) is not among the Nobel recipients, despite her 15 nominations for the prize, five of which came from Max Planck and two from Niels Bohr, themselves Nobel laureates. Her story is a truly fascinating one that illustrates many of the obstacles women have encountered and in a number of ways parallels Emmy Noether's life story. Between 1990 and 2000 several excellent biographies of Meitner appeared, including one for children by Rachel Stiffler Barron, *Lise Meitner: Discoverer of Nuclear Fission.*

Lise showed early aptitude for math and science and was reported to have slept with a math book under her pillow as a young girl. (Don't try this at home, especially with recent calculus tomes.) In Austria in the late 1890s, formal schooling for girls ended at age 14. But after several years of intense tutoring, Lise entered the University of Vienna and in 1906 became the second woman in the university's 500-year history to be awarded a Ph.D. in physics. With financial backing from her father, she traveled to Berlin, where at the Chemistry Institute of the University of Berlin, she met a young chemist, Otto Hahn, and they then began a very productive 30-year collaboration on the relatively new topic of radioactivity. Emil Fischer, the institute director, reluctantly agreed to let Lise conduct research in a small basement room (sharing the then-common fear that women might catch their hair on fire during experiments). By 1908 she had developed her "recoil method," a technique for purifying radioactive material that took advantage of the recoil energy of atoms produced in alpha decay. It was one of her first discoveries widely adopted by the scientific community. With the sanctioning of university education for women in Prussia in 1909, Lise was permitted to use the chemistry institute's laboratories for the first time. By March 1918, she and Hahn had submitted their paper announcing the discovery of a new radioactive element, protactinium, the mother of actinium. Although Frederick Soddy and John Cranston had achieved similar findings independently at virtually the same time, Meitner and Hahn had characterized protactinium more completely, and so priority was awarded to them.

Ninety years ago in the summer of 1919, the Kaiser Wilhelm Institute for Chemistry appointed Lise Meitner a professor, in all likelihood the first woman in Germany, certainly in Prussia, with that title. The German Revolution of 1918–1919 had brought a significant change in social attitudes and more rights for women. Meitner's new title was especially helpful for attracting students and assistants, obtaining grants, and negotiating with the bureaucracy. When Max Planck approached her in 1921 about the possibility of teaching in the physics department at the University of Berlin, she expressed considerable surprise—for she had never had a female instructor in her entire university career. But in 1922, she became the first woman in Germany to be named a *Dozent* (lecturer), and four years later she became an assistant professor with full lecturing rights and salary. (In 1922, Emmy Noether was appointed *nicht beamteter ausserordentlicher Professor* or unpaid "extraordinary" professor at Göttingen, but was not paid for her lectures

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AWM ONLINE

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

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

AWM DEADLINES

AWM-SIAM Sonia Kovalevsky Lecture: November 1, 2009

Ruth I. Michler Memorial Prize: November 1, 2009

AWM-SIAM Workshop: January 12, 2010

AWM Travel Grants: February 1, April 1, and October 1, 2010

Mentoring Travel Grants: February 1, 2010

Sonia Kovalevsky High School Mathematics Days: February 1, 2010

AWM Essay Contest: February 27, 2010

Hay Award: April 30, 2010

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until she was appointed to the special position of *Lehrauftrag für Algebra* [adjunct professor for algebra] about a year later.) The academic community, however, hadn't quite adjusted to having women in its midst, and Meitner's inaugural public lecture on cosmic physics was announced in Berlin academic circles as a lecture on the significance of radioactivity in "cosmetic" physics.

With the German Anschluss of Austria in 1938, Meitner no longer had a legal passport, and her Jewish ethnicity made her situation very precarious. An escape orchestrated by colleagues outside Germany and facilitated at great risk by Dutch physicist Dirk Coster brought her to the Netherlands in July 1938 just as borders closed and emigration effectively ended. After their harrowing train trip, Coster notified Hahn by telegram that "the baby has arrived." With no legal documents or status, and no means of support, Meitner was forced to leave Holland for essentially an assistant's position in Manne Siegbahn's Institute in Stockholm. There, a lack of equipment, assistants, and financial resources effectively sounded the death knell of Meitner's illustrious research career.

In November 1938, Meitner and Hahn met in Copenhagen and continued their ongoing research discussions. Hahn returned to Berlin and in December conducted experiments with Fritz Strassmann that led to the splitting of the uranium nucleus. It was quite apparent from the resulting Hahn-Strassmann paper that they had very little understanding of the underlying process. It was only in a joint article by Meitner and her nephew Otto Robert Frisch, "Disintegration of Uranium by Neutrons: A New Type of Nuclear Reaction," which they submitted in January 1939, that the impact of the experiment was fully appreciated, the process coherently explained, and the insight into the immense energy released in the process revealed. In their article, Meitner and Frisch coined the term "nuclear fission," borrowing "fission" from cell division in biology. Hahn, in his 1946 acceptance speech for the 1944 Nobel Prize in chemistry for "his" discovery of fission, made virtually no acknowledgment of Meitner's role in his work or of their 30-year collaboration, or of Strassmann's role, for that matter. (Hahn did, however, give Meitner part of the monetary award, which she sent on to an Emergency Committee of Atomic Scientists chaired by Einstein in Princeton to help refugee scientists.) Starting in the late 1930s, and no doubt initially motivated by political considerations, Hahn distanced himself from Meitner, failing even later in life to give her credit for her enormous contributions. Despite the intentional downplaying of her role by Hahn, Meitner nevertheless did achieve considerable recognition, numerous awards (including the 1966 Enrico Fermi Award together with Hahn and Strassmann, and ironically, the first-ever Otto Hahn Prize), loads of honorary degrees, and, in 1997, an element named in her honor, #109 meitnerium. When she visited New York in January 1946, the press lavished attention on her under the mistaken impression that she had escaped Nazi Germany "with the atomic bomb in her purse." In February of that year, the Women's National Free Press Club named Lise Meitner "Woman of the Year." Sitting next to her at the gala awards event, President Truman, in a variation on Abraham Lincoln's legendary comment to Harriet Beecher Stowe, remarked, "Ah, so you're the little lady who got us into this mess." This was truly misguided, as Meitner had refused to have anything to do with the atomic bomb, even going so far as to decline attractive offers of research positions in the United States that would certainly have bettered her situation.

Sharon Bertsch McGrayne's book *Nobel Prize Women in Science: Their Lives, Struggles, and Momentous Discoveries* makes for inspiring reading, as does the article "George H. Whipple or How To Be a Great Man without Knowing Differential Equations" by H.W. Davenport. Mr. Whipple, not to be confused with the Charmin squeezer of commercial notoriety, did fundamental work with Frieda Robscheit-Robbins on anemia. A noble as well as a Nobel man, Whipple publicly acknowledged the profound contribution of his group and shared 1/3 of his prize money with Robscheit-Robbins and two other female technicians. Limited access to advanced education, laboratories, funding, and most especially to prominent academic and research positions, had forced Robscheit-Robbins and many other female scientists to take jobs, often temporary ones, as low-level lab assistants or technicians, when a professorship or leadership of a research group would have been the more appropriate position, and, of course, would have led to greater visibility and recognition.

McGrayne's article in the May 2002 edition of *Science* (http://www.sciencemag.org/cgi/content/full/296/ 5569/851) on Gertrude Belle Elion, 1988 Nobel Prize winner in the area of physiology or medicine, quotes Elion as saying, "Keep your eye on the goal," and, echoing Admiral David Farragut, "Damn the torpedoes. Full speed ahead!" which is certainly excellent advice for all.

Georgia Benkart
Madison, WI
September 12, 2009

Letter to the Editor

I read with great interest the Education Column in the September–October AWM *Newsletter,* where author Pat Kenschaft promoted environmental mathematics. I applaud her notable efforts to trumpet the value of inserting environmental issues into our discipline, since an understanding of the quantitative aspects of such matters is essential to our understanding of the issues.

I wanted to bring to your attention the textbook that I have been using in my Mathematics for the Environment course for the past three years, which was omitted from Pat's article. It is called *Quantitative Reasoning and the Environment: Mathematical Modeling in Context* (by Greg Langkamp and Joseph Hull, Pearson/Prentice Hall ISBN 0-13-148527-X).

I have also used Charlie Hadlock's book (described in Pat's column) several times (at both the introductory and advanced level). Both books are excellent. In Hadlock's book, the emphasis on air and water pollution is an appropriate focus and the author's experiences as a consultant shine through.

In the Langkamp/Hull book, the problems range widely across many issues of concern pertaining to the environment. Each chapter comes with a project that my students have found extremely informing and interesting. I'd highly recommend that anyone considering teaching a course in Environmental Mathematics examine both of these textbooks.

Sincerely,
Catherine A. Roberts
College of the Holy Cross

Workshop Mentors Needed

Are you looking for an opportunity to be more active in AWM? Have you considered being a mentor at one of our workshops? We're looking for volunteers to serve as mentors at the January AWM workshop, to be held January 2010 in conjunction with the annual Joint Mathematics Meetings in San Francisco. Being a mentor for a graduate student or recent Ph.D. is incredibly rewarding. If you'd like to help, contact our Executive Director Maeve McCarthy at mlmccarthy@awm-math.org.

ASSOCIATION FOR WOMEN IN MATHEMATICS

AWM Election

This year, we are electing a President-Elect, a Clerk, and four Members-at-Large of the Executive Committee. The Member-at-Large positions are contested, so we encourage you to vote. Statements and biographical data provided by the candidates follow. For the first time, we are including photos of the candidates. Those elected will take office on February 1, 2010.

On November 20, 2009, you will receive an e-mail inviting you to vote. At that time the electronic ballot link (www.awm-math.org/ballot.htm) will be activated. You will be asked to provide your membership number when you vote; this number will be included in the email that you receive. Also, a ballot is included on page 19 of this issue, for those who prefer to vote the old-fashioned way. A validating signature is required on the envelope if you vote via paper ballot. Institutional, affiliate, and corporate memberships do not carry voting privileges. Electronic ballots must be cast by **December 15, 2009**, which is also the due date for paper ballots.

PRESIDENT-ELECT

Jill Pipher, Brown University

I was honored to be nominated for this position, and I hope to serve this inspirational organization with energy and attention.

It is certainly true that there are fewer obstacles to professional opportunities for women in mathematics now, and that the climate and culture for women in the physical sciences has greatly improved. In the 1950s, when I was born, less than six percent of doctoral degrees in mathematics were awarded to women. Now about thirty percent of doctoral degrees are awarded to women. Yet this is far from full participation, and the effects of underrepresentation continue to dog us. When I was Chair of my department, I often lingered in the department office, and on more than one occasion was assumed to be on the secretarial staff. These minor gaffes pale by comparison to the powerful consequences of underrepresentation, such as the burden on an individual to perform "for the group," and the attendant repercussions on

Jill Pipher

individual performances. There is no doubt that there is much more to be done to support women professionally in mathematics.

I look forward to working with other AWM officers, and to the opportunity to explore ways to increase membership. For example, can we reach more women in industry? Abroad? Younger women appear to have a more inclusive experience in the mathematical community today: what are their greatest concerns, and how can AWM address them?

As AWM approaches its 40th anniversary, I eagerly anticipate the celebration of decades of impact and progress and the reflection on the future directions of this organization.

Biographical Information: Jill Pipher is Professor of Mathematics at Brown University. She served as Chair of the Department 2005–2008 and was Vice-Chair during the two prior years. She received her Ph.D. from UCLA in 1985 and came to Brown as an associate professor in 1990 from the University of Chicago. Her research interests include harmonic analysis, PDE and cryptography. She has published papers in each of these areas of mathematics and jointly holds three patents for the NTRU encryption and digital signature algorithms. She is a co-founder of Ntru Cryptosystems, Inc. Her undergraduate textbook, *An Introduction to Mathematical Cryptography,* jointly authored with Brown colleagues J. Hoffstein and J. Silverman, was recently published by Springer Undergraduate Textbooks in Mathematics. At Brown, she is the faculty mentor for the Math WISE (Women in Science and Engineering) group and has helped to organize SUMS (the Brown annual symposium for undergraduate mathematical sciences). Her awards include an NSF Postdoctoral Fellowship, Presidential Young Investigator Award, Mathematical Sciences Research Institute Fellowship, and an Alfred P. Sloan Foundation Fellowship. Her research is currently supported by an NSF grant. Her recent invited lectures include the Coxeter Lectures in Mathematics at the Fields Institute, Toronto and a plenary lecture at the Lars Ahlfors Centennial in Helsinki. She is a member of the AMS, AWM and MAA.

CLERK

Rebecca Segal, Virginia Commonwealth University

I am pleased to be nominated for the position of Clerk of AWM. I have been encouraged and inspired throughout my career as a result of my participation in numerous AWM programs. I am excited to have the chance to give back to AWM and I look forward to working with the other nominees.

Rebecca Segal

I was fortunate to attend a women's college for my undergraduate degree and to have many strong female mentors early in my career. At the time, I didn't realize how rare this was. As a faculty member, it is a privilege to myself be a role model for students. Participation in and promotion of AWM is one way I can provide guidance and opportunities for the students.

Biographical Information: Rebecca Segal was an undergraduate mathematics major at Bryn Mawr College in Pennsylvania. She completed her Ph.D. in 2001 in applied mathematics at North Carolina State University under the direction of Michael Shearer. She was then a postdoctoral fellow at CIIT Centers for Health Research in North Carolina with Julia Kimbell. Following that, she was a teaching fellow in the mathematics department at the University of Bristol, England. She is currently an assistant professor at Virginia Commonwealth University. Her research is in the use of numerical solutions to differential equations derived from applications in medicine and biology, working primarily on applications of nasal airflow patterns to drug delivery and modeling wound healing in patients with additional injuries or disease states.

MEMBER-AT-LARGE

Karen M. Brucks, University of Wisconsin Milwaukee

It is a pleasure and honor to be considered for membership on the AWM Executive Committee. AWM continues to play an important and unique role in the mathematical community by providing a variety of resources for the advancement of women in mathematics.

Karen M. Brucks

It is an interesting time in mathematics and more broadly in the sciences. Exciting collaborative interdisciplinary research opportunities abound and the focus on undergraduate research is growing significantly. Activities to assist women of all ages to identify and

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capitalize on collaborative research opportunities will further yet advance women in mathematics.

Obtaining scholarship funds for students is essential in this age of rapidly rising tuition costs. Facilitating the sharing of best practices in obtaining funds for and in running scholarship and other student support programs is an ongoing opportunity for AWM.

The recruitment and retention of women into mathematics remains a top priority. Identifying and promoting innovative evidence-based systemic organizational approaches leading to institutional transformation and increased participation and advancement of women in mathematics and the sciences continues to be a need in the scientific community.

So again, it is an interesting time in mathematics. Challenges and opportunities are plentiful. It would be a pleasure to work with AWM and the broader scientific community to further the advancement of women in mathematics.

Biographical Information: Karen M. Brucks is an Associate Professor of Mathematical Sciences at the University of Wisconsin Milwaukee (UWM). She served four years as the Mathematical Sciences Department Chairperson (2001–2005) and is currently the Associate Dean for the Natural Sciences. Working for the advancement of women has been a constant in her life. Since 1997, Karen has had the opportunity to be involved with the NSF funded Summer Math Program (SMP) for undergraduate women in mathematics. Each summer SMP brings 18 mathematically talented female undergraduate students to Carleton College for an intensive four week program. Karen has taught in this program in 1997, 1999, 2001, 2007, and 2008 and has typically visited and given colloquium talks when not teaching.

Brucks earned the B.A. degree from the University of Arizona and the M.A. and Ph.D. degrees from the University of North Texas. Her research interests are in the area of symbolic and topological dynamics. She has a 2004 book in the Cambridge Press London Mathematical Society Student Texts series titled *Topics from One-Dimensional Dynamics.* Selected service activities include the AAUW American Fellowship Panel 1997–2000, AWM Travel Grant Selection Committees, and 2008 NSF review panel for S-STEM Scholarship Proposals. Karen currently is PI on an NSF S-STEM award that provides scholarships to undergraduate students at UWM in the Natural Sciences.

Kari Hag, Norwegian University of Science and Technology, NTNU Trondheim

I was surprised and flattered to be invited to run for a Member-at-Large seat on the AWM Executive Committee. Although I do not live in the US I always want to attend the annual meeting of the AMS and MAA and will have an extra push to do so if elected, since the only face-to-face meetings of the EC will be there. (I have been a member of the AMS, MAA and AWM for many years.)

Let me emphasize that I am very impressed by the work of the AWM. What I could add is maybe a broader perspective. The numbers of women in mathematics differ dramatically among different European countries, with Southern Europe having the largest numbers. But also here women full professors are rare. I learned this from working on the Round Tables "Women and Mathematics" that were a part of the program for the first two congresses of the European Mathematical Society. My report from the last Round Table can be found at www.math.ntnu.no/~kari/round.pdf.

In the Nordic countries, and maybe in Norway in particular, the awareness of women in university positions has increased considerably over the last years. "The Committee for Mainstreaming—Women in Science" has been active since January 2004. It monitors the situation of women in research and promotes measures to help increase their numbers and improve the general work environment for women in academia. On the other hand, the recruitment of girls and women to studies in the mathematical sciences is still a matter of great concern. I feel that we might have a lot to gain by exchanging ideas on these matters.

Kari Hag

Biographical Information: Kari Hag is a Professor of Mathematics at the Norwegian University of Science and Technology (NTNU). Her professorship has a special responsibility for the development of teacher education at the department.

She is Norwegian and did her undergraduate work in Norway, but earned her Ph.D. in mathematics from the University of Michigan in 1972 with F. W. Gehring as her advisor. She has been back to the U of M as a Visiting Scholar many times and has also been a VS at the University of Texas at Austin.

Her main area of research is geometric function theory, where she has most of her publications. In the last years she

has continued work on a book with Gehring on the theme of understanding the geometric and analytic nature of quasidisks, which are objects found in surprisingly many areas of mathematics. She has a long record of teaching and has received the (Norwegian) SINTEF Prize for her pedagogical work. She has many publications related to pedagogical issues as well as several published articles on issues about women in mathematics.

She has served regularly on various local and national committees. She has also been involved with international organizations such as the European Women in Mathematics and ICMI, the International Commission on Mathematics Instruction. In the period 2002–2006 she was Acting Dean at the Faculty of Information Technology, Mathematics and Electrical Engineering at NTNU.

Cymra Haskell, University of Southern California

Cymra Haskell

I am honored to run for the position of Member-at-Large of the AWM Executive Committee. The AWM has played an invaluable role in increasing the representation of women in the mathematics community. Its programs have increased the visibility of women and celebrated their accomplishments, and its advocacy has raised awareness of many of the impediments to success that women face.

Since the founding of the AWM in the 1970s, we have made great strides towards integrating women in mathematics. In particular, we have been very successful at identifying and addressing the more overt mechanisms that deter women from entering and staying in the profession (though there is still work to be done on this front, particularly in the area of child care and promoting family friendly workplaces). However, we are still a far cry from realizing the full participation of women in mathematics; too few women enter the profession and too many leave it prematurely. The more difficult task ahead of us is to change the culture of the profession to make it more welcoming to women. In my experience the primary factors that drive women away are the same as those that drive men away, but women are more susceptible to them. In particular, many of the talented individuals that I've seen leave the field do so because they don't want to participate in the intense competitive environment they find themselves in and because they feel that the discipline doesn't allow them to pursue a well-rounded existence. I believe that one of the most important roles of the AWM at this point in time is to lead the way in transforming the culture of the profession to one where excellence is nurtured rather than achieved through competition and to one where all nature of mathematical achievements are recognized and encouraged including research in mathematics, research and collaborations with other disciplines, education, and advocacy.

Biographical Information: Cymra is a Lecturer in Mathematics at the University of Southern California. Her research has focused on statistical properties of dynamical systems and modeling of biological processes. Although born in this country, she grew up in England and did her undergraduate degree at the University of London, Imperial College. After completing her Ph.D. at Stanford in 1992 she had postdoctoral positions at UT Austin and SUNY Stony Brook before coming to the University of Southern California where she has been for ten years.

Cymra is committed to increasing diversity in mathematics. As a graduate student she ran workshops at the local Expanding Your Horizons Conferences for girls in K–12. She has taught in a summer program on the Navajo reservation and in the EDGE summer program for women about to enter graduate school in mathematics. About five years ago she started a Women in Mathematics group at the University of Southern California. The group gets together about twice a month, hosting speakers and providing a mentoring network for women interested in mathematics. More recently she co-organized the first annual (we hope!) one-day symposium for Women in Mathematics in Southern California. She is also involved at the K–12 level, working with the Algebra Project to bring the lowest performing quartile of students in mathematics to college level by the time they graduate from high school.

Trachette L. Jackson, University of Michigan

I am honored to be nominated to join the AWM Executive Committee as a Member-at-Large. Service to the mathematics community, at both the local and national level, is extremely important to me. I currently serve on the advisory board for the National Institute for Mathematical and Biological Synthesis (NIMBioS), am on the steering committee for the Annual Biomedical Research Conference for Minority Students (ABCRMS) and am a co-chair of the Mathematical Biology Institute (MBI) Diversity Committee. I fully support the AWM's mission and I look forward to becoming more involved with AWM initiatives and activities.

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AWM Election *continued from page 9*

Biographical Information: Trachette L. Jackson earned her Ph.D. in Applied Mathematics in 1998 from the University of Washington, and she is currently a Professor of Mathematics at the University of Michigan. Jackson is an award-winning teacher scholar whose research in mathematical oncology has received international attention. In 2003 she became the second African American woman to receive the prestigious Alfred P. Sloan Research Fellowship in mathematics; in 2005 she received a James S. McDonnell 21st Century Scientist Award, and in 2008 *Diverse Issues* magazine honored her as one of the year's Emerging Scholars. The main focus of Jackson's research is combining mathematical modeling and numerical simulation with in vivo experiment to gain deeper understanding of tumor growth and vascular structure at the molecular, cellular, and tissue levels. Jackson's commitment to the field of theoretical and computational cancer research is further evidenced by her joint efforts to spearhead a Quantitative Oncology subsection in the authoritative journal *Cancer Research,* for which she now serves as a Senior Editor.

As an educator, Jackson co-founded and co-directs the Mathematical Biology Research Group (MBRG), which is a University of Michigan wide initiative to foster interdisciplinary research at the interface of mathematics and biology. She is also co-director of the NSF-funded SUBMERGE (Supplying Undergraduate Biology and Mathematics Education and Research Group Experiences) program, which merges the subjects of mathematics and biology for undergraduate students. Jackson has built her career on collaborative research and educational activities that cut across traditional disciplinary boundaries and will continue to expand her efforts to reach students at all levels.

Trachette L. Jackson

Chawne Kimber, Lafayette College

The AWM is successful in its mission to support the education and careers of girls and women in mathematics. I look forward to helping advance these efforts, especially for a diverse constituency of women and girls.

My experience working with issues of diversity is two-fold. First, I was a co-organizer of the North American Workshop on Diversity in Mathematics at Banff International Research Station in 2006 and then was a panelist at the follow-up workshop the next summer. Second, currently I am examining pipeline issues for students from underrepresented groups (women, ethnic minorities, low-income, and first-generation) when they are at the critical high school-to-college transition point. A key component of this examination is a Lafayette College six-week summer program I direct for academically talented science and engineering majors in this demographic.

Chawne Kimber

I have served as a mentor through the AWM Mentor Network, on the AWM Committee on Student Chapters and as a judge in the AWM Essay Contest. My service for other organizations includes a term on the AMS Committee on the Profession and currently terms on the AMS Committee on Committees and on the AMS Task Force on Prizes.

Biographical Sketch: Chawne Kimber is Associate Professor of Mathematics at Lafayette College, where she was hired in 1999. Involvement in Project NExT (2000–2001) bolstered her teaching, while her research was strongly supported through stints as Van Vleck Visiting Assistant Professor at Wesleyan University during 1999–2000 and 2003–2004. Chawne earned a B.S. in mathematics from the University of Florida, an M.S. in mathematics from the University of North Carolina at Chapel Hill and a Ph.D. in mathematics from the University of Florida. Her field of research is ordered algebraic structures, which ranges from lattice theory to general topology to commutative algebra. Chawne has co-organized a Special Session in her field at an AMS meeting and is currently co-organizing a workshop on frames.

Irina Mitrea, Worcester Polytechnic Institute

I am honored to have been invited to run for the position of Member-at-Large of the AWM Executive Committee. I believe that my research interests, history of mathematical outreach, and proved commitment to diversity are in line with the research, education, training, mentoring and outreach goals of AWM.

During the last four years I have created, organized, and run a number of mathematical outreach activities involving more than 400 students, a significant portion of which were specifically designed to benefit women and minority in mathematics. A case in point is the Girls and Mathematics Summer Program, offered during 2006–2008 at the University of Virginia and in 2009 at Worcester Polytechnic Institute, which overall had more than 130 middle school girls participants. At the national level, I have been an active participant and mentor in programs with a long tradition in supporting the interest of undergraduate women in graduate studies in mathematics such as the G. Washington University Summer Program for Women in Mathematics and the Women and Mathematics Program of the Institute for Advanced Study and Princeton University. Since 2007 I also actively engaged in the mentorship efforts of AWM as mentor and as a member of the AWM Mentoring Committee.

As a member of the Executive Committee of the AWM I would work on expending the existing AWM mentoring network involving faculty, graduate and undergraduate students to include high school and middle school women interested in mathematics; building research collaborations between women high school, undergraduate, and graduate students; developing awareness of job opportunities and possible career paths for women interested in mathematics; attracting women to mathematics by establishing a national network of all-girl-problem-solving groups and by supporting the interest of women in the field especially through critical transition points in their careers.

Irina Mitrea

Biographical Information: Irina Mitrea pursued her graduate studies in the School of Mathematics at the University of Minnesota, where, in 2000, she earned a Ph.D. degree under the direction of Carlos Kenig and Mikhail Safonov. Her area of expertise is at the interface between real and harmonic analysis, and partial differential equations. Following post-doctoral positions in the School of Mathematics at the Institute for Advanced Studies in Princeton (2000–2001) and in the Department of Mathematics at Cornell University (2001–2004) she joined the University of Virginia in the Fall of 2004 as an assistant professor and was promoted to associate professor with tenure in 2007. Since 2009 she joined the Department of Mathematical Sciences at Worcester Polytechnic Institute as an associate professor.

Mitrea's research is currently supported by an NSF CAREER Grant, 2006–2011. Other awards include the 2008 Ruth Michler Memorial Prize from the Association of Women in Mathematics; an NSF Grant from the Division of Mathematical Sciences, 2003–2006; a Fund for Excellence in Science and Technology grant from the University of Virginia, 2005–2006; a Sloan Dissertation Fellowship, 1999–2000, and a Liftoff Fellowship from the Clay Mathematics Institute, 2000.

Ami Radunskaya, Pomona College

The AWM has been a source of support and inspiration for me since my undergraduate days at Berkeley, and I am grateful for this opportunity to run for Member-at-Large of the Executive Committee. We need to continue to support women, young and old, through the challenges that we face as professional mathematicians. Our community will benefit from the recruitment and retention of talented young women who dream of doing mathematics for a living, and we can all serve as role models for girls who don't realize that they can turn their enjoyment of puzzles and numbers into a career. The AWM has developed many successful programs to address these needs. As a member of the Executive Committee I would work to support these existing programs, as well as collaborate with all of you to develop and implement new ones.

Biographical Information: A California native, Ami Radunskaya received her Ph.D. in Mathematics from Stanford University after graduating with honors from the University of California at Berkeley. She has been on the faculty at Pomona College in Claremont, California for 15 years. She works in ergodic theory, dynamical systems, and applications to various "real-world" problems. Some current research projects involve mathematical models of cancer immunotherapy, a collaboration with the electrical company modeling large clusters of windmills, and, on the more theoretical side, the analysis of stochastic perturbations of dynamical systems.

Ami Radunskaya

Contrary to popular belief, Ami Radunskaya thinks that

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anyone with the will to do so can succeed in mathematics, and she has committed herself to increasing the participation of women and underrepresented groups in the mathematical sciences. She has been a faculty member of the Summer Scholars program, an outreach program for talented high school students, and has been a faculty member and local director of the EDGE (Enhancing Diversity in Graduate Education) program for over ten years. She is also a local coordinator for the Southern California Mentoring Network, a network of women mathematicians from all backgrounds, from the undergraduate level up to senior faculty members.

Professor Radunskaya was awarded an Irvine Fellowship for Excellence in Faculty Mentoring in 2004.

Marie A. Vitulli, University of Oregon

I welcome the opportunity to play a larger role in charting the future course of the AWM, an organization that has had a huge impact in the professional lives of many women mathematicians. I have been a member of the AWM since its early days and have served in various capacities. If elected as Member-at-Large of the Executive Committee, I would help the AWM continue and even expand upon its efforts to support and promote women mathematicians in all stages of our careers.

I have been deeply committed to advancing the status of women mathematicians on the national and local levels. I served as the AWM representative to the Joint Committee on Women in the Mathematical Sciences (1995–98) and in that capacity co-authored "Are Women Getting All the Jobs" (*Notices of the AMS* 44 (3) (1997), 338–339) with Mary Flahive of Oregon State University. I am now serving as the AMS representative to the Joint Data Committee, and with the help of Jim Maxwell of the AMS, Mary and I are preparing an update to "Are Women Getting All the Jobs." I co-authored "Round Table Report: Women in Mathematics in the United States" (European Congress of Mathematics, Budapest, July 22–26, 1996, Progress in Mathematics Vol. 169 (1998) Birkhaüser) with Sylvia M. Wiegand. I have helped with the AWM Workshops for Graduate Students and Recent Ph.D.'s (2005–06), as a member, as chair of the participant selection committee, and as panel moderator. I have served on the AWM Noether Lecture Selection Committee (2007–10) and am currently its chair (2009–10). During the past 12 years, with a generous grant from the University of Oregon, I created and maintained the Women in Math Project http://www.uoregon.edu/~wmnmath/, an extensive collection of resources for women in mathematics. I continue to serve as a mentor for women students both for the AWM Mentor Network and my university.

Marie A. Vitulli

Biographical Information: Marie Vitulli is a Professor of Mathematics at the University of Oregon, where she has been since receiving her Ph.D. (1967, University of Pennsylvania). Vitulli is a commutative algebraist whose research interests include generalizations of integral closure for rings and ideals and valuation theories for commutative rings.

Selected Articles

- Serre's condition R_k for affine semigroup rings, *Comm. in Algebra* 37(3) (2009), 743–756
- Weak subintegral closure of ideals, to appear in *Advances in Math.* (with T. Gaffney)
- The core of monomial ideals, *Advances in Math.* 211(1) (2007), 72–93 (with C. Polini and B. Ulrich)
- V-Valuations of a commutative ring I, *J. of Algebra,* 126 (1989), 264–292 (with D.K. Harrison)
- The hyperplane sections of weakly normal varieties, *Amer. J. Math.* 105 (1983), 1357–1368

MEDIA COLUMN

Media Column Editors: Sarah Greenwald, Appalachian State University, greenwaldsj@appstate.edu *and Alice Silverberg, University of California, Irvine,* asilverb@math.uci.edu

Review of the play **Emilie—La Marquise Du Châtelet Defends Her Life at the Petit Théatre at Cirey Tonight**

Reviewer: Alice Silverberg, University of California, Irvine

I first learned about the French Enlightenment intellectual Emilie du Châtelet from the 1974 book *Women in Mathematics* by Lynn M. Osen [1], which inspired me when I was an undergraduate in much the same way that others were inspired by E. T. Bell's *Men of Mathematics.*

By chance, just before the end of its run, I learned that South Coast Repertory in Costa Mesa, CA was presenting the World Premiere of a play about the life of du Châtelet.

The play, by 27-year-old playwright Lauren Gunderson, had been commissioned by South Coast Repertory. I managed to catch the last show, on May 10.

I liked it very much. I thought that it was well-acted. The set design was interesting, with a clever chalkboard (see the photos and video at [2]). But what I liked most was the unapologetic way in which it put a woman and her passion for science front and center.

Gunderson's website [3] points out that her own work combines "science, feminism, and history onstage," and this showed clearly in *Emilie.* The play was true to what I've read about the life and spirit of du Châtelet.

It was a life lived fully. What came across clearly in the play were du Châtelet's passion for science and passion for life. The play concentrates on a very productive time in du Châtelet's life, when she and the writer Voltaire lived at her husband's country estate, the Château de Cirey [4].

The relationship between du Châtelet and Voltaire at various times was love affair, friendship, intellectual dueling, and scientific competition, such as when they each submitted entries on the nature of fire to a French Academy of Sciences competition (won by Leonhard Euler, but both their entries were also published), or argued about the merits of the ideas of Gottfried Leibniz versus those of Isaac Newton. The play also touches on spirited public disputes between du Châtelet and her critics.

At the end of du Châtelet's life, she worked very hard to finish her translation of and commentary on Newton's *Principia Mathematica,* in anticipation of the death that she feared would be likely in that era due to being pregnant at the late age of 42.

While du Châtelet's life had its ups and downs, she was fortunate to live in a time when being a member of the French aristocracy had its perks. When du Châtelet died in 1749 about a week after easily giving birth to her fourth child (Voltaire claims the baby was immediately placed on a geometry book), three of the distraught companions near her bedside included her husband, her devoted friend/colleague/ex-lover Voltaire, and her lover and the father of the child, Jean-François de Saint-Lambert.

While a topic of the play is the balance and tension between "Love" and "Philosophy" in du Châtelet's life, the play itself manages to maintain a reasonable balance in dealing with both scientific passion and love life. The tension between two strong personalities trying to deal with each other as both lovers and colleagues will be familiar to many readers of this *Newsletter.* What the viewer takes away will vary from person to person. The play's message could be summed up with Emilie's line "Nothing gives me meaning but me," and that asking questions is what keeps us going.

Scientists in the audience will be confused by the depiction of the *force vive* controversy, which was presented as a debate over whether $F=mv^2$ or $F=mv$. This is puzzling to anyone who remembers $F=ma$; even the units don't seem to work out. It would have been helpful to know that the F here is really kinetic energy (and there is an analogy with $E=mc^2$).

Mathematicians will also cringe at the attempts to poeticize mathematical ideas, with "the squaring of hearts" and the idea that squaring something makes it alive (though as pointed out in Gunderson's notes on her script, this may be justified by Newton's own words on the subject, and the flowery prose of the period).

The source Gunderson cites in the program is Judith P. Zinsser's recent du Châtelet biography [5], but she clearly also used other sources. A great deal has been written about du Châtelet, including a recent lively biography by David Bodanis [6]. Coincidentally, another commissioned play about du Châtelet, *Legacy of Light* by playwright Karen Zacarias, had its premiere at roughly the same time, in Arlington, Virginia. I'm pleased to see the current interest in women of science.

After seeing the play at South Coast Repertory, I went back to Osen's book [1] and was surprised to learn that she had been closely affiliated with my current university. I spent an afternoon at UCI's Special Collections and Archives where Osen's papers are stored. About her book *Women in Mathematics* she wrote to friends, "Do read the chapter on Emilie du Châtelet whose name you will encounter frequently, and whose life I would have been quite happy to lead" and "of all the women I've written about, she is the most intriguing, a real swinging broad who could teach us all something about how to lead our lives."

References

[1] Lynn M. Osen, *Women in Mathematics,* The MIT Press, 1974.

[2] South Coast Repertory's Emilie website: www.scr.org/calendar/view.aspx?id=1897

[3] Lauren Gunderson's website: www.laurengunderson.com

[4] Château de Cirey website: www.visitvoltaire.com

[5] Judith P. Zinsser, *Emilie Du Châtelet: Daring Genius of the Enlightenment,* Penguin, 2007 (paperback version of *La Dame d'Esprit: a Biography of the Marquise Du Châtelet,* Viking, 2006).

[6] David Bodanis, *Passionate minds: the great Enlightenment love affair,* Little, Brown, 2006.

Notes on the Two-body Problem

Cathy Kessel, AWM Past President

The two-body problem came up during the "Family Matters" panel at MathFest mentioned in the President's Report this issue. It will be the topic of the AWM panel "Dual Careers or Dueling Careers? Jobs and the Two-Body Problem" at the Joint Mathematics Meetings. Given that this article is sandwiched chronologically between these panels, it's an opportune place to put the information that I have been collecting.

Marion Pour-El's article "Spatial Separation in Family Life" may have been the first article that I read about the two-body problem. It appeared in the AWM *Newsletter* in 1982. (I am sad to note that this mention of her article appears with the announcement that she is no longer with us; see page 30.)

Pour-El's article and several others documented solutions for the two-body problem (see Bettye Anne Case and Anne Leggett's *Complexities* for examples). In the past, it seemed to me that these solutions did not include both members of a couple having full-time jobs in the same department. I did hear of one couple that split a job. But, it seemed that most mathematician couples either lived in different cities so both could have jobs or lived in the same city while one (often a wife, it seemed) had part-time or temporary jobs, or no job at all.

The extent of the two-body problem seems never to have been well documented, although I think that everyone suspects that many mathematicians, particularly female mathematicians, are part of a two-mathematician couple. We now have this information for U.S. mathematicians before 1940. In her review of *Pioneering Women in American Mathematics,* Marge Bayer pointed out, "Our readers will certainly recognize one common aspect of the personal lives of the early women math Ph.D.'s. The husbands of 40% of those

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 and
- 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. 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, 2010**.

	Married at Ph.D.		Not married at Ph.D.	
	M	F	M	F
Number of respondents	66	20	119	15
Number of respondents with spouse in 1995	64	19	85	10
Spouse had Ph.D., M.D., or J.D. in 1995	25%	84%	22%	80%

who married also had Ph.D.'s in mathematics, and another 21% had Ph.D.'s in other fields." And, "of the 228 women in the study, 84 were married at some point, and 36% of those had little or no employment while they were married."

In her book about mathematicians who received their Ph.D.'s between 1940 and 1959, *Women Becoming Mathematicians,* Margaret Murray notes that by the 1950s cultural norms had changed, making marriage more acceptable—or even desirable—for women mathematicians. "In an odd way, despite all the complications it added to her life, marriage seemed to make the completion of the Ph.D. [in mathematics] a more acceptable pursuit for a woman in the 1950s, since it signified her intention to take on the normal female roles of wife and mother" (p. 127).

Some of you may be now thinking "But, what about the *Science* article in 1992?" That article said, "A remarkable 80% of female mathematicians are married to other scientists and engineers"—but, although at the time I contacted its author, I could not track down a source for this statement.

The 80% was repeated in 2004, again apparently without a source. A book called *The Two-Body Problem* said 80% of married female mathematicians are married to other mathematicians. The source it gave was a 1998 survey of physicists—which does not report this statistic. However, the survey did find that 43% of married female physicists are married to other physicists and over 68% of married female physicists are married to scientists.

Fortunately, some information about mathematicians is now available—although it may not be in the optimal form. A study called "Ph.D.'s—Ten Years Later" surveyed people who earned Ph.D.'s in biochemistry or mathematics between 1982 and 1985. Of those, 180 men and 37 women had held postdocs in mathematics. The responses from mathematicians displayed in the table above suggest that the two-body problem affected married women more than married men in 1995. (Note that, as is frequent in surveys, responses were not given for every question.)

The researchers who conducted the study comment, "A substantial percentage of women who did postdoc training in the hope of becoming a professor did not realize this aspiration. Women who were married at the time of Ph.D. completion were more likely to end up in research positions in the BGN [business, government, non-profit] sectors than in academia."

More recent statistics from the 1999 Survey of Earned Doctorates are given in *Beyond Bias and Barriers* (published in 2007). For married Ph.D.'s between the ages of 30 and 44:

- 78% of female mathematicians were married to a scientist or engineer.
- 41% of male mathematicians were married to a scientist or engineer.

For the same married Ph.D.'s:

- 88% of female mathematicians had a husband who worked full time.
- 48% of male mathematicians had a wife who worked full time.

Dual-career Academic Couples, a study published in 2008, includes same-sex as well as opposite-sex couples. It is based on a survey of faculty members of 13 leading research universities. The number of mathematicians who responded was small, about 20 women and 30 men. Their responses followed the pattern described above—far more women had partners who were similar than did men. In this case, the similarity was the partner's department: 70% of the women had a partner in the same department, as did 38% of the men.

In 1994, Susan Landau praised departments with programs to assist spouses in finding positions but concluded, "With rare exceptions, the problem of the two-career academic couple has been viewed as the problem of the individuals involved. That is a narrow view, as this complication affects a majority of women scientists."

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In 2008, *Dual-career Academic Couples* reiterated this theme for women and men:

> Academics practice "disciplinary endogamy"; that is to say, they tend to couple in similar fields of study and are often found in the very same department. Endogamy rates are high in the natural sciences, particularly among women. Fully 83 percent of women scientists in academic couples are partnered with another scientist, compared with 54 percent of men scientists.

The good news is that attitudes about hiring dual-career couples appear to be changing—sometimes at the university level, sometimes at the department level. Some institutions are members of a Higher Education Recruitment Consortium (HERC). The HERC for a particular region maintains listings of all faculty and staff openings at member institutions (see www.hercjobs.org). Some institutions have explicit guidelines for hiring couples that are intended to address concerns about academic qualifications of the "second hire" of a dual hire. Such guidelines were discussed at the Dual-Career Academic Couples Conference at Stanford in June by administrators from Princeton, Stanford, and Berkeley.

But the Clayman study notes that many women are still at a disadvantage:

> It is true that U.S. women still practice hypergamy, the tendency to partner with men of higher (or at least not lower) status than their own. Consequently, in heterosexual couples male partners may be somewhat more established professionally than are female partners.

Although this tendency is not universal, it affects us all. Prevailing practices seem still to make hiring a more junior "trailing spouse" more difficult, thus lessening the likelihood of hiring women.

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National Research Council. (2007). *Beyond bias and barriers.* Washington, DC: National Academies Press. Can be read online. See pp. 171–173.

Clayman Institute. (2008). *Dual-career academic couples: What universities need to know.* Stanford University. Can be downloaded at www.stanford.edu/group/gender/ResearchPrograms/DualCareer/index.html. See p. 31.

Dual-Career Academic Couples Conference: Strategies and Opportunities. June 16, 2009. Some presentations and other information posted at www.standford.edu/group/gender/ResearchPrograms/DualCareer/Conferencd2009.html.

Dual Careers or Dueling Careers? Jobs and the Two-Body Problem. AWM panel, Joint Mathematics Meetings, San Francisco, January 13, 2010, 2:15 p.m.–3:40 p.m., Room 2007, 2nd Floor, Moscone Center West.

The Fourteenth General Meeting of European Women in Mathematics

Barbara Lee Keyfitz, Ohio State University

During August 25–28, 2009, I attended the biennial meeting of European Women in Mathematics (EWM) in Novi Sad, Serbia. This was a remarkable experience for me in several ways, and I'd like to report on it for readers of the AWM *Newsletter*. This article is a personal account rather than an official report on the meeting.

Although I am currently only a former-past-president, I had the honor of representing AWM at the meeting—this as a result of my involvement in a workshop at the Schrödinger Institute in Vienna taking place the week after the EWM meeting. Dusanka Perisec of the University of Novi Sad, the organizer of the EWM meeting, knew that I would be visiting Vienna and suggested taking advantage of this serendipity. And as classes at Ohio State do not start until September I was able to extend my trip for an extra week. Beyond that, Ohio State allowed me to pay for the costs of this extra excursion from my start-up money (for which I am very grateful) and Dusanka efficiently used the cost savings to design an attractive conference brochure, which can be downloaded from the conference's web site, http://ewm2009.wordpress.com/. Ironically, Dusanka herself canceled her participation in the Vienna meeting because, after a year of organizing the EWM meeting and a week of supervising its flawless execution, she realized she needed a rest.

Although I have many colleagues from Eastern Europe and have had both a Croatian and a Serbian postdoc, I have not visited Eastern Europe for many years and had never been to any of the countries that once made up Yugoslavia. (I learned on this trip that "Yugo" means "South"—makes sense, doesn't it.) I was personally a little apprehensive about visiting a country that for a long time was cast in a bad light in US news reports, but I did not sense any such sentiments among the other participants at the meeting, perhaps because Europeans receive more up-to-date news of Eastern European countries and have adjusted to how things have changed since the 1990s. I did venture, once or twice, to ask political questions of my hosts, which they answered mildly and, as far as I could tell, objectively. One question had a particularly interesting answer. I asked whether most businesses were now run by crooks and was told, sadly, that, yes, that was the case, and it was a result of the sanctions and blockade. Since there was no honest way of trading, commerce was taken over by smugglers and other criminals. It sounded like the law of unintended consequences at work again. I can imagine that it will be many years before people without underworld connections will be able to control the local markets again. Nonetheless, the picture that a casual visitor sees is of a prosperous, stable, consumer-oriented society. (People gave Tito credit for maintaining Yugoslavia's independence from Soviet control, and for insisting that its citizens continue their pre-communist way of life.)

So, after a day in Belgrade to get my bearings and recover a bit from jet lag, I took a bus to Novi Sad, a much smaller city (population about 250,000, contrasted with ten times that number for Belgrade). The bus and the road were fast and modern. For the conference, we were all housed in a university dormitory—neither modern nor air-conditioned but adequate and meticulously clean. The conference organization included a large number of students, identically dressed in conference T-shirts, who spoke perfect English and were very good at organizing us. About 70 people had registered for the conference. That included the nine plenary lecturers, about fifteen presenters of posters and 29 women who gave short talks.

The idea of a medium-scale conference with plenary and parallel sessions, where all the speakers are women, and where the speakers represent many different areas of mathematics, has not been tried in North America, as far as I know. But EWM has been running meetings in this format ever since its foundation in 1986. And, based on this example, it's a wonderful idea. There were nine plenary speakers (the list, along with talk titles and abstracts, is on the conference web site), and all of them—perhaps I should say "us" since I had the honor to be one of them—really made the effort to deliver interesting talks to a wide audience. Speaking as a participant, I found it a wonderful opportunity to learn about new areas of mathematics.

The conference had one feature, new to me, that I found particularly interesting. During the program, there were a couple of "panel discussions" on different topics, which were organized quite differently from the method I am used to. After hearing a short introduction to the topic, the audience in the session was divided into a number of groups of five to seven women who met, with a group leader, to talk through a list of questions related to

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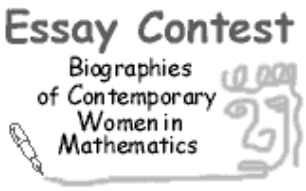
the topic. After forty-five minutes of discussion, the room was brought to order again and each group was asked to give a short report on its conclusions. The panel moderator took notes, and (I am told) there will be a report that summarizes the conclusions. A couple of the small groups were set up to conduct their discussions in languages other than English, a courtesy that allowed some of the participants to express themselves more effectively. Besides making the panel discussions more participatory, the experience encouraged participants to get to know each other, as the groups were set up in a somewhat random way. One panel topic was unusual. It seems that EWM had been approached by the Isaac Newton Institute for Mathematical Sciences (a government-supported research institute in Cambridge, UK) with a request for advice on how to improve the gender balance in their programs. The Newton Institute had come up with a list of plans—some general and some quite specific—and asked EWM to give their reaction and to offer other suggestions. Of course, EWM was pleased to have been consulted and felt that in order for their suggestions to carry the authority of the organization, there should be an open discussion among the membership; hence the panel at their meeting.

Besides the registered delegates, there were a number of local attendees, especially for the series given by Ingrid Daubechies, this year's EMS plenary lecturer. By comparison with the events that AWM runs, there were relatively fewer students and postdocs, but I sensed that there were a number of first-time attendees this year—specifically junior women from Novi Sad and a number of women at all levels of seniority from other Eastern European countries (Russia, Bulgaria, Belarus and so on). One remarkable success of EWM has been their appeal to the most successful women mathematicians in Europe. I was told that some of the famous people I recognized in the audience have been loyal attendees of most of the conferences.

EWM is quite a different society from AWM. To begin with, its members come from a variety of countries whose mathematical cultures differ widely—and not only in the status of women—and speak a variety of languages. Even the matter of collecting dues is complicated, because international currency transfers are expensive. (Apparently this is true even when the Euro forms a common currency.) And although the European Mathematical Society now sets a good example of international activity in Europe, EWM is justly proud of predating the EMS. The two societies cooperate, and EWM keeps in touch with the EMS's committee on women. But without the access to government funding agencies that AWM enjoys, EWM does not have a counterpart to the extensive set of programs run by AWM.

One feature of this EWM meeting was the amazing level of publicity surrounding it. Some of this was orchestrated by Dusanka, who received support from her university to hire a public relations team. Their ideas included design of a logo; getting attention from local TV stations; and a project to film the entire conference, along with interviews with a number of the speakers. Eventually this will turn into a DVD. One of the most interesting initiatives was a



To increase awareness of women's ongoing contributions to the mathematical sciences, the Association for Women in Mathematics holds an annual essay contest for biographies of contemporary women mathematicians and statisticians in academic, industrial, and government careers. AWM is pleased to announce that the 2010 contest is sponsored by Math for America, www.mathforamerica.org.

The essays will be based primarily on an interview with a woman currently working in a mathematical career. The AWM Essay Contest is open to students in the following categories: **grades 6–8**, **grades 9–12**, and **undergraduate**. At least one winning entry will be chosen from each category. Winners will receive a prize, and their essays will be published online at the AWM Web site. Additionally, a grand prize winner will have his or her entry published in the AWM *Newsletter*. For more information, contact Dr. Elizabeth Stanhope (the contest organizer) at stanhope@lclark.edu or see the contest Web page: www.awm-math.org/biographies/contest.html. The deadline for receipt of entries is **February 27, 2010**. *(To volunteer as an interview subject, contact Stanhope at the e-mail address given.)*

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ASSOCIATION FOR WOMEN IN MATHEMATICS

trip to the local maternity hospital by a group of EWM officers to deliver baby outfits sporting the conference logo to all babies born in Novi Sad during the conference. (I was told that there were ten, and that all were girls, but this seems too remarkable to be true.) Some of the warm reception the conference received was probably due to Serbia's eagerness to welcome international groups. But, whatever the cause, the hospitality was delightful.

After the meeting ended, I had arranged to spend an extra day in Novi Sad, and Dusanka set up a lovely tour of a nearby area, Fruska Gora, which contains a number of monasteries. Those I saw (currently still fulfilling their original mission) contained beautiful art and architecture, narrated enthusiastically by a young historian friend of Dusanka's. And on my last evening, I was the guest of Dusanka and her family at a local restaurant, complete with a band playing regional music. Altogether, it was a delightful end to a unique experience, and I'm happy to report that Dusanka did not appear nearly as tired as she had every right to be. My thanks to her and to everyone at EWM for their warm welcome, and best wishes for the continued success of our sister organization.

In Memoriam

Alice Turner Schafer, 1915–2009

With deep regret, the Association for Women in Mathematics announces that former AWM President Alice Turner Schafer died Sunday, September 27 at the age of 94. A champion of women in mathematics, Professor Schafer was one of the founders of AWM and from 1973 to 1975 served as its second president. Alice taught at Connecticut College and for 28 years at Wellesley College, where she was Helen Day Gould Professor of Mathematics, retiring in 1980. Following her retirement, she continued to teach at Simmons College and Marymount University until she was eighty-one years old. In 1998, the Mathematical Association of America honored Alice Schafer with its Yueh-Gin Gung and Dr. Charles Y. Hu Distinguished Service to Mathematics Award. The AWM Alice T. Schafer Prize for excellence in mathematics by an undergraduate woman was established in her honor in 1990.

A memorial tribute will appear in the January–February issue of this newsletter.

AWM Ballot

You will receive an e-mail inviting you to vote electronically (or see www.awm-math.org/ballot.htm); those who prefer may mail this ballot or a copy thereof to AWM, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030, to be received by December 15, 2010. You must validate your ballot by signing your name on the envelope, or your votes will not be counted.

President-Elect (vote for one):

☐ Jill Pipher ☐ _____

Clerk (vote for one):

☐ Rebecca Segal ☐ _____

Member-at-Large (vote for up to four):

☐ Karen M. Brucks
☐ Kari Hag
☐ Cymra Haskell
☐ Trachette L. Jackson
☐ _____
☐ _____
☐ Chawne Kimber
☐ Irena Mitrea
☐ Ami Radunskaya
☐ Marie A. Vitulli
☐ _____
☐ _____

EDUCATION COLUMN

How should we respond when students ask: When will we ever use this?

Jackie Dewar, Professor of Mathematics and Director of the Center for Teaching Excellence, Loyola Marymount University, Los Angeles, CA

This column begins with an excerpt from the August 31, 2009 edition of *Tomorrow's Professor,* a free e-mail newsletter sponsored by the Stanford Center for Teaching and Learning available by signing up at https://mailman.stanford.edu/mailman/listinfo/tomorrows-professor.

Tomorrow's Professor Message #961: The Ten Worst Teaching Mistakes. This post is the work of Richard M. Felder, North Carolina State University and Rebecca Brent, Education Designs, Inc.

> Mistake #5. Fail to establish relevance.
>
> Students learn best when they clearly perceive the relevance of course content to their interests and career goals. The "trust me" approach to education ("You may have no idea now why you need to know this stuff but trust me, in a few years you'll see how important it is!") doesn't inspire students with a burning desire to learn, and those who do learn tend to be motivated only by grades.
>
> To provide better motivation, begin the course by describing how the content relates to important technological and social problems and to whatever you know of the students' experience, interests, and career goals, and do the same thing when you introduce each new topic. (If there are no such connections, why is the course being taught?)

Across the United States, faculty of all disciplines are being encouraged to engage college and university students by connecting ideas to action. The America Association of Colleges and Universities (http://www.aacu.org/) has several ongoing initiatives and publications that address this topic (for example, see [1] & [2]). In [3], Schneider declares that civic engagement is almost becoming an imperative for institutions of higher education in part because of public pressure to demonstrate the value of a liberal education. In writing about liberal education Freeland [4, p.9] asserts: "The goal is to enrich liberal learning by connecting it more strongly with the lives students will actually live after college." Until recently, community service by students has been a common response of educational institutions at all levels. While laudable, Vaz [5] notes this form of service learning is often only loosely connected to the curriculum. A better model involves an open-ended inquiry in response to community needs. According to Burns [6], connecting theory and practice by bringing classroom instruction to bear on real world problems both produces new knowledge and places it in the service of public good. The website of Imagining America (http://www.imaginingamerica.org/), a consortium of more than 80 institutions of higher education including many research-intensive schools, provides multiple examples of this sort of "public scholarship" in arts, humanities and design.

Connecting mathematics to real world problems or to students' experience, interests, and career goals may not be easy to practice uniformly across the K–16 mathematics curriculum, but mathematics programs could benefit from reflecting on the challenge this goal presents. Pat Kenschaft, writing in this column in the last issue of this newsletter (September–October 2009), gave us a number of examples and resources for teaching environmental mathematics, a topic that makes clear connections between mathematics and the real world.

My personal experience in this arena involves working with two of my Loyola Marymount University colleagues, Suzanne Larson and Thomas Zachariah, to add a civic engagement component to our university's quantitative literacy (QL) course. We incorporated semester-long group projects involving local community issues that students could investigate using the rather modest set of mathematical tools taught in the course (number sense, elementary statistics, mathematics of finance). The purpose was to help these students become more adept at using mathematics to understand and address real world problems and challenges they might encounter. Our course development effort was called *Quantitative Literacy through Community-Based Group Projects.* For our purposes, "civic" took on a very local interpretation. Students examined questions such as: Was there enough parking on campus and was it safe? Who did/did not use the student health center and why? Which was cheaper/better—living on or off campus? What sort of financial planning decisions would take a student from graduation to a comfortable retirement? Assessment results showed that compared to students in the standard QL course, students in the projects-based course performed similarly on all topics on the post-test except one (understanding margin of error), and significantly better on that one topic, while they showed

increased awareness of community issues. Students finished the projects-based course with increased confidence in their ability to respond to mathematical questions or situations. A substantial majority reported that the project experience also taught them non-mathematical skills such as time management and teamwork. (See http://myweb.lmu.edu/tzachari/sencer.html for more details.)

Our course development effort was supported in part by funding from SENCER (Science Education for New Civic Engagements and Responsibilities—a comprehensive faculty development and science education reform project funded by the National Science Foundation. SENCER has featured the revised QL course as an emerging model course on their website (http://www.sencer.net) since 2006. SENCER aims to engage student interest in mathematics and science by supporting the development of academic programs and undergraduate courses that teach "to" basic science and mathematics "through" complex, capacious and unsolved public issues. SENCER offers a number of resources, including model courses, background papers suitable for classroom use that explore significant science related issues, a "house calls" program that matches SENCER consultants with institutions, a free on-line customizable assessment tool called the SENCER-SALG or Student Assessment of Learning Gains (see http://salgsite.org), and the annual SENCER Summer Institutes that provide learning and networking opportunities through a rich mix of plenary sessions, workshop and concurrent sessions. The 2010 SENCER Summer Institute is currently scheduled for July 29 – August 2, 2010 at the University of North Carolina in Asheville, NC.

Examples of other mathematics courses recently developed with SENCER support include *Introductory Statistics with Community-Based Projects* by Cindy Kaus of Metropolitan State University and *Ordinary Differential Equations—Mathematical Modeling in Real World Situations* by Victor Donnay of Bryn Mawr College. Unfortunately, to date, many more science than mathematics faculty have taken advantage of the opportunities afforded by SENCER. This may be due in part to the fact that the Summer Institute often coincided with MathFest. That won't be the case in 2010, so if you want to develop a course that demonstrates how mathematics can address the problems and challenges facing today's world, watch the SENCER website (http://www.sencer.net) for the call for participants for the 2010 SENCER Summer Institute.

[1] Association of American Colleges and Universities, *Peer Review: Emerging trends and key debates in undergraduate education: Bringing Theory to Practice.* 9, no. 3, 2007.

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NSF-AWM Mentoring Travel Grants for Women

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

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

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

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

Deadline. There is one award period per year. Applications are due **February 1, 2010**.

[2] A. Hoy and W. Meisel, *Civic engagement at the center: Building democracy through integrated cocurricular and curricular experiences,* Association of American Colleges and Universities, 2008.

[3] C. Schneider, Toward an engaged academy: New scholarship, new teaching, *Liberal Education,* 87, no. 1 (2003), 18–27.

[4] R. Freeland, Liberal education and effective practice: The necessary revolution in undergraduate education, *Liberal Education,* 95, no. 1 (2009) 6–13.

[5] R. Vaz, Connecting science and technology education with civic understanding: A model for engagement. *Peer Review,* 7 no. 2, (2005), 1–16.

[6] D. Burns, Students and the engaged academy, *Liberal Education,* 87, no. 1 (2001), 2–3.

BOOK REVIEW

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

The Shape of Content: An Anthology of Creative Writing in Mathematics and Science, Chandler Davis, Marjorie Wikler Senechal and Jan Zwicky, eds., A.K. Peters, 2008.

Reviewer: Erin Carmody, Department of Mathematics, City University of New York Graduate Center

Beyond Numbers

One doesn't have to crack open *The Shape of Content* to be utterly puzzled by its concept. The subtitle of the book, "Creative Writing in Mathematics and Science," already causes some confusion. Upon delving into its pages, it appears to be in fact a compilation of short literary pieces, all with a common theme: the incorporation of mathematical and scientific ideas and qualities. The big question about this collection, though, is what's the point?

Has this type of creative writing been around before? Well, one example is *Fantasia Mathematica,* a book by Clifton Fadiman published back in 1958. Fadiman's work was the main representative of this genre until *The Shape of Content* came out in 2008 as the fruit of three workshops at the Banff Centre in Canada. The participants who serve as the book's authors were a hodgepodge of writers, mathematicians and scientists, all sharing an interest in each other's fields and working together to create a "common enterprise," as the editors of the book call it. The goal was to fuse elements of each professional's expertise to create an interesting product. Simply put, the poems, dialogues and short stories presented in this book attempt to give shape to the content of math and science, providing a context for their deeper meaning. But still, the question persists: why?

This collection aims to prove that two seemingly opposing processes aren't actually so different, that "the creative challenges demanded by shape [creative writing] and by content [math and science] are so much the same," as stated in the introduction (p. *xii*). Not only does the book demonstrate this by merging the two spheres of academia together, but what's more, it's a celebration of the essence of math and science, something much larger than numbers and equations found in mildewy textbooks. Marco Abate, the author of the first piece of the collection, "Évariste and Héloïse," evoked this essence, exploring the "possible relationships between magic and mathematics, and their different but sometimes uncannily similar ways of exploring the unknown world" (p. 1).

One of his title characters, the historical figure Évariste Galois, was the primary inspiration for this piece. During Galois's life he made important contributions to algebra and was the first to use "group" as a technical term. He lived as a renegade and a rebel in tumultuous political times, adding to the fascination of his intriguing character. During the July Revolution in France when Charles X, in danger of being overthrown, staged a coup d'état, the director of the École Normale—Galois's school—locked all the students inside. Enraged by his imprisonment, Galois drafted a furious letter to the director that was printed in the newspaper; this earned him expulsion. One of the many times when Galois was arrested, he was on the frontlines of a Bastille Day protest, wearing the uniform of a disbanded army and waving a pistol in the air. Finally his life ended at the age of twenty as a result of a duel held for reasons that are to this day unknown.

While feisty pioneers of math who make for compelling characters contribute to the weight of this book, artfully crafted poems anchor it. The poem "Algebra" by Susan Elmslie is beautifully shaped, letting the words convey the mathematical field's process and function, taking it beyond letters, symbols and numbers. The poem articulates the harmony of algebra, as extracted from the Arabic meaning of the word: reunion of broken parts. Here, a form of creative writing communicates to a less mathematically inclined audience what algebra in its

raw form cannot, serving as a wonderful example of what this book is all about.

Another poem by Elmslie, "Chemistry," offers two different interpretations of the same term, using them in counterpoint. Elmslie interweaves the two ideas, so that they bounce off and morph into each other, creating a nice movement throughout the poem. She deconstructs the physical attraction between humans known as chemistry by way of dissecting it into its scientific components (p. 88).

> When he returns from this long journey,
> we'll raise a glass to new discoveries
> and to the finer chemistries
>
> that kept us, keep us, coming back for more:
> the sublime stitching of energy and mass
> the distant tungsten burners of the night
> witness and bless; the perfect resonance
> of two complex structures, ours.

One piece, "Robbins v. New York" by Colin Adams, is a good example of the use of mathematics to explore hypothetical arguments in a court of law. This piece was inspired by a real case in 2005 in which a man named James Robbins was found guilty of selling drugs to an undercover cop. The case concerned whether or not the deal took place within 1000 feet of a school, as claimed by the state of New York. Defense lawyers argued that the distance should be measured by how far away the school is on foot, which is not in a straight line because of the obstruction of buildings. However, the state argued the distance should be measured "as the crow flies." Adams' piece is a "transcript" of an imagined session of the Supreme Court. It's packed with mathematical formulas and principles and theories proposed to determine the exact distance at which the drug deal occurred, keeping in mind obstacles such as buildings, trees and subways.

Throughout, the Justices argue about how they should measure the distance as the legislators intended them to, information which they do not have. They question if it should be measured using the Euclidean metric, the Weil-Peterson metric, the metric on Kahler manifolds, or by the Pythagorean Theorem; they even bring up Einstein's theory of special relativity in regard to a subway train that goes to the school and whether the observer of the train is inside or outside of it. This all proves to create a traffic jam of mathematical vehicles, and that, along with the use of the crow as a serious factor in the case, adds complexity and humor to the piece. At one point a hypothetical mole in cahoots with the crow is brought into the argument, creating wonderful comedy:

> *Justice Scalia:* Presupposing an inability for crows to pass drugs to moles flies directly in the face of the constitutional mandate. One can certainly imagine a trained pair of animals in the employ of a nefarious drug ring that behaved in exactly this manner. The drugs could be placed in a pouch with Velcro on the side of the bird and the burrowing mammal could have Velcro harnesses to which the pouch could be easily attached and transferred.
>
> *Justice Breyer:* How would the bird get the Velcro pouch off its harness at the time of transfer?
>
> *Justice Scalia:* The mole could help.
>
> *Justice Breyer:* Moles don't have hands. They have little flippers.

Another lesson *The Shape of Content* teaches is that the material that makes up mathematical and scientific entities can likewise be used in building creative writing structures. All aspects of math and science seem especially conducive to poetry, with math playing a part in poems (leaving aside free verse) with meter and regimented numbers of syllables, stanzas and lines. Adam Dickinson's poem "Eclipse" is just one of many in *The Shape of Content* that are chock full of scientific references. The source that reigns supreme in this poem, and indeed throughout literature, is biology, or good old Mother Nature. Robert Frost, one of the masters of nature poetry in America (and the world for that matter), used this resource well. A passage from Frost's poem "Birches" is an exemplar of this kind of poetry; it inspired poems like "Eclipse" in *The Shape of Content* that include images such as planets, animals, water and plants.

> But swinging doesn't bend them down to stay.
> Ice-storms do that. Often you must have seen them
> Loaded with ice a sunny winter morning
> After a rain. They click upon themselves
> As the breeze rises, and turn many-colored
> As the stir cracks and crazes their enamel.
> Soon the sun's warmth makes them shed crystal shells
> Shattering and avalanching on the snow-crust
> Such heaps of broken glass to sweep away
> You'd think the inner dome of heaven had fallen.
>
> (Robert Frost, "Birches")

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Book Review *continued from page 23*

While this book achieves much in marrying creative writing with math and science, there is also room for improvement. This is in part due to the lack of much precedent for this style of writing. Even though Frost and others write in the spirit of this genre, they do not have roots in mathematical and scientific backgrounds. The present collection is ambitious and the attempt is well warranted, but there is little to look back on to compare influence or structure. With practice, individuals with expertise in both worlds will surely refine their accomplishments in future endeavors of this type.

The Shape of Content is an admirable exercise in the fusion of left and right brain capacities and is a strong beginning for more work in this vein. The selections in the book range from philosophical enlightenments, such as an experiment with the powers of soap in Randall Wedin's short story "Breaking Down the Barriers," to artistic inspirations like the studies on sculptures in Claire Ferguson's "Eine Kleine Rock Musik III." The last stanza of Adam Dickinson's poem, "The Ghosts of Departed Quantities," sums up the book's intentions and accomplishments (p. 78):

> What separates us is innumerable,
> but like applause,
> other words for the same thing,
> all our differences fit.

CaMeW: The Career Mentoring Workshop for Women in the Mathematical Sciences

Rachelle DeCoste, Wheaton College, Norton, MA

Where can a graduate student find all of the following: a support network of peers, junior and senior faculty who will advise and mentor the student with her own best interests at heart, and role models who can inspire her to believe in her future as a female mathematician? As she enters her final year in graduate school and begins the job search, will the graduate student also be offered advice on various academic tracks, detailed feedback on her application materials and the opportunity to practice talking about her research and interviewing with potential employers? The graduate student who finds all of these resources in her own department is lucky—very lucky—but unfortunately also very rare. In an attempt to offer these resources to women in graduate programs across the country, CaMeW, the Career Mentoring Workshop for women in the mathematical sciences, was held for the third time this past summer. Fourteen women who were entering their final year in graduate school were invited to this intensive three-day workshop at Wheaton College (MA).

These participants engage in interactive sessions run by junior faculty women, all of whom have fairly recently been through the job search themselves. We have been fortunate to have had great junior faculty involved all three years. Each year the junior faculty have been selected because of their professional experiences, and, more importantly, because they feel comfortable sharing their own experiences and are supportive of other women in math who may have different goals than their own. Several senior faculty (male and female) from various types of academic institutions are invited to participate in a full day of the workshop. While the junior faculty are able to offer recent first-hand accounts and experiences from their own final years in graduate school and their job searches, the senior faculty are able to offer long-range perspective, views from the other side of the hiring process and role models for both the grad student participants and the junior faculty. Senior faculty participate in a panel discussion, give feedback on mathematics talks and interact informally with the participants. Additionally, one senior woman mathematician is invited to give a keynote speech to the participants and faculty each year. We have been fortunate to have heard from incredible women who have given inspiring accounts of their lives as mathematicians. The speakers have been Ruth Haas of Smith College, Rhonda Hughes of Bryn Mawr College and Catherine Roberts of College of the Holy Cross.

The CaMeW program consists of workshops titled *Finishing the Ph.D.: The year ahead*; *The Job Search: overview*; and *Interviewing, Negotiating and the Decision Process.* Additionally, participants are asked to prepare application materials (CV, teaching statement and research statement) prior to their arrival, and during the workshop they receive feedback from at least two faculty members who have read their materials. Each participant gives the first 15 minutes of a talk on her research and then receives both written and oral feedback from other participants and faculty. Mock interviews are held, during which each participant is paired with a faculty member who interviews her, giving her an experience similar to the first round interviews at the JMM.

The participants' reaction to these opportunities is both expected and surprising at once. They universally rate the application materials working session as one of the most beneficial aspects of the workshop. Having a first draft of these

materials completed over the summer places them ahead of their peers when the fall semester starts and the job ads begin to appear. They are more prepared to begin to send out their applications and have also had the opportunity to really think about which jobs will best suit them and how to convince a potential employer that they are also a good fit for the position.

Even in this collegial and supportive environment, we have found that the math talks and the mock interviews still create a lot of stress for participants—even here, they are nervous about being judged. We believe that the opportunity to give a practice job talk and have a practice interview helps alleviate some of the stress and nervousness that will naturally occur during the talks and interviews that count, and that the participants will be better equipped to cope with the stress that remains after having encountered it during our workshop. Of course, the feedback they each receive at CaMeW should help them perform better in both situations as well.

While dissemination of information about the job search process and personal feedback are important aspects of CaMeW, they are activities that also support the larger aim of the workshop. The overall goal is to help women establish a support network of peers and faculty mentors that will serve as the foundation of a network they will rely on throughout their careers. We hope that the participants will be able to begin their post-graduate

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AWM Workshop for Women Graduate Students and Recent Ph.D.'s

supported by the Department of Energy, the Office of Naval Research,
and the Association for Women in Mathematics

For many years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent Ph.D.'s in conjunction with major mathematics meetings.

WHEN: An AWM Workshop is scheduled to be held in conjunction with the SIAM Annual Meeting, Pittsburgh, PA, July 12–16, 2010.

FORMAT: The workshop will consist of a poster session by graduate students and two or three minisymposia featuring selected recent Ph.D.'s, plus an informational minisymposium directed at starting a career. The graduate student poster sessions will include all areas of research, but each research minisymposium will have a definite focus selected from the areas of Mathematical Biology, Modeling, Control, Optimization, Scientific Computing, and PDEs and Applications. AWM will offer funding for travel and two days subsistence for as many as twenty participants. Departments are urged to help graduate students and recent Ph.D.'s obtain supplementary institutional support to attend the workshop presentations and the associated meetings. All mathematicians (female and male) are invited to attend the program.

MENTORS: We also seek volunteers to lead discussion groups and to act as mentors for workshop participants. If you are interested in volunteering, please contact the AWM office.

ELIGIBILITY: To be eligible for selection and funding, a graduate student must have begun work on her thesis problem, and a recent Ph.D. must have received her degree within approximately the last five years, whether or not she currently holds a postdoctoral or other academic or non-academic position. All non-US citizens must have a current US address. All selected and funded participants are invited and strongly encouraged to attend the full AWM two-day program. Those individuals selected will be notified by the AWM Office and will need to submit a final title and abstract with name, affiliation, address, etc. by mid-February to SIAM for the meeting program; AWM will provide instructions with the notification. For some advice on the application process from some of the conference organizers see the AWM website.

All applications should include:

- a cover letter
- a title and a brief abstract (75 words or less) of the proposed poster or talk
- a concise description of research (one-two pages)
- a curriculum vitae
- at least one letter of recommendation from a faculty member or research mathematician who knows the applicant's work is required for graduate students and recommended but not required for recent Ph.D.'s. In particular, a graduate student should include a letter of recommendation from her thesis advisor.

Applications must be completed electronically by **January 12, 2010**.

See http://www.awm-math.org/workshops.html.

careers with more confidence in themselves and satisfaction with their positions than they would have if they had to navigate their final year of graduate school and the job search on their own. We believe that more confidence and higher satisfaction with their positions will lead women to stay in academia longer. If a participant finds that her first postdoctoral position is not a good fit, we hope she will both remember the shared experiences of the junior mentors, many of whom have switched tenure-track positions, and feel comfortable relying on her support network for advice and reassurance as she considers future career options, rather than feeling isolated and stuck and ultimately leaving academia. The honest and open conversations that occur during the workshop, and in following interactions, seem to reassure participants that they are not alone and that there are other women who have experienced many of the same stresses, doubts, fears, and struggles as well as the joys that come with a career as an academic mathematician.

Holding CaMeW in the summer allows us to mentor women as they begin their final year in graduate school. However, the CaMeW experience stretches beyond participation in the summer workshop. Each year at the JMM, an informal gathering is held over breakfast on the first day of the meetings. Here, participants are able to renew relationships in person, meet participants from other years and share their own experiences. This gathering allows all participants to enlarge their networking circles and provides a friendly and relaxed setting for those about to engage in the very intense period of first round interviews at the meeting. Past participants who have begun new positions share their reflections on their new jobs and can both offer advice to those on the job market and seek advice from faculty about postgraduate life. Additionally, throughout the meeting, various configurations of CaMeW participants and faculty can be found in hallways or lobbies; often mentors provide encouragement or support when necessary or just a diversion of small talk in between interviews. Participants report this resource as a great help at a very high stress time.

Most people that we tell about this program are enthusiastic and supportive; however, we know that there are still people out there who think there is no need for such a program. (We hope these people are not the ones reading our pending grant proposal!) To those people we would offer the feedback that we have received from our participants as evidence that women are benefiting from their participation in CaMeW in ways that are currently unavailable elsewhere. What follows is a small sample of feedback from a spring 2009 survey of all past-participants on which we had an 87.5% response rate. They report that through their participation in CaMeW they:

- accomplish a more informed job search: "The workshop informed me of the types of options out there. I knew I wanted a teaching position and the workshop helped me to figure out how to tell what types of positions would satisfy this desire. I felt I could look through job listings and make informed decisions about how interested I was in any given position."
- reflect on the type of position they want: "… I was surprised to find that I hadn't thought very much before then about what kind of job I really wanted. Knowing what I was looking for was, I believe, a distinct advantage once I did enter [the] job market. I was able to target my search effectively (even though it was still quite broad in scope) and I think my enthusiasm for certain positions really came through in my materials. I know several people who weren't as sure what they wanted in a first job, and I think they're struggling to make themselves stand out as candidates (i.e. they're still looking)."
- have lower stress that they have to find the one "perfect job": "It helped me realize that there were many positions available and many paths to career success. It helped ease the pressure of finding only one specific kind of job."
- challenge their ideas of what a successful mathematician is: "Because I attended a large research institution for graduate school, I did feel pressure to pursue a position at a large research institution myself, and I felt some of my professors looked down on those who chose not to do so. I appreciated that CaMeW presented many different images of successful mathematicians." And, "the workshop showed me exciting mathematics happens at small colleges and universities, and not just at top tier institutions."
- gain perspectives different from the ones held by faculty in their graduate programs: "It was a rare opportunity to spend time with other women in this field who I felt I could really relate to; this is not often the case with the (very limited number of) women at my current institution. It was great to have other brilliant, talented, successful, happy mathematicians affirm that there are a number of ways to flourish in one's field, be that in a teaching position, a research position, or any number of other places. The workshop was a refreshing change from my graduate department, which seems to value only one dimension of existence—research—and define a person entirely in terms of that."
- gain confidence in their balance of professional and personal lives: "I cannot express how grateful I am that I had the opportunity to attend. My advisor in my department had a very narrow definition of what she

expected me to do after I graduated. The thought made me miserable and would have been unsustainable for me. I am very thankful that I was able to be part of a forum where I was able to talk to other people with families and to not be made to feel guilty for considering my family in the job search process."

- recognize the importance of a professional support network: "I had never been involved in any programs outside of my own department mostly because I … never knew of any such opportunities. CaMeW drove home to me the importance of finding mentors and peers who are invested in my future (as I am in theirs). I now realize that I can (and should) build support networks beyond the confines of my own campus—especially since I had never found a real mentor locally."

Additionally we offer the following statistics from the first 2 years of our program based on the survey mentioned above.

- 70.6% of those attending the annual JMM applied to participate in the AWM workshop at that meeting.
- 38% have applied to the MAA's Project NExT or other professional development programs.
- Of those who applied to either the AWM workshop or a professional development program, over half said they did so because of CaMeW.
- 76% of the respondents have contacted a mentor since their participation; 81% have contacted another participant.
- 76% said that the workshop influenced their ideas about "successful" mathematicians.
- 62% said that their participation in the workshop influenced them in unanticipated ways.
- 38% have organized events for fellow graduate students based on what they learned at the workshop (additional participants commented that they had not organized events, but had offered advice and information to their peers based on their CaMeW experiences).
- 100% are interested in mentoring other women finishing their Ph.D.'s.
- 100% would recommend the workshop to a friend.

We know that CaMeW is not unique in its support of women in mathematics. There are several other programs for women at various stages of their mathematical careers; however none that we are aware of target women at the end of their graduate careers. We have been inspired and supported by many of these other programs. In particular, the Summer Math Program at Carleton College and the EDGE Program have given financial support to several of their past participants to attend our workshop. The AWM has been supportive in many ways, in particular in helping us advertise and publicize the program, and many of our participants have gone on to apply for the AWM workshops at the JMM each year. We believe that there is a necessity and a place for the many programs out there that support women in math at the various stages of their careers. Since only nine percent of tenured faculty in doctoral granting mathematics programs are women, there is a clear need for women to look beyond their own programs to the larger mathematics community for models of successful, engaged and satisfied women mathematicians.

Since only nine percent of tenured faculty in doctoral granting mathematics programs are women, there is a clear need for women to look beyond their own programs to the larger mathematics community for models of successful, engaged and satisfied women mathematicians.

Alissa Crans of Loyola Marymount University and Sarah Ann Stewart of Belmont University have served as co-directors of CaMeW from its start; I am extremely grateful to both of them for their contributions to the program. There are many more people who should be thanked, but there is not room enough to do that here. However I would be remiss not to include that this workshop would have been impossible without the support of both Florence Fasanelli, director of the MAA Tensor grant program, and Colonel Michael Phillips, Head of the Department of Mathematical Sciences at the United States Military Academy at West Point. Both individuals have offered their unwavering support from the moment I shared my idea for the workshop, and these two programs have offered the majority of funding for the past three years. Additionally, the first year of the program was hosted by West Point; the following two years were held at Wheaton College with support of the President's and Provost's Offices. Unfortunately we have exhausted our eligibility for funding through the Tensor program. Funding for CaMeW 2010 (and beyond) is pending; the program will continue if sufficient funding is secured.

Please visit our website for more information and for news of future programs: www.wheatoncollege.edu/camew.

I would like to thank Laura Hall-Seelig (CaMeW '08) for her helpful suggestions and feedback for this article.

2009 Awards to Encourage Women and Girls to Study Mathematics

Florence Fasanelli, Director, Tensor/MAA

Sixteen projects conducted by professors of mathematics were selected in March 2009 to receive funds from the Mathematical Association of America's Tensor/MAA small grants program. The mission of each project is to encourage women or girls to continue the study of mathematics or mathematics dependent fields. Rachelle DeCoste, Wheaton College, has conducted three yearly two-day conferences for women completing their graduate study. Participants met with six recent graduates and six senior faculty members to address what is expected to finish the Ph.D. and how to find a job through the stages of interviews.

The transition to graduate school, as well as the retention of women there, are also critical points in retaining women. The Women in Mathematics (WIM) Group at the University of Maryland under the guidance of Konstantina Trivisa provides the needed intervention at the undergraduate level to increase women's awareness of different kinds of graduate programs which can match their career interests. The activities include seminars, panels, study groups and mentor groups. James Lin hosts the UCSD Student Chapter for the Association of Women in Mathematics at the University of California at San Diego to provide an increased knowledge of and greater interest in the mathematical sciences. Undergraduate women participate in the Hope College REU each year under the leadership of Stephanie Edwards. Janet Liou-Mark conducts *Navigation by Mentoring and Leadership* at New York City College of Technology – CUNY where women are recruited to major in applied mathematics. At York College – CUNY, Lidia Gonzales hosts *York Tensor Scholars Program* where undergraduates are developing a Tensor community.

Tensor/MAA also welcomes activities for high school girls, particularly those who are underrepresented in the mathematical sciences. At Delaware State University, Mazen Shahin conducts a six-week residential research experience in mathematics, biology and information technology for 18 high school girls. Career days as well as lengthier programs are considered highly important for exposing rural as well as urban girls to STEM career possibilities. Violetta Vasilevska, University of South Dakota in Vermillion, hosts a math day for students from surrounding schools where panelists provide math examples to illustrate the importance of mathematics in their careers with a follow-up of ongoing email communication with the participants and director. John Hulvey hosts an Expanding Your Horizons Day at James Madison University in April and suggests problems to solve over the summer with a follow-up in the fall. Marie Fung holds a High School Math Day for Girls at Worcester State College with monthly follow-up through an undergraduate mentor and activities on Pi Day.

Three summer camp proposals were funded: a residential camp in number theory and mathematical modeling for 30 high school girls at the University of Northern Colorado under the guidance of Hortensia Soto-Johnson, a week long residential program in science and mathematics under the direction of Katherine Socha at St. Mary's College of Maryland, and a camp led by Aprillya Lanz at Virginia Military Institute.

At Indiana State University, Elizabeth Brown conducts a club for 16 middle grade girls who meet twice a month to do mathematics with undergraduate mentors. Twenty middle-grade girls are the youngest who were funded in 2009 to attend a two-week program led by Alejandra Sorto at Texas State University – San Marcos.

Call for Nominations: 2011 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. *Five* complete copies of nomination materials for this award should be sent to: The Hay Award Selection Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. Nominations must be received by **April 30, 2010** 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. Nominations via email or fax will not be accepted.

These 15 projects, reaching young elementary school girls, secondary school teenagers, undergraduates and graduates as well as women who have completed Ph.D.'s are only a few of the kinds of projects the MAA/Tensor program reviews and funds. Over the past 15 years awards have gone to a special graduate course at Arizona State University where all the mathematics studied had been invented by women, performances of a play about female mathematicians, development of an undergraduate history of mathematics course focusing on women who plan to go into teaching at Loyola Marymount University, and travel for members of math clubs to participate in professional meetings. During the last three years, Janet Kaahwa, University of Uganda, has developed a popularization project utilizing posters of women mathematicians reaching into remote areas and schools to interest both teachers and their students in continuing to study mathematics.

The Tensor/SUMMA program which funds projects for underrepresented minorities selected 12 projects in 2009. In particular scholarships to outstanding summer camps were funded. Descriptions and contact information for all projects can be found on the MAA web site.

Proposals following the guidelines posted on the MAA web site are due **February 12, 2010**. Both program directors, Florence Fasanelli for Tensor/MAA for women and girls and Carole Lacampagne for Tensor/SUMMA for underrepresented minorities, urge potential project directors who plan to attend the Joint Mathematical Meetings in San Francisco in 2010 to visit the poster session on Mathematical Outreach Programs for Underrepresented Populations Thursday, January 14 from 9:00–11:00 a.m. Potential project directors seeking funding are welcome to contact the project directors through the MAA web site for feedback on ideas prior to submission. Each recipient receives up to $6000. Projects are eligible for renewal for up to three years.

Opportunities

Project NExT/YMN Poster Session

Project NExT and the Young Mathematician's Network invite submissions of abstracts for a poster session to be held on Wednesday, January 13, 2010 from 2:15 to 4:15 p.m. in Room 3001, 3rd floor, Moscone Center West at the Joint Mathematics Meetings in San Francisco. The poster size will be 48" by 36"; it is best to have the posters 36" high. Posters and materials for posting pages on the posters will be provided on-site. We expect to accept about forty posters from different areas within the mathematical sciences.

This poster session is intended to highlight the research activities, both mathematical and pedagogical, of recent or future Ph.D.'s in mathematics and related fields. The organizers seek to provide an open venue for people who are near completion or have finished their graduate studies in the last five years to present their work and make connections with other same-stage professionals, in much the same spirit as the YMN and Project NExT.

Should you have a special requirement involving a computer hook-up, please let us know and we will check to see if it may be accommodated.

If you are interested in participating, submit copies of your abstract to: Prof. Mike Axtell, Department of Mathematics, OSS 201, University of St. Thomas, 2115 Summit Ave., St. Paul, MN 55105; phone: (651) 962-5495; e-mail: maxtell@stthomas.edu AND Prof. Kim Roth, Department of Mathematics, A302 Brumbaugh Academic Center, Juniata College, 1700 Moore Street, Huntington, PA 16652; phone: (814) 641-3593; e-mail: roth@juniata.edu.

Our poster sessions the past fourteen years have been great successes. Visitors to the session each year were numerous and included many prospective employers. This session provides an excellent way to showcase your work in a relaxed, informal environment.

The deadline for final consideration is **December 17, 2009**. Preference will be given to those who earned a Ph.D. since 2004; please include with your submission when and where you received your Ph.D., or indicate when you expect to receive it. Please submit your abstract via e-mail, not an attachment. If it includes mathematical formulas, please submit it in basic LaTeX or TeX format. Submissions will be acknowledged quickly by e-mail. Accepted abstracts will be posted at www.youngmath.net/Documents/2010/Posters/ before the Joint Meetings.

Schlumberger Faculty for the Future

Role Models for the Next Generation/Faculty for the Future fellowships are awarded to women from developing and emerging economies who are preparing for Ph.D. or postdoctoral study in the physical sciences, engineering, or related disciplines to pursue advanced graduate study at top universities in their disciplines abroad. Applications open on October 5, 2009 and close on **November 30, 2009**. See http://www.slb.com/content/about/foundation/facultyfuture.asp.

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ICWM 2010: Second Announcement

The first announcement for the International Conference of Women Mathematicians (ICWM) 2010 taking place in Hyderabad, August 17–18, 2010, immediately before the International Congress of Mathematicians (ICM), appeared in the July–August issue of this newsletter. Information not included there follows.

There will be nine lectures of 45 minutes each from the following speakers: Julie Deserti (Paris, France), Frances Kirwan (Oxford, UK), Maryam Mirzakhani (Stanford, USA), Neela Nataraj (IIT Bombay, India), Raman Parimala (Atlanta, USA), Mythily Ramaswamy (TIFR Bangalore, India), Maria Saprykina (KTH Stockholm, Sweden), Nathalie Wahl (Copenhagen, Denmark), and Di Yana (CAS Beijing, China)

In addition to the lectures there will be a discussion forum and a conference dinner on the evening of August 17. Registration will begin on **January 1, 2010**.

Twelfth Annual Nebraska Conference for Undergraduate Women in Mathematics

The Twelfth Annual Nebraska Conference for Undergraduate Women in Mathematics will be on January 29–31, 2010, at the University of Nebraska–Lincoln. This conference will bring together outstanding undergraduate women mathematicians from across the country. It is open to undergraduate women mathematicians at all stages of their careers. Those who have already done research can present their results as either a talk or a poster. Two leading mathematicians, Bryna Kra and Karen Vogtmann, will give plenary addresses. In addition to the mathematical program, there will be information about summer opportunities, graduate programs, and careers in mathematics. About 200 undergraduates have attended each of the past several years and between 35 and 50 have presented their research. For more information or to register, see http://www.math.unl.edu/~ncuwm.

The conference covers local expenses (lodging and most meals) for all undergraduate women participants. Some participants' travel costs can be covered, when participants' home institutions are not able to do so.

The registration deadline is **December 4**, but spaces will be filled on a first come basis, and we have had to close registration early in some years. Please encourage possible participants and, in particular, possible speakers, to register early. The conference is currently funded by grants from the NSF and the NSA. Contact ncuwm@math.unl.edu if you have questions.

In Memoriam

Marian Pour-El died on June 10, 2009 at the age of 81. Born in New York City, Pour-El received her bachelor's degree in physics from Hunter College in New York in 1949. She earned her master's degree in mathematics in 1951 and her Ph.D. in mathematical logic in 1958 from Harvard University. Not only was she was one of the first women to complete a Ph.D. in mathematics at Harvard, she also was first to study logic within mathematics.

Her first academic position was held at Penn State University. From 1962 to 1964, she was on the visiting faculty at the Institute for Advanced Studies and worked with Kurt Gödel, the eminent logician. In 1964, she joined the School of Mathematics at the University of Minnesota and served until her retirement in 2000.

Pour-El's research interests included computability and functional analysis, and applications to physical theory. Over the years, she addressed many international symposia and conferences in logic. In 1993, a symposium was held in her honor in Kyoto, Japan. She served on numerous AMS committees. She was also an inspiration and mentor to many female graduate students.

AWM member **Linda Barkley** passed away August 15, 2009. She earned an M.S. in mathematics from Loyola Marymount University (LMU) in 1980. She worked in the Space and Communications division of Hughes Aircraft in El Segundo, CA, which was acquired by Boeing Communications. She helped plan the Expanding Your Horizons in Math, Science and Engineering Career Day for junior high school girls for many of the 25 years that LMU hosted it (1978–2003). She served as regional coordinator of the Women and Mathematics Lectureship Program sponsored by the MAA that sent women role model speakers to junior and senior high schools all across Southern California to inform boys and girls about the career opportunities afforded by studying mathematics. She generously volunteered her time and energy to all of these initiatives to encourage more women to enter math-related fields.

Sonia Kovalevsky High School Mathematics Days

Through grants from Elizabeth City State University and the National Security Agency (NSA), the Association for Women in Mathematics expects to support Sonia Kovalevsky High School Mathematics Days at colleges and universities throughout the country. Sonia Kovalevsky Days have been organized by AWM and institutions around the country since 1985, when AWM sponsored a symposium on Sonia Kovalevsky. They consist of a program of workshops, talks, and problem-solving competitions for high school women students and their teachers, both women and men. The purposes are to encourage young women to continue their study of mathematics, to assist them with the sometimes difficult transition between high school and college mathematics, to assist the teachers of women mathematics students, and to encourage colleges and universities to develop more extensive cooperation with high schools in their area.

AWM awards grants ranging on average from $1500 to $2200 each ($3000 maximum) to universities and colleges. Historically Black Colleges and Universities are particularly encouraged to apply. Programs targeted toward inner city or rural high schools are especially welcome.

Applications, not to exceed six pages, should include:

- a cover letter including the proposed date of the SK Day, expected number of attendees (with breakdown of ethnic background, if known), grade level the program is aimed toward (e.g., 9th and 10th grade only), total amount requested, and organizer(s) contact information;
- plans for activities, including specific speakers to the extent known;
- qualifications of the person(s) to be in charge;
- plans for recruitment, including the securing of diversity among participants;
- detailed budget (Please itemize all direct costs in budget, e.g., food, room rental, advertising, copying, supplies, student giveaways. Honoraria for speakers should be reasonable and should not, in total, exceed 20% of the overall budget. Stipends and personnel costs are not permitted for organizers. The grant does not permit reimbursement for indirect costs or fringe benefits.);
- local resources in support of the project, if any; and
- tentative follow-up and evaluation plans.

Organizers should send announcements including date and location of their SK Days to the AWM web editor for inclusion on the AWM website. If funded, a report of the event along with receipts (originals or copies) for reimbursement must be submitted to AWM within 30 days of the event date or by June 1, whichever comes first. Reimbursements will be made in one disbursement; no funds may be disbursed prior to the event date. The annual fall deadline is **August 4**, with a potential additional selection cycle with a deadline of **February 4**.

An additional selection cycle will be held in February 2010 for Spring 2010 using funds remaining after the August 2009 selection cycle. AWM anticipates awarding up to six additional grants in this cycle. The decision on funding will be made in late February. Applications must be received by **February 4, 2010**.

Send *five* complete copies of the application materials to: Sonia Kovalevsky Days Selection Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. For further information, call 703-934-0163 or e-mail awm@awm-math.org.

ADVERTISEMENTS

BOSTON COLLEGE, DEPARTMENT OF MATHEMATICS — Post-doctoral Position - The Department of Mathematics at Boston College invites applications for a post-doctoral position beginning September 2010. This position is intended for a new or recent Ph.D. with outstanding potential in research and excellent teaching. This is a 3-year Visiting Assistant Professor position, and carries a 2-1 annual teaching load. Research interests should lie within Geometry and Topology or related areas. Candidates should expect to receive their Ph.D. prior to the start of the position and have received the Ph.D. no earlier than Spring 2009. Applications must include a cover letter, description of research plans, curriculum vitae, and four letters of recommendation, with one addressing the candidate's teaching qualifications. Applications received no later than January 1, 2010 will be assured our fullest consideration. Please submit all application materials through MathJobs.org. Boston College will start a Ph.D. program in Mathematics beginning Fall 2010. Applicants may learn more about the Department, its Faculty and its programs at www.bc.edu/math. Electronic inquiries concerning this position may be directed to postdoc-search@bc.edu. Boston College is an Affirmative Action/Equal Opportunity Employer. Applications from women, minorities and individuals with disabilities are encouraged.

BOSTON COLLEGE, DEPARTMENT OF MATHEMATICS — Tenure-Track Positions — The Department of Mathematics at Boston College invites applications for two tenure-track positions at the level of Assistant Professor beginning in September 2010, one in Number Theory or related areas, including Algebraic Geometry and Representation Theory; and the second in either Geometry/Topology or Number Theory or related areas. In exceptional cases, a higher level appointment may be considered. The teaching load for each position is three semester courses per year. Requirements include a Ph.D. or equivalent in Mathematics awarded in 2008 or earlier, a record of strong research combined with outstanding research potential, and demonstrated excellence in teaching mathematics. A completed application should contain a cover letter, a description of research plans, a statement of teaching philosophy, curriculum vitae, and at least four letters of recommendation. One or more of the letters of recommendation should directly comment on the candidate's teaching credentials. Applications completed no later than December 1, 2009 will be assured our fullest consideration. Please submit all application materials through MathJobs.org. Boston College will start a Ph.D. program in Mathematics beginning Fall 2010. Applicants may learn more about the Department, its Faculty and its programs at www.bc.edu/math. Electronic inquiries concerning these positions may be directed to math-search @bc.edu Boston College is an Affirmative Action/Equal Opportunity Employer. Applications from women, minorities and individuals with disabilities are encouraged.

BOSTON UNIVERSITY — Multiple Positions — The Department of Mathematics and Statistics invites applications for the following three positions: Tenure-track Assistant Professor level in Algebraic Geometry and/or Automorphic Representation Theory. The position will begin in September 2010, pending budgetary approval. Strong commitment to research and teaching is essential. Please submit the AMS Application Cover Sheet, CV, research statement, and at least three letters of recommendation, one of which addresses teaching, to mathjobs.org. Alternatively, send all material to AGART Search, Department of Mathematics and Statistics, Boston University, 111 Cummington St., Boston, MA 02215. Application Deadline January 2, 2010; Tenure-track Assistant Professor level in Stochastic Processes, areas include all applications, including those in statistics, bioinformatics, physics, and mathematical finance. The position will begin in September 2010, pending budgetary approval. Strong commitment to research and teaching is essential, preferably with interest in interdisciplinary research. Please submit CV, research statement, and at least three letters of recommendation, to Stochastic Processes Search Committee, Department of Mathematics and Statistics, Boston University, 111 Cummington St., Boston, MA 02215. Application Deadline January 2, 2010; A two-year Post-Doctoral Position in Dynamical Systems, starting September 2010 pending budgetary approval. Strong commitment to research and teaching is essential. Submit AMS cover sheet, CV, research statement and three letters of recommendation, one of which addresses teaching, to mathjobs.org. Alternatively, send all material to Dynamical Systems Postdoctoral Search Committee, Department of Mathematics and Statistics, Boston University, 111 Cummington St., Boston, MA 02215. Application Deadline January 2, 2010. Boston University is an affirmative Action/Equal Opportunity Employer.

BROWN UNIVERSITY, MATHEMATICS DEPARTMENT — J. D. Tamarkin Assistant Professorship — One three-year non-tenured non-renewable appointment, beginning July 1, 2010. The teaching load is one course one semester, and two courses the other semester and consists of courses of more than routine interest. Candidates are required to have received a Ph.D. degree or equivalent by the start of their appointment, and they may have up to three years of prior academic and/or postdoctoral research experience. Applicants should have strong research potential and a commitment to teaching. Field of research should be consonant with the current research interests of the department. For full consideration, applicants must submit a curriculum vitæ, an AMS Standard Cover Sheet and three letters of recommendation by December 1, 2009. Please submit all application materials on line at http://www.mathjobs.org. If necessary, inquiries and materials can be addressed to: Junior Search Committee, Department of Mathematics, Box 1917, Brown University, Providence, RI 02912. Email inquiries should be addressed to juniorsearch@math.brown.edu. Brown University is an Equal Opportunity/Affirmative Action Employer and encourages applications from women and minorities.

CALIFORNIA INSTITUTE OF TECHNOLOGY — Harry Bateman Research Instructorships in Mathematics — Description: Appointments are for two years. The academic year runs from approximately October 1 to June 1. Instructors typically are expected to teach one course per quarter for the full academic year and to devote the rest of their time to research. During the summer months there are no duties except research. Eligibility: Open to persons who have recently received their doctorates in mathematics. Deadline: January 1, 2010. Application information: Please apply online at mathjobs.org. You can also find information about this position at http://www.math.caltech.edu/positions.html. To avoid duplication of paperwork, your application may also be considered for an Olga Taussky and John Todd Instructorship. Caltech is an Affirmative Action/Equal Opportunity Employer. Women, minorities, veterans, and disabled persons are encouraged to apply.

CALIFORNIA INSTITUTE OF TECHNOLOGY —Scott Russell Johnson Senior Postdoctoral Scholar in Mathematics — Description: There are three terms in the Caltech academic year. The fellow is typically expected to teach one course in two terms each year, and is expected to be in residence even during terms when not teaching. The initial appointment is for three years with an additional three-year terminal extension expected. Eligibility: Offered to a candidate within six years of having received the Ph.D. who shows strong research promise in one of the areas in which Caltech's mathematics faculty is currently active Deadline: January 1, 2010. Application information: Please apply online at mathjobs.org. You can also find information about this position at http://www.math.caltech.edu/positions.html. To avoid duplication of paperwork, your application may also be considered for an Olga Taussky and John Todd Instructorship. Caltech is an Affirmative Action/Equal Opportunity Employer. Women, minorities, veterans, and disabled persons are encouraged to apply.

CALIFORNIA INSTITUTE OF TECHNOLOGY — Olga Taussky and John Todd Instructorships in Mathematics — Description: Appointments are for three years. There are three terms in the Caltech academic year, and instructors typically are expected to teach one course in all but two terms of the total appointment. These two terms will be devoted to research. During the summer months there are no duties except research. Eligibility: Offered to persons within three years of having received the Ph.D. who show strong research promise in one of the areas in which Caltech's mathematics faculty is currently active. Deadline: January 1, 2010. Application information: Please apply online at mathjobs.org. You can also find information about this position at http://www.math.caltech.edu/positions.html. To avoid duplication of paperwork, your application may also be considered for an Olga Taussky and John Todd Instructorship. Caltech is an Affirmative Action/Equal Opportunity Employer. Women, minorities, veterans, and disabled persons are encouraged to apply.

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CALIFORNIA INSTITUTE OF TECHNOLOGY — Tenure Track Position — The Division of Physics, Mathematics, and Astronomy at the California Institute of Technology invites applications for a tenure-track position at the assistant professor level in mathematics. We are especially interested in the following research areas: topology/geometry and analysis, but other fields may be considered. The term of the initial appointment is normally four years and appointment is contingent upon completion of the Ph.D. Exceptionally well-qualified applicants may also be considered at the associate or full professor level. We are seeking highly qualified applicants who are committed to a career in research and teaching. Application Information: Please apply online at mathjobs.org. You can also find information about this position at http://www.math.caltech.edu/positions.html. Caltech is an Affirmative Action/Equal Opportunity Employer. Women, minorities, veterans, and disabled persons are encouraged to apply.

CLARKSON UNIVERSITY — Tenure-Track Positions — The Department of Mathematics (www.clarkson.edu/math) invites applications for two tenure-track positions starting in August 2010: one in applied mathematics and one in statistics. The applied mathematics position will be filled at the Assistant Professor level, and the statistics position will be filled at the Assistant or Associate Professor level. We are especially interested in candidates with expertise in computational areas of applied mathematics, including statistics or dynamical systems, but all areas of applied mathematics will be considered. Responsibilities will include teaching undergraduate and graduate level mathematics courses, and directing graduate students. Minimum requirements are a Ph.D. in mathematics by the date of appointment, demonstrated excellence in both research potential and teaching ability, and fluency in English. In addition, the candidate should be able to interact with other faculty in the department and the university. Applications including vita and three reference letters should be submitted to Prof. C.A. Lynch, Department of Mathematics, Clarkson University, Potsdam, NY 13699-5815. Completed applications will be reviewed starting immediately. Women and minorities are urged to apply. Clarkson University is an AA/EOE Employer. (Pos. #128-08 statistics and #127-08 applied math)

DARTMOUTH COLLEGE — John Wesley Young Research Instructorship — 2-3 years, new or recent Ph.D. graduates whose research overlaps a department member's. Teach 4 ten-week courses spread over 3 terms. Appointment for 26 months, with possible 12 month renewal; monthly salary of $4,833, including two-month research stipend for Instructors in residence during 2 of 3 summer months; if not in residence, salary adjusted accordingly. To initiate an application go to http://www.mathjobs.org – Position ID: JWY #1717. You can also access the application through a link at http://www.math.dartmouth.edu/recruiting/. General inquiries can be directed to Annette Luce, Department of Mathematics, Dartmouth College, 6188 Kemeny Hall, Hanover, New Hampshire 03755-3551. Files complete by January 5, 2010 considered first. Dartmouth College is committed to diversity and strongly encourages applications from women and minorities.

EDGE SUMMER PROGRAM AT NC STATE — The Enhancing Diversity in Graduate Education (EDGE) Program is a postbaccalaureate summer enrichment program designed to strengthen the ability of women and minority students to successfully complete graduate programs in the mathematical sciences. The summer program consists of two core courses in analysis and algebra/linear algebra. There will also be minicourses in vital areas of mathematical research in pure and applied mathematics, short-term visitors from academia and industry, guest lectures, graduate student mentors, and problem sessions. In addition, a follow-up mentoring program and support network will be established with the participants' respective graduate programs. Applicants to the program should be women who are (1) graduating seniors who have applied to graduate programs in the mathematical sciences, (2) recent recipients of undergraduate degrees who are now entering graduate programs, or (3) first-year graduate students. All applicants should have completed standard junior- or senior- level undergraduate courses in analysis and abstract algebra and have a desire to earn the doctorate degree. Women from minority groups who fit one of the above three categories are especially encouraged to apply. A stipend of US$2,000 plus travel, room, and board will be provided to participants. Final acceptance to the program is contingent on acceptance to a graduate program in the mathematical sciences. The EDGE Program will be held in the summer of 2010 at North Carolina State University in Raleigh. The application deadline is February 15, 2010. See the website http://www.edgeforwomen.org/?page_id=5 for further information as it becomes available.

FIELDS INSTITUTE, TORONTO, CANADA — Postdoctoral Fellowships — Description: Applications are invited for postdoctoral fellowship positions for the 2010-2011 academic year. The 2010 (Fall) Thematic Program on Asymptotic Geometric Analysis will take place at the Institute July to December 2010 and the 2011 (Winter/Spring) Thematic Program on Dynamics and Transport in Disordered Systems will take place at the Institute from January to June 2011. The fellowships provide for a period of engagement in research and participation in the activities of the Institute. In addition to regular postdoctoral support, one visitor for each six-month program will be awarded the Institute's prestigious Jerrold E. Marsden Postdoctoral Fellowship. Applicants seeking postdoctoral fellowships funded by other agencies (such as NSERC or international fellowships) are encouraged to request the Fields Institute as their proposed location of tenure, and should apply to the Institute for a letter of invitation. Eligibility: Qualified candidates who will have recently completed a PhD in a related area of the mathematical sciences are encouraged to apply. Deadline: December 15, 2009 although late applications may be considered. Application Information: Please consult www.fields.utoronto.ca/proposals/postdoc.html The Fields Institute is strongly committed to diversity within its community and especially welcomes applications from women, visible minority group members, Aboriginal persons, persons with disabilities, members of sexual minority groups, and others who may contribute to the further diversification of ideas.

INDIANA UNIVERSITY BLOOMINGTON, DEPARTMENT OF MATHEMATICS — Zorn Research Postdoctoral Fellowships — The Department of Mathematics seeks applications for two Zorn Research Postdoctoral Fellowships beginning in the Fall of 2010. These are three-year, non-tenure track positions with reduced teaching loads. Outstanding candidates with a recent Ph.D. in any area of pure or applied mathematics are encouraged to apply. Zorn fellows are paired with mentors with whom they have compatible research interests. The Department maintains strong research groups in all of the principal fields of mathematics. Bloomington is located in the forested hills of southern Indiana and offers a rich variety of musical and cultural attractions. Applicants should submit an AMS cover sheet, a curriculum vitae, a research statement, and a teaching statement using the online service provided by the AMS at http://www.mathjobs.org. If unable to do so, send application materials to the address below. Applicants should arrange for four letters of recommendation, including one evaluating teaching experience. Please ask reference writers to submit their letters electronically through http://www.mathjobs.org. If they are unable to do so, they may also send their letters to the following address: Zorn Postdoctoral Fellowships Search Committee, Department of Mathematics, Indiana University, 831 East 3rd Street, Rawles Hall, Bloomington, IN 47405-7106. Applications should be received by December 15, 2009. Indiana University is an equal opportunity / affirmative action employer.

JOHNS HOPKINS UNIVERSITY, DEPARTMENT OF MATHEMATICS — The Department of Mathematics invites applications for one or more positions at the Associate Professor or Full Professor level beginning fall 2010 or later. Candidates in all areas of pure mathematics are encouraged to apply. To submit your applications go to www.mathjobs.org/jobs/jhu. Applicants are strongly advised to submit their other materials electronically at this site. Submit the AMS cover sheet, a curriculum vitae, a list of publications, and the names and addresses of three references. Applicants should indicate whether they are applying for an associate professor or a full professor position. The department will assume responsibility to solicit letters of evaluation and will provide evaluators with a copy of the summary of policies on confidentiality of letters of evaluation. If you do not have computer access, you may mail your application to: Appointments Committee, Department of Mathematics, Johns Hopkins University, 404 Krieger Hall, Baltimore, MD 21218. Write to cpoole@jhu.edu for questions concerning these positions. Applications received by December 1, 2009 will be given priority. The Johns Hopkins University is an Affirmative Action/Equal Opportunity Employer. Minorities and women candidates are encouraged to apply. Deadline for Applications: No deadline given For more information about the position or institution/company: http://www.mathematics.jhu.edu/new/jobs.htm

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JOHNS HOPKINS UNIVERSITY, DEPARTMENT OF MATHEMATICS — Non-Tenure-Track J.J. Sylvester Assistant professor — Subject to availability of resources and administrative approval, the Department of Mathematics solicits applications for non-tenure-track Assistant Professor Positions beginning fall 2010. The J.J. Sylvester Assistant Professorship is a three-year position offered to recent Ph.D.'s with outstanding research potential. Candidates in all areas of pure mathematics, including analysis, mathematical physics, geometric analysis, complex and algebraic geometry, number theory, and topology are encouraged to apply. The teaching load is three courses per academic year. To submit your applications go to www.mathjobs.org/jobs/jhu. Applicants are strongly advised to submit their other materials electronically at this site. If you do not have computer access, you may mail your application to: Appointments Committee, Department of Mathematics, Johns Hopkins University, 404 Krieger Hall, Baltimore, MD 21218. Application should include a vita, at least four letters of recommendation of which one specifically comments on teaching, and a description of current and planned research. Write to cpoole@jhu.edu for questions concerning these positions. Applications received by December 1, 2009 will be given priority. The Johns Hopkins University is an Affirmative Action/Equal Opportunity Employer. Minorities and women candidates are encouraged to apply. Deadline for Applications: No deadline given For more information about the position or institution/company: http://www.mathematics.jhu.edu/new/jobs.htm

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, DEPARTMENT OF MATHEMATICS — Positions for Faculty and Instructors —The Mathematics Department at MIT is seeking to fill positions in Pure and Applied Mathematics and Statistics, at the level of Instructor, Assistant Professor and higher, beginning September 2010. Appointments are based primarily on exceptional research qualifications. Appointees will be expected to fulfill teaching duties and to pursue their own research program. PhD is required by the employment start date. For more information, and to apply, please visit www.mathjobs.org. To receive full consideration, please submit applications by December 1, 2009. Recommendations should be submitted through mathjobs.org but may also be sent as PDF attachments to hiring@math.mit.edu, or as paper copies mailed to: Mathematics Search Committee, Room 2-345, Department of Mathematics, MIT, 77 Massachusetts Ave., Cambridge, MA 02139-4307. Please do not mail or e-mail duplicates of items already submitted via mathjobs. MIT is an Equal Opportunity, Affirmative Action Employer.

NORTHWESTERN UNIVERSITY — Tenured or Tenure-track Positions — Applications are invited for job-ad-2009-2 tenured or tenure-track positions starting September 2010. Priority will be given to exceptionally promising research mathematicians. We invite applications from qualified mathematicians in all fields. Applications should be made electronically at www.mathjobs.org and should include (1) the American Mathematical Society Cover Sheet for Academic Employment, (2) a curriculum vitae, (3) a research statement, (4) a teaching statement, and (5) three letters of recommendation, one of which discusses the candidate's teaching qualifications. Inquiries may be sent to: hiring@math.northwestern.edu. Applications received by November 1st will be given priority. AA/EOE. Women and minority candidates are especially encouraged to apply.

NORTHWESTERN UNIVERSITY — Ralph Boas assistant professorships — Applications are solicited for up to four Ralph Boas assistant professorships of three years each starting September 2010. These are non-tenure track positions with a teaching load of four quarter courses per year. We invite applications from qualified mathematicians in all fields. Applications should be made electronically at www.mathjobs.org and should include (1) the American Mathematical Society Cover Sheet for Academic Employment, (2) a curriculum vitae, (3) a research statement, (4) a teaching statement, and (5) three letters of recommendation, one of which discusses the candidate's teaching qualifications. Inquiries may be sent to: boas@math.northwestern.edu. Applications are welcomed at any time, but the review process starts December 1, 2009. AA/EOE. Women and minority candidates are especially encouraged to apply.

POMONA COLLEGE —Tenure-track position in any area of Statistics — Submit applications to MathJobs.org or Johanna Hardin, 610 N. College Ave., Claremont, CA 91711. Application includes: letter, curriculum vitae, graduate transcripts, at least three letters of recommendation (at least one evaluating teaching), a description, for the non-specialist, of research accomplishments and plans, and a statement of teaching philosophy. We will fully consider applications completed by December 1, 2009. Pomona College is an equal opportunity employer and is particularly interested in candidates who have experience working with students from diverse backgrounds and a demonstrated commitment to improving access to and success in higher education for underrepresented groups.

PURDUE UNIVERSITY — Tenure-track position — The Department of Statistics, Purdue University invites applications for a tenure-track position beginning August 2010 at the Assistant Professor level in the area of statistical bioinformatics. This hire will join an exciting and established group in statistical bioinformatics. The Department of Statistics offers a stimulating and nurturing academic environment. More than 35 tenured and tenure-track faculty members direct research programs in a broad range of areas complementary to statistical bioinformatics. Further information about the department is available at http://www.stat.purdue.edu All applicants should hold a Ph.D. in Statistics or a related field, be committed to excellence in teaching, and have demonstrated strong potential for excellence in research. Salary and benefits are highly competitive. For all positions in Statistics, please visit http://www.stat.purdue.edu/hiring/ to apply. Review of applications will begin on December 1, 2009, and will continue until the position is filled. Purdue University is an Equal Opportunity/Equal Access/Affirmative Action employer fully committed to achieving a diverse workforce.

SANTA CLARA UNIVERSITY, DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE — The Department of Mathematics and Computer Science at Santa Clara University invites applications from candidates with expertise in scientific computation or statistics and interest in mathematical biology, computational physics or chemistry, or environmental science. Tenure track Assistant Professor position available starting in September 2010 (contingent on funding). Application deadline is January 20, 2010. For more information regarding application submissions, see www.scu.edu/hr/careers/faculty.cfm.

TEXAS A&M UNIVERSITY — IAMCS-KAUST Postdoctoral Fellowships — The Institute for Applied Mathematics and Computational Science (IAMCS) at Texas A&M University is pleased to invite applications for its IAMCS-KAUST Postdoctoral Fellowships. IAMCS is an interdisciplinary research institute at Texas A&M University named in 2008 as one of the four inaugural King Abdullah University of Science and Technology (KAUST) Global Research Partner Centers. Its core members number more than thirty faculty from the fields of Mathematics, Statistics, Computer Science and Engineering. Fostering collaboration and interdisciplinary research anchored in the mathematical sciences are at the heart of IAMCS's mission. To that end, IAMCS emphasizes among its activities annual research themes. Current and upcoming themes are mathematical and computational challenges in Earth Science, Material Science and Engineering, and the Life Sciences.

IAMCS Postdoctoral candidates should have demonstrated interest and involvement in interdisciplinary research, and successful candidates will be encouraged to participate in the annual theme activities and to establish research collaborations exploring theme year topics. Moreover, each fellow will be invited to establish collaborations with KAUST faculty, postdocs and students as well as all of the KAUST Global Research Partner institutions and individual investigators. This offers an unprecedented opportunity for postdoctoral fellows to join a remarkable network of leading research institutions and eminent scholars assembled through the KAUST GRP program. KAUST is a new graduate research university developed by the Kingdom of Saudi Arabia at a site along the Red Sea a short distance north of Jeddah. Opened in September 2009, it offers world class, state-of-the-art research and instructional facilities supporting its core research and graduate programs in earth sciences, materials science and engineering, biosciences, and applied mathematics and computational science. A key element in KAUST's development as a premier graduate research university is its Global Research Partnership (GRP) program. The GRP consists of its Academic Excellence Alliance Partners, Research Center Partners and Individual Research Scholar Partners. The IAMCS-KAUST Postdoctoral

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Fellowships at Texas A&M University are two year appointments with the possibility of extension to a third year. The fellowship stipend is $53K over 12 months plus fringe benefits. Interested individuals should submit their application materials (CV, research statement and three letters of recommendation) to the email address KAUST@tamu.edu by 15 December 2009. IAMCS intends to select up to four IAMCS-KAUST Fellows. Texas A&M University is an equal opportunity employer. The University is dedicated to the goal of building a culturally diverse and pluralistic faculty and staff committed to teaching and working in a multicultural environment and strongly encourages applications from women, minorities and individuals with disabilities.

TEXAS A&M UNIVERSITY, THE DEPARTMENT OF MATHEMATICS — The Department of Mathematics anticipates several openings for tenured, tenure-eligible, and visiting faculty positions beginning fall 2010. The field is open, but we particularly seek applications from individuals whose mathematical interests would augment and build upon existing strengths both within the Mathematics Department as well as other departments in the University. Salary, teaching loads and start-up funds are competitive. For a Tenured Position the applicant should have an outstanding research reputation and would be expected to fill a leadership role in the department. An established research program, including success in attracting external funding and supervision of graduate students, and a demonstrated ability and interest in teaching are required. Informal inquiries are welcome. For an Assistant Professorship, we seek strong research potential and evidence of excellence in teaching. Research productivity beyond the doctoral dissertation will normally be expected. We also have several visiting positions available. Our Visiting Assistant Professor positions are three-year appointments and carry a three course per year teaching load. They are intended for those who have recently received their Ph.D. and preference will be given to mathematicians whose research interests are close to those of our regular faculty members. Senior Visiting Positions may be for a semester or one year period. A complete dossier should be received by December 15, 2009. Early applications are encouraged since the department will start the review process in October, 2009. Applicants should send the completed "AMS Application Cover Sheet", a vita, a summary statement of research and teaching experience, and arrange to have letters of recommendation sent to: Faculty Hiring, Department of Mathematics, Texas A&M University, College Station, Texas 77843-3368. Further information can be obtained from: http://www.math.tamu.edu/hiring. Texas A&M University is an equal opportunity employer. The University is dedicated to the goal of building a culturally diverse and pluralistic faculty and staff committed to teaching and working in a multicultural environment and strongly encourages applications from women, minorities, individuals with disabilities, and veterans. The University is responsive to the needs of dual career couples.

TUFTS UNIVERSITY — Term-limited Assistant Professorship — Applications are invited for a term-limited Assistant Professorship to begin September 1, 2010. The initial contract will be for one year, renewable for an additional two years. A Ph.D. in Mathematics, evidence of strong teaching, and promise of strong research are required, with a research focus on Geometric Group Theory and/or Low-Dimensional Topology. The successful candidate will be expected to teach two courses per semester, and to contribute to research within the department in the fields of Geometric Group Theory and Low-Dimensional Topology, and to participate in the weekly Geometric Group Theory and Topology seminar. Areas of research in the department include CAT(0) groups, Mapping Class Groups, and Hyperbolic 3-Manifolds. Applications should include a cover letter, curriculum vitae, research statement and teaching statement, which should all be submitted through www.mathjobs.org. If a recommender cannot submit online, we will accept signed PDF attachments sent to znitecki@tufts.edu, or paper letters mailed to GGTT Search Committee Chair, Department of Mathematics, Bromfield-Pearson Hall, Tufts University, Medford, MA 02155. Review of applications will begin on Dec. 15, 2009 and will continue until the position is filled. Tufts University is an Affirmative Action/Equal Opportunity employer. We are committed to increasing the diversity of our faculty. Members of underrepresented groups are strongly encouraged to apply.

TUFTS UNIVERSITY — Term-limited Assistant Professorship — Applications are invited for a term-limited Assistant Professorship to begin September 1, 2010. The initial contract will be for one year, renewable for an additional two years. A Ph. D. in Mathematics or a closely related field, evidence of strong teaching, and promise of strong research are required, with a research focus in computational methods for nonlinear inverse problems. The teaching load will be two courses per semester. The successful candidate will be expected to join current interdisciplinary research efforts focused on developing efficient and accurate mathematical and computational tools for solving large-scale nonlinear inverse problems, such as those that arise in biomedical and geophysical applications. Candidates with a background in computational PDEs are especially encouraged to apply, but candidates with experience in other areas related to nonlinear inverse problems will also be considered. Applications should include a cover letter, curriculum vitae, research statement and teaching statement, which should all be submitted through www.mathjobs.org. In addition, applicants should arrange for three letters of recommendation to be submitted through www.mathjobs.org. If a recommender cannot submit online, we will accept signed PDF attachments sent to Scott.MacLachlan@tufts.edu, or paper letters mailed to CIP Search Committee Chair, Department of Mathematics, Bromfield-Pearson Hall, Tufts University, Medford, MA 02155. Review of applications will begin on Dec. 15, 2009 and will continue until the position is filled. Tufts University is an Affirmative Action/Equal Opportunity employer. We are committed to increasing the diversity of our faculty. Members of underrepresented groups are strongly encouraged to apply.

UNIVERSITY OF CALIFORNIA, BERKELEY DEPARTMENT OF MATHEMATICS — FRG Postdoctoral Positions — We invite applications for a special (non-tenure-track) position, effective July 1, 2010. Applicants should have a recent Ph.D., or the equivalent, in algebra or logic or number theory. Preference will be given to applicants in the area of algebraic dynamics. This position is supported in part by the NSF through its Focused Research Group program. NSF requires that applicants be citizens, nationals or permanent residents of the United States, its territories and possessions. The term of this appointment is three years. It has no teaching requirement in the first year, and one course per semester in years 2 and 3. Some additional funds for research travel and other research expenses will be available. The applications must be submitted online via http://www.mathjobs.org and should include the AMS Cover Sheet and supporting documentation (cover letter, resume, publication list, research statement, and possibly a teaching statement). Applicants should ask three people to submit letters of evaluation via mathjobs.org. All letters of evaluation are subject to Berkeley campus policies on confidentiality of letters of evaluation, a summary of which can be found at http://math.berkeley.edu/employment_academic.html. Refer potential reviewers to the UC Berkeley statement of confidentiality found at: http://apo.chance.berkeley.edu/evalltr.html Applications must be submitted by January 12, 2010. Applications submitted after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer. The Department seeks candidates whose research, teaching, or service has prepared them to contribute to our commitment to diversity and inclusion in higher education.

UNIVERSITY OF CALIFORNIA, BERKELEY DEPARTMENT OF MATHEMATICS — Charles B. Morrey Jr. Assistant Professorships — We invite applications for these special (non-tenure-track) positions effective July 1, 2010. The terms of these appointments may range from two to three years. Applicants should have a recent Ph.D., or the equivalent, in an area of pure or applied mathematics. The applications must be submitted online via http://www.mathjobs.org and should include the AMS Cover Sheet and supporting documentation (cover letter, resume, publication list, research statement, and possibly a teaching statement). Applicants should ask three people to submit letters of evaluations via mathjobs.org. All letters of evaluation are subject to Berkeley campus policies on confidentiality of letters of evaluation, a summary of which can be found at http://math.berkeley.edu/employment_academic.html. Refer potential reviewers to the UC Berkeley statement of confidentiality found at: http://apo.chance.berkeley.edu/evalltr.html Applications must be submitted by January 12, 2010. Applications submitted after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer. The Department seeks candidates whose research, teaching, or service has prepared them to contribute to our commitment to diversity and inclusion in higher education.

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UNIVERSITY OF CALIFORNIA, BERKELEY DEPARTMENT OF MATHEMATICS — RTG Postdoctoral Positions — We invite applications for two special (non-tenure-track) positions, effective July 1, 2010. Applicants should have a recent Ph.D., or the equivalent, in pure mathematics. Preference will be given to applicants in the areas of topology, geometry, and operator algebras. These positions are supported in part by the NSF through its Research Training Group program. NSF requires that applicants be citizens, nationals or permanent residents of the United States, its territories and possessions. The term of these appointments is two years, with a third year likely, contingent on funding. They have a reduced teaching load of one course per semester. These appointments carry an additional stipend of $10,000 in each of the first two years for summer research, and up to $2,000 per year for travel and other research-related expenses. The applications must be submitted online via http://www.mathjobs.org and should include the AMS Cover Sheet and supporting documentation (cover letter, resume, publication list, research statement, and possibly a teaching statement). Applicants should ask three people to submit letters of evaluations via mathjobs.org. All letters of evaluation are subject to Berkeley campus policies on confidentiality of letters of evaluation, a summary of which can be found at http://math.berkeley.edu/employment_academic.html. Refer potential reviewers to the UC Berkeley statement of confidentiality found at: http://apo.chance.berkeley.edu/evalltr.html Applications must be submitted by January 12, 2010. Applications submitted after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer. The Department seeks candidates whose research, teaching, or service has prepared them to contribute to our commitment to diversity and inclusion in higher education.

UNIVERSITY OF CALIFORNIA, DAVIS — Post-Doc Positions In Mathematics — The Department of Mathematics at the University of California, Davis, is soliciting applications for a few post-doctoral positions starting July 1, 2010. The areas of specialization are open. To be considered for the Arthur J. Krener Assistant Professor position, the Department seeks applicants with excellent research potential in areas of faculty interest and effective teaching skills. Applicants are required to have completed their Ph.D. by the time of their appointment, but no earlier than July 1, 2006. The annual salary of this position is $52,350. The typical teaching load is 3 to 4 quarter-long courses. Arthur J. Krener appointments are renewable for a total of up to three years, assuming satisfactory performance in research and teaching. Applicants for the VIGRE Fellow position must be US citizens, nationals, or permanent residents and have received their Ph.D. no earlier than January 1, 2009. Applicants in all research areas are encouraged to apply. The current annual salary for VIGRE Fellows is $59,456. The typical teaching load is 2 to 3 quarter-long courses. VIGRE Fellow appointments are renewable for a total of up to three years, assuming satisfactory performance in research and teaching. Additional information about the Department may be found at http://math.ucdavis.edu/. Our postal address is Department of Mathematics, University of California, One Shields Avenue, Davis, CA 95616-8633. Applications will be accepted until the positions are filled. To guarantee full consideration, the application should be received by November 30, 2009. To apply: submit the AMS Cover Sheet and supporting documentation electronically through http://www.mathjobs.org/. UC Davis is an affirmative action/equal employment opportunity employer and is dedicated to recruiting a diverse faculty community. We welcome all qualified applicants to apply, including women, minorities, individuals with disabilities and veterans.

UNIVERSITY OF ILLINOIS AT CHICAGO, DEPARTMENT OF MATHEMATICS, STATISTICS AND COMPUTER SCIENCE — The Department has active research programs in a broad spectrum of centrally important areas of pure mathematics, computational and applied mathematics, combinatorics, mathematical computer science and scientific computing, probability and statistics, and mathematics education. See http://www.math.uic.edu for more information. Applications are invited for tenure track Assistant Professor or tenured Associate Professor positions, effective August 16, 2010. Preference will be given to applicants in statistics and related areas, but outstanding applicants in all specialties will be considered. Final authorization of the position is subject to the availability of state funding. Applicants must have a Ph.D. or equivalent degree in mathematics, computer science, statistics, mathematics education or related field, an outstanding research record, and evidence of strong teaching ability. The salary is negotiable. Send vita and at least three (3) letters of recommendation, clearly indicating the position being applied for, to: Appointments Committee; Dept. of Mathematics, Statistics, and Computer Science; University of Illinois at Chicago; 851 S. Morgan (m/c 249); Box T; Chicago, IL 60607. Applications through mathjobs.org are encouraged. No e-mail applications will be accepted. To ensure full consideration, materials must be received by November 16, 2009. However, we will continue considering candidates until all positions have been filled. Minorities, persons with disabilities, and women are particularly encouraged to apply. UIC is an AA/EOE.

UNIVERSITY OF ILLINOIS AT CHICAGO, DEPARTMENT OF MATHEMATICS, STATISTICS AND COMPUTER SCIENCE — The Department has active research programs in a broad spectrum of centrally important areas of pure mathematics, computational and applied mathematics, combinatorics, mathematical computer science and scientific computing, probability and statistics, and mathematics education. See http://www.math.uic.edu for more information. Applications are invited for the following position, effective August 16, 2010. Final authorization of the position is subject to the availability of state funding. Research Assistant Professorship. This is a non-tenure track position, normally renewable annually to a maximum of three years. This position carries a teaching responsibility of three courses per year, and the expectation that the incumbent play a significant role in the research life of the Department. The salary for AY 2009-2010 for this position is $54,500. Applicants must have a Ph.D. or equivalent degree in mathematics, computer science, statistics, mathematics education or related field, and evidence of outstanding research potential. Preference will be given to candidates in areas related to number theory or dynamical systems. Send vita and at least three (3) letters of recommendation, clearly indicating the position being applied for, to: Appointments Committee; Dept. of Mathematics, Statistics, and Computer Science; University of Illinois at Chicago; 851 S. Morgan (m/c 249); Box R; Chicago, IL 60607. Applications through mathjobs.org are encouraged. No e-mail applications will be accepted. To ensure full consideration, materials must be received by December 31, 2009. However, we will continue considering candidates until all positions have been filled. Minorities, persons with disabilities, and women are particularly encouraged to apply. UIC is an AA/EOE.

UNIVERSITY OF LOUISVILLE — Tenure-track Positions — The Department of Mathematics at the University of Louisville invites applications for two tenure-track positions at the Assistant Professor level beginning Fall 2010. Preference will be given to applicants in applied or computational areas of Combinatorics and Probability, but qualified applicants in other areas enhancing the department's PhD program in applied and industrial mathematics and complementing existing strengths, will be considered. The typical teaching load in the department is two courses per semester. Minimum qualifications for these positions include a Ph.D. degree, or its equivalent, in the Mathematical Sciences. Applicants with demonstrated strengths in research and teaching are encouraged to apply. The expectations include that the successful applicant will contribute fully to research and both undergraduate and graduate instruction, including courses for STEM majors, as well as mathematics courses for prospective elementary, middle and high school teachers. Review of applications will begin November 1, 2009. Applicants must apply on-line at www.louisville.edu/jobs. For the Combinatorics position use Job ID# 24408, for the Probability position use Job ID #24411 and submit your CV electronically. The following items need to be mailed in a hardcopy to the address below: (1) cover letter that clearly indicates the position name or the job ID number, summary of research interest and statement of teaching interests; (2) the AMS Standard Coversheet; and (3) curriculum vitae. Please have mailed directly at least four letters of recommendation which discuss at length your research and teaching qualifications to: Search Committee, Department of Mathematics, University of Louisville, Louisville, KY 40292. The University of Louisville is an Affirmative Action, Equal Opportunity, Americans with Disabilities Employer, committed to diversity and in that spirit, seeks applications from a broad variety of candidates. For more information about the position or institution please see: http://www.math.louisville.edu/

ADVERTISEMENTS

UNIVERSITY OF OKLAHOMA, DEPARTMENT OF MATHEMATICS — Tenure-Track Position — Applications are invited for one full-time, tenure-track position in mathematics beginning 16 August 2010. The position is initially budgeted at the assistant professor level, but an appointment at the associate professor level may be possible for an exceptional candidate with qualifications and experience appropriate to that rank. Normal duties consist of teaching two courses per semester, conducting research, and rendering service to the Department, University, and profession at a level appropriate to the faculty member's experience. The position requires an earned doctorate and research interests that are compatible with those of the existing faculty; preference will be given to applicants with potential or demonstrated excellence in research and prior successful undergraduate teaching experience. Salary and benefits are competitive. For full consideration, applicants should send a completed AMS cover sheet, curriculum vitae, a description of current and planned research, and have three letters of recommendation (at least one of which must address the applicant's teaching experience and proficiency) sent to: Search Committee, Department of Mathematics, The University of Oklahoma, 601 Elm, PHSC 423, Norman, OK 73019-0315 Phone: 405-325-6711 FAX: 405-325-7484 E-mail: search@math.ou.edu *Applications may also be submitted online through http://mathjobs.org Screening of applications will begin on November 15, 2009 and will continue until the position(s) is filled. The University of Oklahoma is an Equal Opportunity/Affirmative Action Employer. Women and Minorities are Encouraged to Apply.

UNIVERSITY OF TENNESSEE AT KNOXVILLE — The Mathematics Department at The University of Tennessee at Knoxville seeks to fill a postdoctoral position in any of the following fields: applied mathematics, computational mathematics, geometry, topology, probability, or differential equations. Candidates should have had their PhDs for no more than four years by September, 2009. Primary consideration will be given to candidates whose interests overlap with existing faculty. The position is a 9 month academic year appointment for three years, beginning August 1, 2010, and may not be extended. The teaching load for this position will be two courses per semester. The salary will be $50,000 per year. Evidence of potential for excellence in research and high quality teaching is required. Review of applications will begin January 1, 2010 and continue until the position is filled. The Knoxville campus of the University of Tennessee is seeking candidates who have the ability to contribute in meaningful ways to the diversity and intercultural goals of the University. Candidates should submit a curriculum vita, a description of their research accomplishments and plans, and a teaching statement. These documents as well as three letters of recommendation, at least one of which should address teaching, can be submitted any of the following ways: (1) by mail to Postdoctoral Search Committee, Department of Mathematics, University of Tennessee, Knoxville, TN 37996-0612, (2) by email to bmorgan@math.utk.edu, or (3) electronically at http://www.mathjobs.org/jobs (preferred). The University of Tennessee is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services. All qualified applicants will receive equal consideration for employment without regard to race, color, national origin, religion, sex, pregnancy, marital status, sexual orientation, gender identity, age, physical or mental disability, or covered veteran status.

WASHINGTON UNIVERSITY IN ST. LOUIS — Department: Mathematics; Employer Type: Academic; Type of Position: Tenure-Track Faculty; Subject Area: Mathematics; Geographic Location: Missouri; Application Deadline: None; Contact Person: David Wright Chair; Address: Department of Mathematics, Washington University, One Brookings Drive, Campus Box 1146, St. Louis, MO. 63130; E-mail Address:wright@math.wustl.edu. The Mathematics Department of Washington University in St. Louis, MO, is announcing two openings for tenure track Assistant Professors in pure mathematics, to begin August 2010. If exceptional senior candidates apply the department may be able to consider them. Responsibilities include teaching three one semester courses per year, maintaining a strong research program, and minor administrative duties. Applicants should have a Ph.D. in mathematics and should have research interests that complement those of our permanent faculty which include Algebra/Algebraic Geometry/Combinatorics, Differential Geometry/Topology, and Analysis. Applicants should provide their CV, publication list, research and teaching statements, and arrange for four to six letters of recommendations to be submitted, at least one of the letters reporting on the applicants teaching abilities. Applicants are encouraged to submit this material using the AMS mathjobs website (www.mathjobs.org/jobs); however it may be sent directly to the Chair, Department of Mathematics. The department will begin reviewing applications on October 20, 2009 and continue until the positions are filled. Washington University is an affirmative action/equal opportunity employer and specifically invites and encourages women and minorities to apply. Employment eligibility verification required on hire. For more information about the position or the department, visit www.math.wustl.edu.

WAYNE STATE UNIVERSITY, DEPARTMENT OF MATHEMATICS — Tenure-Track Position — The Department of Mathematics at Wayne State University invites applications for a possible tenure-track position, pending authorization, commencing in Fall, 2010. Qualified candidates from any area of mathematics are welcome to apply, but priority will be given to applicants in the research areas of analysis and algebra. Applications should include a signed, detailed vita, description of current research interests, and four letters of recommendation, one of which should address teaching. Solid evidence of teaching at the undergraduate level is preferred to a statement of teaching philosophy. There is also a possibility of a visiting position for the 2010-2011 academic year. A Ph.D. in mathematics or a related field and a strong interest in research and teaching are required for all positions. Applications received by December 1, 2009 will be given priority. Upon final approval, the position will be posted at https://jobs.wayne.edu. Applicants must apply online through this website. For further information in the meantime, please consult the department's website, http://www.math.wayne.edu. Wayne State University is an Equal Opportunity/Affirmative Action Employer. Women and members of underrepresented minority groups are especially encouraged to apply. Daniel Frohardt, Chair, Wayne State University, College of Liberal Arts and Sciences, Department of Mathematics Detroit, Michigan 48202 (313) 577-2479 (313) 577-7596 FAX

Association for Symbolic Logic
ASL Travel Awards

Student Travel Awards: The 2010 ASL North American Annual Meeting, 2010 ASL European Summer Meeting, and other ASL or ASL-Sponsored Meetings. The ASL will make available modest travel awards to graduate students in logic and (for the European Summer Meeting only) to recent Ph.D.'s so that they may attend the 2010 ASL North American Annual Meeting in Washington, D.C., or the 2010 ASL European Summer Meeting in Paris, France. Student members of the ASL also may apply for travel grants to other ASL or ASL-sponsored meetings. To be considered for a Travel Award, please (1) send a letter of application, and (2) ask your thesis supervisor to send a brief recommendation letter. The application letter should be brief (preferably one page) and should include: (1) your name; (2) your home institution; (3) your thesis supervisor's name; (4) a one-paragraph description of your studies and work in logic, and, in the case of an ASL student member application to attend an ASL or ASL-sponsored meeting other than the North American Annual Meeting or European Summer Meeting, a paragraph indicating why it is important to attend the meeting; (5) your estimate of the travel expenses you will incur; (6) (for citizens or residents of the USA) citizenship or visa status; and (7) (voluntary) indication of your gender and minority status. Women and members of minority groups are strongly encouraged to apply.

In addition to funds provided by the ASL, the program of travel grants is supported by a grant from the US National Science Foundation; NSF funds may be awarded only to students at USA universities and to citizens and permanent residents of the USA. Air travel paid for using NSF funds must be on a U.S. flag carrier. Application by email is encouraged; put "ASL travel application" in the subject line of your message.

For the 2010 ASL North American Annual Meeting, applications and recommendations should be received before the deadline of December 21, 2009, by the Program Chair: Reed Solomon, Department of Mathematics, University of Notre Dame, 255 Hurley Hall, Notre Dame, IN 46556-4618, USA; Fax: 1-574-631-6579; email: **solomon@math.uconn.edu**. Applications by email are preferred.

For the 2010 ASL European Summer Meeting, applications and recommendations should be received before the deadline of March 29, 2010 by the Organizing Committee. Applications and recommendations should be submitted online at **www.logic2010.org**.

For ASL student member travel grants to other ASL or ASL-sponsored meetings, applications and recommendations should be received at least three months prior to the meeting at the ASL Business Office: ASL, Box 742, Vassar College, 124 Raymond Avenue, Poughkeepsie, New York 12604, USA; Fax: 1-845-437-7830; email: **asl@vassar.edu**. Decisions will be communicated at least two months prior to the meeting.

For further information about these meetings, and other ASL and ASL-sponsored meetings, visit the ASL website at

https://aslonline.org/Meetings.htm

ASL, Box 742, Vassar College
124 Raymond Ave., Poughkeepsie, NY 12604
Email: **asl@vassar.edu**; Fax: 845-437-7830
Also visit the ASL website: **http://www.aslonline.org**.

AWM

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2009-2010 Individual Membership Form

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ASSOCIATION FOR WOMEN IN MATHEMATICS

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(703) 934-0163
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awm@awm-math.org

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

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

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