AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 35, Number 5 NEWSLETTER September–October 2005

President's Report

Workshops, Workshops

AWM is involved in a number of workshops each year. Some are recurrent (in fact periodic) events, like the workshops for graduate students and recent Ph.D.'s that take place at the Joint Mathematics Meetings in January and at the SIAM Annual Meeting in July. We have also held workshops that have different sorts of emphases. The concepts behind these different workshops typically emerge from some thoughtful suggestions or chance conversations. They include the recent workshop on careers in industry held in cooperation with the IMA and an upcoming workshop celebrating the legacy of Olga Ladyzhenskaya and Olga Oleinik, planned for next May at MSRI, and, of course, jointly organized with MSRI.

One of the best-received workshops organized by AWM was the event in memory of Ruth Michler that was held at the University of Maryland two years ago. "After Tenure: Women Mathematicians Taking a Leadership Role" was reported on enthusiastically by Carolyn Gordon in her president's report of March–April 2004:

> The energy ... was electric. Thirty "junior" participants (mostly recently tenured faculty) and a dozen "senior" participants discussed leadership from many different angles. Panel discussions addressed leadership within one's department (in particular, how to be an effective department chair), leadership in research and the professional societies, and the pros and cons of taking on leadership positions.... Through the use of fascinating case studies, we brainstormed on many types of issues such as how to handle inappropriate remarks in letters of recommendation for job candidates. Lloyd Douglas, Deborah Lockhart, and Henry Warchall of the National Science Foundation and Rosalie (Jackie) Smith and Michelle Wagner of NSA shared information about funding opportunities. Discussion groups addressed various leadership issues.... How inspiring it was to see so many young women mathematicians who are already moving into leadership positions in their departments or in the profession with remarkable skill and sensitivity!

IN THIS ISSUE

5 AWM-SIAM Workshop
9 Addressing Achievement Gaps
10 AWIS Conference
14 Book Review
16 Education Column

AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

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.

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.

Circulation: 4000. © 2005, AWM

EXECUTIVE COMMITTEE

President
Barbara Lee Keyfitz
Fields Institute
222 College Street, 2nd Floor
Toronto, Ontario
M5T 3J1 Canada
bkeyfitz@fields.utoronto.ca

Past President
Carolyn Gordon

Treasurer
Rebecca Herb

At-Large Members
Fern Y. Hunt
Krystyna Kuperberg
Helen Moore
Catherine A. Roberts
Ann Trenk

Clerk
Maura Mast

Meetings Coordinator
Bettye Anne Case; case@math.fsu.edu

Newsletter Editor
Anne Leggett; leggett@members.ams.org

Web Editor
Holly Gaff; hgaff@epi.umaryland.edu

This might be a good place to say that our hosts at these workshops contribute a generous amount of funding, as well as logistical support. The workshops mentioned in this article are enabled by funding from federal granting agencies; specifically, ONR and NSA fund the January workshops and ONR the July ones. And I have just returned from an event organized by the Committee on Women of the Canadian Mathematical Society, "Connecting Women in Mathematics Across Canada," or "CWiMAC." This was a two-day workshop at Banff aimed at women graduate students. AWM contributed to this workshop by funding travel costs for a couple of students from the US. I attended and gave a talk, about which more later.

Rather than give a report on the Banff conference or the recent SIAM workshop, both of which were excellent, well-organized and well-attended events, in this column I'd like to talk about the function of the workshops for graduate students and recent Ph.D.'s and why they are worthwhile, both for the junior participants and for the senior mentors who attend.

There is now a rather standard format: a typical workshop lasts for one to two and a half days and contains a mixture of plenary talks on mathematical topics or career histories, panel discussions focused on career experiences or on specific career development opportunities (such as grant proposal writing or academic administration), and shorter talks and posters, sometimes in parallel sessions.

The standard is to choose successful women scientists as plenary speakers. This attracts participants and gives them the benefit of meeting people who have been successful, in an informal atmosphere where the "stars" are expected to answer questions—even rather personal questions—in a friendly, confidential atmosphere. It also offers these speakers a unique opportunity, as it turns out, to give the sort of talk for which they might not otherwise have an audience: a talk about one's research area, and what attracted one to it, described in scientific terms suitable for a general audience. I was asked to give one of the talks at the Banff meeting, and in anticipation of addressing an audience of young women (especially young Canadian women), I reviewed my career and picked out the key points: the problems that got me excited about research, and the colleagues and mentors who had been important to my career. (In my case, the dominant conclusion was that I have been very lucky.) The other senior speaker at Banff, Neeza Thandi, holds a Ph.D. in mathematics and now works for Liberty Mutual Insurance. Her talk had two parts: first, how she decided to leave academia and build a career in the private sector; and, second, how mathematics is used in insurance. Neeza has an interesting position, as she works in a research department and uses quite sophisticated mathematics extensively in her work. In fact, in response to a question, she said that she is even encouraged to publish her results, as it is felt that the entire industry benefits when risk is better understood. At other workshops, such as the commemorative workshops AWM held for Julia Robinson and Olga Taussky Todd, speakers have given retrospective talks on the careers of these role models, again blending mathematical topics with life experiences and adding a

historical perspective. It is a certain amount of work to prepare a talk like this, so different from the standard colloquium or conference plenary talk, but the resulting stories add up to a particular and unique history of the achievements of women in mathematics. Some of these, from the earlier workshops, have been written down and assembled as part of the new book *Complexities: Women in Mathematics,* by Bettye Anne Case and Anne M. Leggett, editors.

The benefits to junior researchers in having an opportunity to present a twenty or thirty minute talk to a general audience are perhaps too obvious to dwell on at length, but they are worth listing. At the JMM and SIAM workshops, speakers are matched with mentors who are assigned to comment (in private) on their talks. Depending on the concerns of the mentor, this critique can range from comments on presentation style to suggestions for further research. In any case, it forms a connection between women of two different generations who might not otherwise have discovered each other. While many of these connections are brief and superficial, others have proved quite durable. In the Banff meeting, the junior speakers were graduate students; some were just beginning their research and presented nothing more than an outline, while others gave what could develop into creditable job talks. After one student's talk at Banff, I heard her advisor whisper to her, "There, now you see that you can give a talk." At the JMM and SIAM workshops, the talks are given by junior researchers within five years of obtaining their degrees. While these speakers have had some experience, the fact that the workshops are embedded in a much larger meeting also means that they may attract a larger audience. In both the recent sessions I attended, at SIAM and at Banff, one thing that impressed me was the young people's command of technology. One after another, they trooped up to the front of the room and connected their laptops to data projectors; then they presented beautifully organized, clear lectures. At the US workshops, graduate students are asked to present posters. The level of the posters has also been very high. Giving a poster is an art that used to be unknown in mathematics, so that most of us are quite incompetent to teach our students how to do it. I find that I am learning from the students in this. Talk or poster, the lesson of this part of the workshop is that communicating your results is important. It is being learned well.

MEMBERSHIP AND NEWSLETTER INFORMATION

Membership dues (Membership runs from Oct. 1 to Sept. 30)
Individual: $55 Family (no newsletter): $30
Contributing: $125 First year, retired, part-time: $30
Student, unemployed, developing nations: $20
Friend: $1000 Benefactor: $2500
All foreign memberships: $8 additional for postage
Dues in excess of $15 and all contributions are deductible from federal taxable income.
Institutional Members:
Level 1: $300
Level 2a or 2b: $175/$150
See www.awm-math.org for details on free ads, free student memberships, and ad discounts.
Affiliate Members: $250
Institutional Sponsors:
Friend: $1000+ Patron: $2500+
Benefactor: $5000+ Program Sponsor: $10,000+
See the AWM website for details.

Subscriptions and back orders
All members except family members receive a subscription to the newsletter as a privilege of membership. Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for $55/year ($63 foreign). Back orders are $10/issue plus shipping/handling ($5 minimum).

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

Newsletter ad information
AWM will accept advertisements for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership and other appropriate subjects. The Managing Director, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the* Newsletter *must be Affirmative Action/Equal Opportunity designated.* Institutional members receive discounts on ads; see the AWM website for details. For non-members, the rate is $100 for a basic four-line ad. Additional lines are $12 each. See the AWM website for *Newsletter* display ad rates.

Newsletter deadlines
Editorial: 24th of January, March, May, July, September, November
Ad: 1st of February, April, June, August, October, December

Addresses
Send all **Newsletter** material **except ads and material for book review and education columns** to Anne Leggett, Math Department, Loyola University, 6525 N. Sheridan Road, Chicago, IL 60626; e-mail: leggett@members.ams.org; phone: 773-508-3554; fax: 773-508-2123. Send all **book review** material to Marge Bayer, Math Department, University of Kansas, 405 Snow Hall, 1460 Jayhawk Boulevard, Lawrence, KS 66045-7523; e-mail: bayer@math.ku.edu; fax: 785-864-5255 and all **education column** material to Ginger Warfield, Math Department, University of Washington, Seattle, WA 98195; e-mail: warfield@math.washington.edu. Send everything else, **including ads and address changes**, to AWM, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030; phone: 703-934-0163; fax: 703-359-7562; e-mail: awm@awm-math.org.

AWM ONLINE

AWM Web Editor
Holly Gaff
hgaff@epi.umaryland.edu

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

Website and Online Forums
http://www.awm-math.org

AWM-Net Editor
Dianne O'Leary
oleary@cs.umd.edu

AWM-Net
To subscribe, send mail to awm-net-request@cs.umd.edu and include your e-mail address; AWM members only.

AWM DEADLINES

NSF-AWM Travel Grant:
October 1, 2005 and February 1, 2006

Schafer Prize, January 2006: October 1, 2005

AWM Essay Contest: October 24, 2005

Noether Lecturer nominations for 2007:
October 15, 2005

Kovalevsky Prize Lecture: November 1, 2005

AWM-SIAM Workshop: January 26, 2006

Sonia Kovalevsky High School
Mathematics Days: February 4, 2006

AWM OFFICE

Jennifer Lewis, Managing Director
Debra Fernandez, Membership Director

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

The other component of all the workshops in which AWM has been involved is a set of panel discussions. At their best, panel discussions offer a chance for interactive presentation of the issues facing women beginning their careers. A well-organized panel is also a good mechanism for transmitting information: for example, what do different federal agencies have in common, and how do they differ, in what they are looking for in grant applications. An interesting panel is also the most difficult component to organize of all that goes into a workshop. After watching and participating in a number of panels, I've concluded that a good panel should be focused enough that speakers stay on topic, but broad enough that more than one point of view can be presented. Good chemistry among the panelists is important, and so is the panelists' ability to empathize with the audience's potential concerns. A mixture of senior and junior panelists will contribute to a lively discussion, as will selecting panelists with different backgrounds or career paths. A strong moderator needs to be able to cut off discussion when it begins to flag and to sense good directions to steer the conversation. It's a good idea to prepare the panelists—perhaps even with a conference call—so that each knows where she will speak in the presentation order and what aspect of the topic is to be her particular focus. Assigning a discussant—one panelist whose job is to summarize or comment on the others' talks—can be a good mechanism for ensuring that there is an exchange of ideas. It seems to me that in the early workshops many panel discussions fell flat; recently they have become much more focused, lively, controversial and generally worthwhile.

Not every part of every workshop is equally important to all participants. I've omitted to mention the social events that are embedded in the activities. Some are formally organized, like lunches, dinners or coffee breaks; others seem to arise spontaneously as participants stay to chat at the conclusion of the formal program or go out together for a drink or a hike. Many of the junior researchers I've spoken to have identified the opportunity to meet their peers as the most valuable part of the workshop (leading one to wonder if we should just dispense with the talks and organize an AWM backpacking trip). One of the purposes of my column this month is to urge all readers, junior or senior, academic or industrial, overworked or underemployed, to participate in an AWM workshop. You will be glad you did.

Barbara L. Keyfitz
Toronto, Canada
July 25, 2005

AWM-SIAM Workshop in the Mardi Gras City

Renee Fister and Suzanne Lenhart, workshop organizers

The AWM workshop at the SIAM Annual Meeting in New Orleans was held on July 11–12, 2005. The workshop opened with a lunch that celebrated the new book *Complexities: Women in Mathematics* by Bettye Anne Case and Anne Leggett and published by Princeton University Press. Bettye Anne gave a presentation on the book and used many interesting photographs. Vickie Kearn of the Press provided table decorations that were enlargements of some of the book's photographs of women mathematicians. We all enjoyed the photographs and the camaraderie. Afterwards, we attended the Sonia Kovalevsky Lecture given by Ingrid Daubechies of Princeton University on "Superfast and (Super)Sparse Algorithms," which can be used to compute transforms from possibly incomplete data.

The presenters in our "Career Transitions" minisymposium spoke to a packed room. Betty Anne Case of Florida State University gave great advice on getting a job and then getting tenure. An interesting discussion about the "two-body" job-seeking problem followed. Thaleia Zariphopoulou from the University of Texas at Austin discussed the difficulties of working in a new interdisciplinary field—financial mathematics. Holly Gaff of the School of Medicine at the University of Maryland encouraged participants to persevere in spite of some unusual detours along career paths. She also reminded us to find positive aspects in any situation. Renee Fister and Suzanne Lenhart led a discussion about getting tenure and managing time.

The two minisymposia showcasing the work of recent Ph.D.'s and the poster presentations featured a variety of applications, ranging from epidemic systems to a collared dove model. Discontinuous Galerkin methods and numerical approximations of semigroups were just some of the numerical algorithms presented.

We would like to thank SIAM for including our workshop as an integral part of their meeting and to thank the Office for Naval Research for their funding support. We appreciate the contributions of the mentor volunteers. We were happy to meet Jennifer Lewis, our new AWM Managing Director.

Minisymposium: Differential Equations and Dynamical Systems Applications

Anna Ghazaryan, Ohio State University
Nonlinear Convective Instability of Fronts

Mihaela Predescu, Bentley College
Analysis of a Nonlinear System Linking Mosquito Breeding Sites and Community Intervention

Brandy Rapatski, College of William and Mary
Determining the Virulence of HVI-1 Epidemics

Irina Tikhonova, Institute for Theoretical and Experimental Biophysics
Biological Processes as a Key Factor of Complex Eocsystem Dynamics

Minisymposium: Optimization, Control and Numerical Methods

Erika Asano, University of Tennessee
An Integrodifferential Model for the Spread of the Eurasian Collared Dove in North America

Urmi Ghosh-Dastidar, New York City College of Technology
A Hybrid Method Combining Tabu and Fast Simulated Annealing for Global Optimization

Fengyan Li, University of South Carolina
Issues on the Implementation of the Locally Divergence-Free DGMs for Maxwell Equations on Triangular Meshes

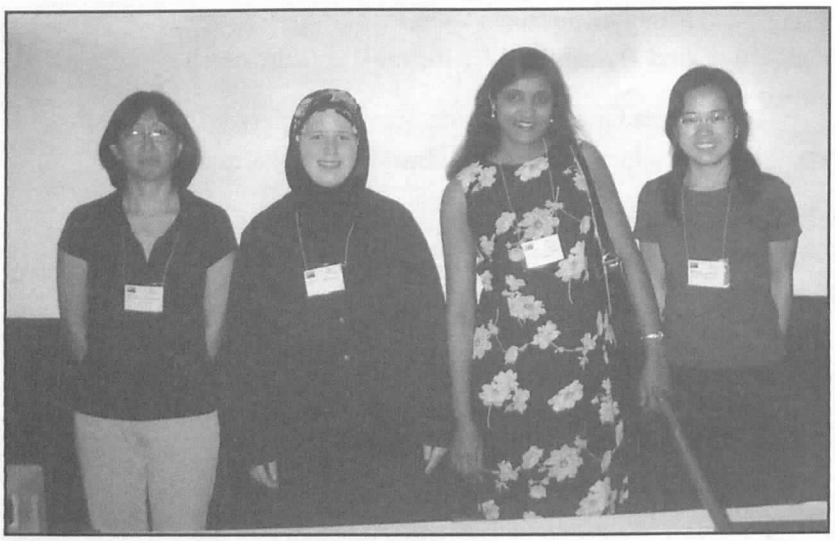
Sarah McAllister, Louisiana State University
Numerical Approximation of Semigroups

Posters

Erika Asano, University of Tennessee
Swinging Elements in a Parabolic Competition Model

Corina Constantinescu, Oregon State University
Asymptotic Decays in Ruin Theory

Wandi Ding, University of Tennessee
Optimal Control on Hybrid Systems Involving ODEs



Minisymposium "Optimization, Control, and Numerical Methods" speakers: Erika Asano (University of Tennessee), Sarah McAllister (Louisiana State University), Urmi Ghosh-Dastidar (New York City College of Technology), and Fengyan Li (University of South Carolina)

Minisymposium "Differential Equations and Dynamical Systems Applications" speakers: Brandy Rapatski (College of William and Mary), Mihaela Predescu (Bentley College), Anna Ghazaryan (Ohio State University), and Irina Tikhonova (Institute for Theoretical and Experimental Biophysics)

Holly Gaff (AWM Web Editor), Corina Constantinescu (Oregon State University) and Elsa Schaefer (Marymount University)

Mariya Ponomarenko, University of Minnesota
Error Estimates in Function Approximations by Artificial Neural Networks

Nicoleta Tarfulea, University of Minnesota
A Model for Individual and Collective Cell Movement in Early Stages of Tumor-Induced Angiogenesis

Kening Wang, University of South Carolina
Domain Decomposition Preconditioners for C^0 Interior Penalty Methods

Yan Zhao, Vanderbilt University
A Model for Strep Throat Infection

See pages 26–27 for more photos.

Women in Mathematics: The Legacy of Ladyzhenskaya and Oleinik

MSRI

May 18–20, 2006

Organized by: Susan Friedlander (Chair), Irene Gamba, Barbara Keyfitz and Krystyna Kuperberg

This workshop is jointly sponsored by the Association for Women in Mathematics and the Mathematical Sciences Research Institute (MSRI). As with previous AWM/MSRI workshops, this is a celebration of careers of women in mathematics, on this occasion those of Olga Ladyzhenskaya and Olga Oleinik. The seminal work of Ladyzhenskaya and Oleinik in PDE and physical applications has generated many fascinating developments in the US, Russia and throughout the world. Some of these developments will be discussed in lectures at the workshop. Experts in PDE, numerical analysis and mathematical fluid dynamics will lecture about their work which is in the spirit of the achievements of Ladyzhenskaya and Oleinik.

The primary goals of the celebration are to assist, encourage, and inspire the junior participants and to promote the achievements of women in mathematics. Talks and discussions by established mathematicians with careers in government, business, industry and academia will focus on contemporary issues of concern to young women. Senior participants will provide role models and offer mentoring to their younger colleagues. Featured lectures will showcase the research and other contributions of outstanding women in mathematics, from the honorees to the present; poster sessions will give junior participants an opportunity to present and discuss their work. There will be many opportunities during the three days of the conference to mix informally and to discuss research and career issues.

There will be two informal poster sessions of 60–90 minutes organized for the junior participants. These will be held in the late afternoons, and refreshments will be served. The presenters will be randomly assigned to a session, so that mathematical fields will be well mixed, and women in a particular field will have the opportunity when not standing by their own posters to browse related posters and interact with their peer group authors.

Panel presentations will be kept brief, so as to allow time for questions and discussion. Topics will include:

- How to choose a thesis advisor; the role of a thesis advisor, advice on what to strive for, and what to avoid, for advisor and advisee (note that both Ladyzhenskaya and Oleinik had many successful students).
- Good and bad postdoctoral positions. Opportunities for research at the various Institutes in the US and elsewhere; how to apply; what happens at workshops, short courses, and programs.
- The "two-body" problem and strategies for solving it. (One might note that Ladyzhenskaya and her husband Kiselev worked together and had joint papers even though they eventually separated.)
- Issues related to funding agencies: advice in preparing grant proposals; reviewing and being reviewed; the job of a rotator.
- How to "defend" one's research time from competing demands.
- Exploring an eventual move to administration.

A proposal for funding to support participants has been submitted to the National Security Agency; we anticipate that an award will be made in mid-Fall, 2005. Students, recent Ph.D.'s, and minorities are particularly encouraged to apply. Please send an email explaining your interest in the workshop along with your registration form. If you are a student, please also solicit a letter from a faculty advisor. Otherwise, submit a current vita or bibliography. Funding awards are made typically six weeks before the workshop begins. Requests received after that point will be considered only if additional funds become available.

If interested in this workshop, please register using the link on the web page www.msri.org/calendar/workshops/WorkshopInfo/328/show_workshop. If you wish to present a paper, please submit a title and abstract in the space provided. If support is needed, complete the application part of the registration form. Please register online by the deadline of **May 1, 2006** if possible. If you are applying for funding, the funding deadline is **March 25, 2006**. Please review the travel funding rules and airline travel reimbursement restrictions.

For further information, send e-mail to msri-workshops@msri.org or regular mail to: Women in Mathematics: The Legacy of Ladyzhenskaya and Oleinik, Mathematical Sciences Research Institute, 17 Gauss Way, Berkeley, CA 94720-5070.

AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

It's almost renewal time!

Please look for an invoice to arrive in your mail in early fall.

Call for Nominations: The 2006 Kovalevsky Prize Lecture

AWM and SIAM established the annual Sonia Kovalevsky Prize Lecture to highlight significant contributions of women to applied or computational mathematics. This lecture is given annually at the SIAM Annual Meeting. Sonia Kovalevsky, whose too-brief life spanned the second half of the nineteenth century, did path-breaking work in the then-emerging field of partial differential equations. She struggled against barriers to higher education for women, both in Russia and in Western Europe. In her lifetime, she won the Prix Bordin for her solution of a problem in mechanics, and her name is memorialized in the Cauchy-Kovalevsky theorem, which establishes existence in the analytic category for general nonlinear partial differential equations and develops the fundamental concept of characteristic surfaces.

The first award of the Kovalevsky Prize was made in 2003 to Linda R. Petzold. In 2004, Joyce R. McLaughlin won the prize; the 2005 winner is Ingrid Daubechies.

The lectureship may be awarded to anyone in the scientific or engineering community whose work highlights the achievements of women in applied or computational mathematics.

The nomination must be accompanied by a written justification and a citation of about 100 words that may be read when introducing the speaker. Nominations should be sent to the AWM office (*five* copies to: Kovalevsky Selection Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030; phone: 703/934-0163) or electronically to awm@awm-math.org, to arrive by **November 1, 2005**.

The awardee will be chosen by a selection committee consisting of two members of AWM and two members of SIAM. Please consult the award web pages www.siam.org/prizes/kovalevsky.htm and www.awm-math.org/kovalevskylectures.html for more details.

Addressing Achievement Gaps

Amy Cohen, Rutgers University

The conference "Addressing Achievement Gaps: The Progress and Challenges of Women and Girls in Education and Work" held May 4–5, 2005, on the ETS Campus, Princeton, NJ was co-sponsored by the Educational Testing Service, the American Association of University Women, and the National Council for Research on Women.

I summarize four talks that I suspect will be of the greatest interest to AWM members. I heard three of these and heard about the fourth from the speaker. Further information may be found on the ETS website www.ets.org.

Sue Rosser, Georgia Institute of Technology, sue.rosser@iac.gatech.edu

Rosser's presentation focused on problems and potential solutions for academic women. It was based primarily on research on 450 women, some with NSF POWRE grants and some with Clare Booth Luce Professorships. The first group tended to be at big research universities; the second, at smaller colleges. Results indicate some "positive changes in institutional policies and practices to increase satisfaction, retention, and success of women faculty."

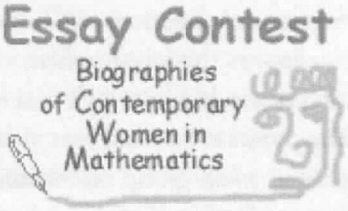
Additional information was based on the NSF funded ADVANCE project at Georgia Tech, which "is building upon the momentum of previous activities to support the full participation and advancement of women and to provide a model of best practices. In order to achieve these goals, Georgia Tech is examining a variety of issues, from promotion and tenure to family and work policies, and implementing change measures to ensure true progress."

Karen King, Michigan State University and NSF, kdking@math.msu.edu

King presented data on the participation of women and girls in mathematics-intensive course-work (both K–12 and post-secondary) and their reports of reasons for continuing or not. Her data led her to suggest that the "gap" is not so much in achievement as in interest and motivation. One particularly intriguing result was that female students tend to stop taking math and math-intensive courses when the courses they take stop "making sense"—for example, when the "rule" that (-1) times (-1) equals 1 is defended not with reasoning but with assertion of teacherly authority. [This thesis was taken up by the next speaker.]

Dylan Wiliam, ETS, dwiliam@ets.org

Wiliam challenged the body of work that sees sex differences in mathematical achievement as somehow innate and looks for the basis of these differences in brain physiology, child rearing, or teaching styles. Instead, he says that the size of these "measured differences in ability or achievement" depend very strongly on what the testers choose to call mathematics and thus choose to test.



To increase awareness of women's ongoing contributions to the mathematical sciences, the AWM is (*pending funding*) sponsoring an essay contest for biographies of contemporary women mathematicians and statisticians in academic, industrial, and government careers.

The essays will be based primarily on an interview with a woman currently working in a mathematical career. This contest is open to students in the following categories: **grades 6–8**, **grades 9–12**, and **undergraduate**. At least one winning entry will be chosen from each category. Winners will receive a prize, and their essays will be published online at the AWM website. Additionally, a grand prize winner will have his or her entry published in the AWM *Newsletter*. For more information, contact Dr. Victoria Howle (the contest organizer) at vehowle@sandia.gov or see the contest web page: www.awm-math.org/biographies/contest.html. The deadline for receipt of entries is **October 24, 2005**. *(To volunteer as an interview subject, contact Howle at the e-mail address given.)*

He distinguished two types of tests: those that ask almost exclusively for the results of mathematical procedures and those that ask for substantial evidence of understanding or reasoning as well as results of procedures. He says that for the second type of exam the difference between performance of males and females is notably less than it is for the first kind of exam. Since reasoning and understanding are crucial in "higher level" courses in math, it seems inappropriate (in designing admissions tests) to reward boys for using procedures that they may not understand while punishing girls who skip questions calling for procedures that they know they don't understand.

Lenore Blum, Carnegie Mellon University, lblum@cs.cmu.edu

Gender differences within computer science tend to decrease as the subject matter of the field becomes more diverse. In particular, extensive programming experience in high school and college is not a reliable indicator of broad intellectual interest or ability in undergraduate and graduate study of computer science. The focus of the AP Exam in "Computer Science" on programming may discourage women and mislead men about careers in computer science.

AWIS Conference on Women in Science and Engineering

Sharon Frechette, College of the Holy Cross

The Association for Women in Science (AWIS) held a national Conference on Women in Science and Engineering, June 23–24, 2005, at Smith College in Northampton, MA. Sponsors included ExxonMobil, the Ewing Marion Kauffman Foundation, and Ivan Allen College at the Georgia Institute of Technology. The program's focus was "building an agenda in support of women scientists and engineers achieving their full potential in their careers." The goals were threefold: 1) discuss recent progress in implementing the recommendations of the 1995 NSF Conference on Women in Science, 2) identify continuing hurdles affecting the progress of women's careers in the STEM disciplines, and 3) make specific recommendations on academic and corporate policies to support the advancement of women as they pursue scientific research, leadership, and entrepreneurship.

The program featured two plenary speakers, a panel discussion and small group discussions, and ample opportunities for women from many scientific disciplines and careers to socialize. My table companions at the opening dinner included a physicist and two mathematicians working in academe, an astronomer from the Maria Mitchell Association (www.mmo.org), and a chemist working in industry. Our conversation touched on issues such as what led us to pursue math and science as girls, what challenges we've faced in our careers, and what makes a successful scientist. In her welcoming remarks, Dr. Carol Christ, President of Smith College, noted the common goals shared by AWIS and Smith College. Smith has continued its commitment to expanding its leadership in science and engineering education, with a new science complex slated to begin construction in 2007. Dr. Christ stressed the need for such commitment to the future of women in science and applauded the efforts of AWIS.

Following dinner, AWIS President Betty Ivey offered statistics on the percentage of women graduating with degrees in science and working on the faculty at US universities and colleges. At the undergraduate level, women earn over 50% of degrees awarded in biology and psychology, although less than 20% of degrees in physics and engineering go to women. Women comprise only 14% of the faculty at large research institutions and 22% at undergraduate institutions. (For more details, see www.awis.org/resource/statistics.html, where AWIS posts numerous statistics concerning women in science.) Ivey posed the question "How can these numbers be improved?" and charged us with focusing on strategies for change.

The keynote speaker was Dr. Shirley Ann Jackson, President of Rensselaer Polytechnic Institute (RPI). (The full text of Jackson's speech is available at www.rpi.edu/president/speeches/ps062305-awis.html.) Jackson opened with comments about women's membership in the National Academy of Sciences. This year, NAS elected a record 19 new women members, evidence of its growing desire to elect more diverse members. Jackson gave examples of women at

elite levels of scientific achievement, including biologist Claire Fraser, President and Director of The Institute for Genomic Research; electrical engineer and astronaut Ellen Ochoa, Deputy Director of Flight Crew Operations at the Johnson Space Center; and the presidents of leading research universities such as Princeton and MIT. However, despite such remarkable gains, the numbers indicate that there is still great disparity. The percentage of women science faculty at research universities is still well below the percentage of women earning doctoral degrees in the sciences, indicating a persistent need to strengthen the pipeline for women in science. Jackson challenged us to think about this in the framework of a larger concern she terms the "Quiet Crisis." To continue as a global leader in science and technology, the US must maintain the necessary critical mass of highly qualified scientists and engineers. Women and underrepresented groups now comprise a majority of those at the early stages of their academic careers, and this talent pool of potential young scientists must be more effectively tapped. Jackson emphasized the vital need to mentor and encourage such students, especially during the critical middle school years, in order to keep them in the science pipeline and ensure their success.

Jackson went on to discuss the BEST initiative (Building Engineering and Science Talent), which she stewarded during her tenure as president of the American Association for the Advancement of Science (AAAS). This initiative created panels to seek out, and examine the practices of, those programs most effective in building a diverse science base. This resulted in specific recommendations for educational, corporate, and community-based initiatives, both to bolster these successful programs and to expand their best practices on a broad scale. The principles BEST identified in successful programs in higher education include: institutional leadership, targeted recruitment, engaged faculty, peer support, and enriched research opportunities. (For details, see www.bestworkforce.org/index.htm.) In addition to these key elements, Jackson stressed the fundamental importance of recognition for the contributions of women scientists and of encouraging young women not to impose their own "glass ceilings." She made reference to a scene in Sue Monk Kidd's bestseller *The Secret Life of Bees.* In this scene, the bees that Lily keeps in a glass jar in her room refuse to leave the jar, even when the lid is opened. They have become conditioned to life in the jar and cannot conceive of anything different. Jackson spoke of the need for young women to see unlimited possibilities for themselves and their futures in science. She also stressed that change must be brought about by action, and vigilance, in challenging women to reach their full potential.

At breakfast in the dining hall, we had another chance to socialize, discussing our own experiences and those of other women in science at our home institutions. Issues included the difficulty in obtaining grants, the challenges of meeting work responsibilities due to childcare constraints, some distressing trends in enrollments of women in science programs (particularly in computer science and engineering), and the pros and cons of the tenure system. Our plenary speaker for the morning session was Dr. Rita Colwell, former Director of the National Science Foundation, and Distinguished University Professor at the University of Maryland. Colwell also began her talk with inspiring portraits of women pioneers in science, including Barbara McClintock, a Nobel Prize winner for "her discovery of mobile genetic elements"; Alice Evans, recognized for her studies on understanding the bacterial contamination of milk; and lastly, the women who programmed the ENIAC, the first all-electronic digital computer. Colwell went on to discuss barriers to the advancement of women in science, including a science proficiency gap between boys and girls that begins to widen as early as grades 4–8, when societal pressures cause girls to opt out of science. In Colwell's opinion, "Mathematics is the single most important factor leading to a career in science and engineering." She particularly stressed the role of algebra and geometry as the "gatekeeper classes" and the need for these to be mandatory for all students. Colwell noted that the common language of mathematics enables advances across all scientific disciplines. She discussed the reliance of our country on overseas talent in mathematics and the urgent need to recruit and retain more US students in mathematics. Colwell applauded creative efforts to keep girls "hooked" on math and science, such as the creation of *The Adventures of Josie True* (www.josietrue.com), a free web-based adventure game for girls. She also noted the importance of the numerous responses to Lawrence Summers' remarks, including a recent *Washington Post* article, "A Woman's Place in the Cosmos," highlighting the responses of astronomer Vera Rubin, among others

(www.washingtonpost.com/wp-dyn/articles/A42271-2005Mar16.html). Using several examples, Colwell stressed the increasing intersection between scientific fields and the crucial nature of interdisciplinary work. She discussed the importance of both reductionism and integration in understanding scientific problems, providing an illustration from her own research on the spread of cholera in Bangladesh. A correlation was found between a rise in sea surface temperature and a significant rise approximately eight weeks later in the recorded number of cholera cases. Using satellite imagery, the time and location of epidemics could then be predicted. Colwell's research also showed that the filtering of water using old sari cloth provides a 50% reduction in the number of cholera cases, thus offering a low-tech solution to a problem identified using high-tech means.

The morning program's panel discussion included presentations by Margaret Ashida, Director of University Talent Programs at IBM; Liane Pedersen-Gallegos, Director of Ethnography & Evaluation Research at the University of Colorado; and Marianne Hudson, Director of Entrepreneurship at the Ewing Marion Kauffman Foundation. Ashida spoke about her work as a member of IBM's Women in Technology Executive Advisory Committee, identifying objectives for recruiting and retaining women in the scientific workforce at IBM, and more generally, for encouraging young girls to pursue science. She discussed the issues of "opting out" or "being opted out" that lead to the marginalization of women and the importance of collaboration at all levels to reduce or reverse this effect. Her main message was to "reach back and pull through" to ensure the success of the next generation of women scientists by becoming involved in programs at your university or workplace or in your local community. Pederson-Gallegos spoke about the Research Associate (RA) career path at the University of Colorado at Boulder. The RA positions are grant funded, non-tenure-track positions, the majority of which are held by women. Through an in-depth study involving 50 RAs, Pederson-Gallegos has sought to identify the factors that contribute to women leaving the tenure-track pipeline, either by choice or by necessity. This study is part of an NSF ADVANCE grant through the LEAP program (Leadership Education for Advancement and Promotion).

Hudson gave an overview of the goals of the Kauffman Foundation (www.kauffman.org), a Kansas City–based foundation providing grants to foster entrepreneurship and advances in education throughout the country. She noted that innovative businesses, particularly those with a science and technology base, are some of the strongest contributors to the nation's economy. The percentage of women-owned businesses has leapt from around 5% in 1970 to around 30% in 2003. Despite this progress, Hudson pointed to continuing barriers to the growth of women-owned

Call for Nominations: Alice T. Schafer Mathematics Prize

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schafer Mathematics Prize to be awarded to an undergraduate woman for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize. The nominee may be at any level in her undergraduate career, but must be an undergraduate as of October 1, 2004. She must either be a US citizen or have a school address in the US. The sixteenth annual Schafer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in San Antonio, Texas, January 2006.

The letter of nomination should include, but is not limited to, an evaluation of the nominee on the following criteria: quality of performance in advanced mathematics courses and special programs, demonstration of real interest in mathematics, ability for independent work in mathematics, and performance in mathematical competitions at the local or national level, if any.

With letter of nomination, please include a copy of transcripts and indicate undergraduate level. Any additional supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, recommendation letters from professors, colleagues, etc.) should be enclosed with the nomination. Send *five* complete copies of nominations for this award to: The Alice T. Schafer Award Selection Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. Nominations must be received by **October 1, 2005**. If you have questions, phone 703-934-0163, e-mail awm@awm-math.org, or visit www.awm-math.org. Nominations via e-mail or fax will not be accepted.

businesses, such as limited access to venture capital. She also noted that the businesses which tend to grow to much larger scales are those based in the STEM disciplines and that there are fewer women-owned businesses of this type. She discussed Kauffman's role in raising awareness about entrepreneurship among young women at the early stages of their academic careers. In partnership with Disney Online, Kauffman introduced the "Opportunity City" interactive exhibit at Epcot Center's INNOVENTIONS pavilion; at the college level, Kauffman has awarded $25 million in competitive grants to fund collegiate entrepreneurship initiatives at eight university campuses nationwide. Hudson stressed the importance of women entrepreneurs such as Helen Greiner, co-founder of iRobot, in helping to build and sustain the pipeline, especially in the development of science-based companies.

As the final component of the conference program, we participated in small group discussion sections during lunch. Each group was charged with particular questions on which to focus. I participated in one of the four academic groups, discussing the following: "What are the structural barriers to the promotion and advancement of women faculty? What actions can administrators take to address these barriers?" Our group included faculty members at all stages of their careers, as well as college and university administrators. We noted a wide range of barriers, including the two-body problem, the lack of formal mentoring systems, the inflexibility of the tenure system, the increasing requirements for achieving tenure, the unwillingness/inability to take full advantage of things such as parental leave, and both real and perceived bias against women in teaching evaluations, awards, and promotions. Our recommendations included such things as instituting half-time tenure-track positions, targeting recruitment of graduate students and post-docs from underrepresented groups, implementing mentoring committees for all junior faculty, and offering the option to delay the tenure clock to all faculty as part of parental leave. Our conclusions, along with those from the other seven groups, were given in reports to the large group during the final afternoon session. These recommendations will become part of the AWIS conference report, to be posted in the near future at www.awis.org/conferencereport.html.

To become an AWIS member or to find out more about AWIS resources, activities, and upcoming events, please see www.awis.org. AWIS has local chapters and offers both institutional and corporate memberships. Please join your local chapter and get involved!

Call for Nominations: The 2007 Noether Lecture

AWM established the Emmy Noether Lectures to honor women who have made fundamental and sustained contributions to the mathematical sciences. This one-hour expository lecture is presented at the Joint Mathematics Meetings each January. Emmy Noether was one of the great mathematicians of her time, someone who worked and struggled for what she loved and believed in. Her life and work remain a tremendous inspiration.

The mathematicians who have given the Noether lectures in the past are: Jessie MacWilliams, Olga Taussky Todd, Julia Robinson, Cathleen Morawetz, Mary Ellen Rudin, Jane Cronin Scanlon, Yvonne Choquet-Bruhat, Joan Birman, Karen Uhlenbeck, Mary Wheeler, Bhama Srinivasan, Alexandra Bellow, Nancy Kopell, Linda Keen, Lesley Sibner, Ol'ga Ladyzhenskaya, Judith Sally, Olga Oleinik, Linda Rothschild, Dusa McDuff, Krystyna Kuperberg, Margaret Wright, Sun-Yung Alice Chang, Lenore Blum, Jean Taylor, Svetlana Katok, and Lai-Sang Young.

The letter of nomination should include a one-page outline of the nominee's contribution to mathematics, giving four of her most important papers and other relevant information. *Five* copies of nominations should be sent by **October 15, 2005** to: The Noether Lecture Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. If you have questions, phone 703-934-0163 or e-mail awm@awm-math.org. Nominations via e-mail or fax will not be accepted.

Book Review

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

Sophie's Diary. A Historical Fiction. Dora Musielak, Author House, Bloomington, IN 2004, ISBN 1418408115, iv+258 pp.

Reviewer: Erin Carmody, University of Kansas

Set during the heat of the French Revolution, *Sophie's Diary* is a historically based novel inspired by the life of the young Sophie Germain. The author, Dora Musielak, tells of Sophie's experiences through a fictional diary. The first diary entry is April 1, 1789, Sophie's 13th birthday. Sophie's new diary tells not of her love interests or quarrels with friends, but of the history of mathematics and the political struggles in France. As she relates famous stories about important mathematicians, she gives a day to day account of the developing French Revolution. The revolution confines Sophie and her family to their house, where Sophie writes in her diary. Sophie studies mathematics mostly at night by candlelight. Sophie's disapproving mother takes away her candles so that she cannot stay up all night to work on math problems. When a close friend of her mother, Madame de Maillard, openly supports Sophie's interest in mathematics and appreciates her talent, her mother is more accepting. She gives Sophie back her candles. From here we see Sophie rapidly progress mathematically, while the streets of Paris fall into violence. The novel ends with the last entry dated April 1, 1793, Sophie's 17th birthday.

A fictional diary is the most appropriate mode for telling this story. Ages 13 through 17 seem to be diary years. Diary formatted books are popular with girls in this age range, and for me this was about the age when I wrote in a diary almost daily. Through the diary we get information that could only be written by Sophie herself. The character Sophie is shy and lives during a time when a girl studying mathematics is not widely accepted. Most importantly, all of Sophie's math lessons are self taught. She has virtually no mathematical outlet, no one to look at her proofs or to teach her new methods. This diary becomes her textbook, a compilation of all that she has learned. Also, this diary is a recording of the events of a political revolution. Here the diary format is important for keeping track of landmark moments in history. The relationship between the mathematical and historical content is this: the more violent the revolution, the more Sophie turns to mathematics. The diary allows Sophie to write out her mathematics formally and to express her feelings openly. For the reader, it gives a simple organized account of someone being turned on to mathematics and a historically accurate timeline of the French Revolution.

The many math topics covered in this novel are presented historically. Sophie's interest in mathematics is sparked by reading a book called *History of Mathematics* she finds in her father's library. In this book she learns about Archimedes, Pythagoras, and Hypatia, among others. She studies algebra from *Arithmetica* by Diophantus. She solves linear and quadratic equations and uses algebra to solve word problems. Soon Sophie understands what it means to write a proof. For instance, she writes a complete proof in her diary that the square root of two is irrational. She is intrigued by prime numbers and proves that there are infinitely many of them. She explores conjectures that give formulas for generating prime numbers and shows where they fail, and wonders if there is a true formula for producing primes or if she could discover it. The four-year diary contains much mathematics; by the time she is seventeen Sophie is learning calculus. Almost all of her learning comes from the books she finds in her father's library or from books given to her by those who support her interest in math. For instance, Madame de Maillard gives Sophie a copy of *Thoughts* by Pascal. On another occasion Sophie is delighted to receive a package from Marquis de Condorcet (a friend of her father) containing Euler's *Introduction to Analysis of the Infinite.* This is not just a book about a girl who is interested in math, this is a book about math. Sophie does not just say she is interested in Fibonacci numbers, but considers the original problem posed by Fermat and explores the sequence thoughtfully. *Sophie's Diary* captures the excitement of understanding a new idea and the beauty of a rigorous proof.

Included in the book is a short biography of the real Sophie Germain and a timeline highlighting the important events in her life. The span of time covered by the diary is

small relative to the life of Sophie Germain. Many of the biography's details are expanded upon in the novel. In the diary Sophie is introduced to the writings of Joseph-Louis Lagrange when she receives *Analytical Mechanics* from Madame de Maillard. In real life, Sophie Germain corresponded with Lagrange and sent a paper to him using the pseudonym "M. LeBlanc." In the story, Sophie has a friend named Antoine-August LeBlanc with whom she discusses mathematics; she asks him to send her his lecture notes from his math classes. It is often noted in her biographies that she somehow received lecture notes from classes she did not attend. In the story Antoine LeBlanc is both a mathematical contact for Sophie and a symbol of the arrogance of some men at that time when faced with a woman as talented as Sophie. We know that the real Sophie Germain lived through the Revolution and that her family had some money. The story spends much time discussing the political views of Sophie's mother and father. Differing opinions of the Revolution are discussed in the novel, from the radical views of some of her father's friends to the loyalist view of her mother. Sophie's opinion remains moderate as she considers both sides, though she clearly opposes the killing of Louis XVI. Much of the novel is about the French Revolution, and by the end I was as interested in the revolution as the mathematics.

The mathematical and historical detail make reading *Sophie's Diary* very much a learning experience.... The struggles and accomplishments of Sophie would be enjoyable for a younger audience, particularly for a young woman interested in math or history.

The biography gives the impression that Sophie wants to be accepted by the scientific community. The novel has Sophie saying explicitly that she wants to be recognized for her talent, she wants to be a mathematician. Also, in the biography the author wonders how Sophie would have the confidence to write to Lagrange or Gauss. The novel creates a character that is surprisingly confident in her work and deeply committed to mathematics. When reading the story there is hope that Sophie will someday be admitted to a university or that she will have a tutor who will recognize her talent. But Sophie Germain never has a formal math lesson and progresses only because she teaches herself. There is some satisfaction in reading that she does gain the recognition of some prominent mathematicians and physicists for her work, such as Joseph Fourier and Carl Friedrich Gauss. We can only imagine what she might have done given the tools other mathematicians of her time had, or at least a formal education.

This book is enjoyable in its details. Several times Sophie guides the reader through a proof and provides comments about how she figured it out or where she saw the proof and what it means to her. We read about the structure of family life, how they celebrate the holidays, and how they interact with each other. Sophie listens to her parents and their friends discuss politics and religion. She gives the reader a glimpse of the conflicting opinions regarding the government of France at that time. Also, the reader can see growth in Sophie. She starts as a child interested in mathematics and leaves a mathematician. She forms new opinions about equal rights for women and the radicals of the revolution. Sophie also starts developing a personal philosophy; she makes connections between beauty and mathematics and wonders about the existence of a god.

The character Sophie Germain used mathematics to create brightness in her world, which was so affected by the revolution. The violence outside kept Sophie confined to the house, a place where her sisters could find relief in housekeeping, but where Sophie turned to the world of mathematics. The character Sophie is independent, thoughtful, obviously intelligent and confident, yet searching for validation. The real Sophie Germain seemed to have possessed these same qualities, though one need not know about the real Sophie Germain to enjoy this story. I appreciate the broad and accurate mathematical content of this book and think it could serve as a basis for a history of math course which explores new ideas when Sophie does. The mathematical and historical detail make reading this book very much a learning experience; indeed an index would be a useful addition for this reason. The struggles and accomplishments of Sophie would be enjoyable for a younger audience, particularly for a young woman interested in math or history.

Education Column

Column Editor: Ginger Warfield, Department of Mathematics, University of Washington, Seattle, WA 98195; warfield@math.washington.edu

For the past few weeks I have been playing with a metaphor. It keeps evolving, and each evolution produces a new bit of insight. Possibilities for further evolution still glimmer enticingly, but sundry deadlines are staring at me, so I think the time has come to renounce ownership and turn the metaphor over to you all for further development.

Actually, before renouncing ownership, I should admit to not having been the owner in the first place. The metaphor originated with my friend and colleague Guy Brousseau. He and I have been working on a series of papers about the teaching of rational numbers and decimals. In the seventies Guy led a team of researchers in Didactique in producing a sequence of Situations covering all of the material on rational numbers and decimals that the French National Program required, and his wife Nadine led a team of fourth grade teachers in helping to develop the Situations and teaching with them. The Situations on whose description we are currently working induced the students to develop decimal numbers by taking the whole class through a collection of games for which non-decimal rational numbers could be used but were extremely cumbersome. The end results were highly successful—most of the students finished with a solid understanding of decimal numbers—but the process presented a heavy challenge for both the class and the teacher. Inevitably, this leads to the question: why put them through so much? What are they learning during the long stage in the middle of the process when the whole class is struggling together and not even the brightest of them can see where they are going? To respond to this, Guy came up with a metaphor involving a child learning to play rugby.

Guy's central image is that of the learning done in a neighborhood pick-up game. All you need to know to join in is that you have to help get the ball to a particular end of the field and that you should neither cry nor sock somebody if they get it away from you. What you then have is a bunch of kids working together towards the joint achievement of getting the ball into the goal. Some of the team members, by talent or prior experience, play a larger part than others in that achievement, but the triumph and the score belong to the whole team, and all of the members are learning from each other as they go. By the same token, students who are put in a Situation where they work as a whole class to achieve a mathematical goal can all make some contributions, share in the excitement of achieving the goal, and learn from each other as they do so. The only difference is that one set is doing rugby and the other is doing math.

For my own purposes, I converted the metaphor to soccer. It's the only sport in which I can claim some expertise (I know, for instance, that the most stressful position on the field is mother of the goalie). I then tossed in a bit of coaching at the youth soccer level and found some new parallels. One was in the matter of skill drill. Clearly, any player can benefit from practicing the art of controlling the ball while running down the field, or trapping a pass, or shooting on goal. Equally clearly, if every minute of soccer time turns into running figure-eights around a pair of cones the level of team enthusiasm is going to dwindle pretty rapidly. There needs to be a balance between time spent drilling and time spent playing, having fun and discovering where the results of the drills can be used. The coach who can find that balance will have a team that progresses rapidly and keeps wanting to progress more. Does that sound familiar?

Moving on from there, I came to yet another of our tough issues: assessment. I refuse even to think about imposing grading on a youth soccer coach, but suppose for instance that some players are being sought for a select team. Certainly the selection process should include some evaluation of skills. On the other hand, if the assessment is made entirely on the basis of ability to control the ball, then the select team is going to miss out entirely on little Johnny, who is not too swift on his feet but somehow always manages to be in the right position to block a breakaway run by the striker, or Suzy, whose dribbling still needs some work, but who always seems to know who is open for a pass when she needs to get rid of the ball. Again it is a question of balance, this time complicated by the fact that it is a lot easier to test for skills than it is to assess the far more vague issue of understanding of the game itself.

There are some other metaphorizable aspects in there that I haven't managed to follow up on yet. For instance, there is the question of how to keep players passing to everyone on the team, and not just to the player they've all decided is Superman or Superwoman. There is also the matter of keeping the weaker players from getting discouraged and quitting, by finding ways to encourage them that don't involve false praise.

Cogitating on generalizations of that last aspect led me into thinking about how much I have learned about teaching from the wonderful director of my Medieval Women's Choir. But that's another metaphor altogether!

Gender Differences in the Careers of Academic Scientists and Engineers

National Science Foundation, Division of Science Resources Statistics, Gender Differences in the Careers of Academic Scientists and Engineers, NSF 04-323, *Project Officer, Alan I. Rapoport (Arlington, VA, 2004). For the full report, see* www.nsf.gov/statistics/nsf04323/.

Summary of Findings

We find evidence that female scientists and engineers are less successful than their male counterparts in traveling along the academic career path. Some of this disparity appears to be related to differences between the sexes in the influence of family characteristics. Typically, married women and women with children are less successful than men who are married and have children. Our estimates of gender differences in success rates are relatively insensitive to characteristics of academic employers and to primary work activity. Below, we summarize our findings for each of the career outcomes examined in this study.

Tenure-Track Placement

After accounting for controls, women with eight or nine years of postdoctoral experience who are employed full-time in academia are about 3.3 percentage points less likely than men to be employed in tenure-track positions. The comparable estimate for women with 14 or 15 years of experience is about 4.5 percentage points. If we allow for gender differences in the influence of family characteristics, gender differences in tenure-track placements are statistically insignificant. Our estimates suggest that being married or having children reduces women's chances to be employed in tenure-track positions relative to men who are married or have children.

Tenure

In Phase I of the analysis we examined gender differences in tenure rates for individuals with specific levels of postdoctoral experience. The findings that follow are based on the results of this analysis.

After accounting for controls, women with eight or nine years of postdoctoral experience who are employed full time in academia are about 6.9 percentage points less likely than men to be tenured. The comparable estimate for women with 14 or 15 years of experience is about 8.5 percentage points. When we restrict our analysis to tenure-track positions only, women with eight or nine years of postdoctoral experience are about 5.9 percentage points less likely than men to be tenured. The comparable estimate for women with 14 or 15 years of experience is about 4.1 percentage points.

Our analysis suggests that women's chances for earning tenure are related to the influence of family characteristics. In most of the models we estimated, gender differences in tenure rates are statistically insignificant when we allow for gender differences in the influence of family characteristics. Having young children later in their careers is positively related to women's chances for earning tenure. We interpret this as indirect evidence suggesting that women who do not have children early in their careers increase their chances for earning tenure.

The Phase II tenure analysis estimated gender differences in the likelihood of doctorate recipients earning tenure at any given time in their careers. For the most part, the results of our Phase II tenure analysis are consistent with the findings reported above for Phase I. After accounting for controls, women are less likely than men to be tenured, and, if we allow for gender differences in the influence of family

characteristics, gender differences in the probability of being tenured are statistically insignificant.

Academic Rank

Our Phase I analysis examined the likelihood that individuals will be employed in any one of three different academic ranks—junior, associate professor, and full professor—at specific points in their postdoctoral careers.

We found that, after accounting for controls, women with 14 or 15 years of postdoctoral experience who are employed full-time in academia are about 8 percentage points more likely than men to be employed in junior ranks. The estimate for women with 20 or 21 years of postdoctoral experience is similar. After accounting for controls, women with 14 or 15 years of postdoctoral experience who are employed full-time in academia are almost 14 percentage points less likely than men to be employed at the rank of full professor. The comparable estimate for women with 20 or 21 years of postdoctoral experience is similar. Our analysis suggests some of the gender differences in academic rank are related to differential influences of family characteristics. For example, if we allow for gender differences in the influence of family variables, the relative difference in employment at the full-professor rank for full-time academicians with 20 or 21 years of postdoctoral experience falls to about 7 percentage points, but it remains statistically significant. Gender differences in academic rank decline if we exclude from our samples doctorate recipients who reported employment in non-tenure-track positions. This finding is consistent with our Phase I tenure analysis, which shows that women are more likely than men to be employed in these positions.

The Phase II rank analysis estimated differences between women and men in the likelihood of doctorate recipients holding either the associate- or full-professor rank at any given time in their postdoctoral careers. Most of our Phase II findings are consistent with the results of our Phase I rank analysis. The Phase II rank analysis indicates that, after accounting for controls, women are less likely than men to be promoted to senior ranks. We also find that after allowing for gender differences in the influence of family characteristics, gender differences in promotions to the full-professor rank are statistically insignificant. We are concerned, however, that the data we used in our Phase II analysis overstate the relative amount of time it takes men to earn promotions, causing us to understate gender differences in promotion rates in the Phase II analyses.*

Directions for Future Research

This study focuses on gender differences for a limited set of career outcomes, but the available data are suited to address several other important questions about the academic careers of female scientists and engineers. These include such questions as whether among scientists and engineers women are more or less likely than men to take academic jobs, take part-time employment in academia, or remain in academia, especially after failing to receive tenure and promotions, and whether women face greater mobility constraints than men when selecting jobs, especially when they must find new employment after failing to receive tenure.

Several of our recommendations for future research address some of the previously noted limitations of this study. For example, we noted that gender differences in preferences for academic versus nonacademic jobs raises the potential for selection bias. A study of gender differences in job choices—especially the first job after earning the doctorate—would help us assess the potential for selection bias. Studies of gender differences in full-time versus part-time employment and in attrition rates would also address selection issues.

A job-mobility study might shed light on whether immobility compromises the academic careers of female scientists and engineers. We are particularly interested in whether gender differences in mobility exist among

* We measured time to promotion by searching SDR waves for the first occurrence of an individual reporting employment at a senior rank. Missing information on academic rank in the SDR files, however, is a potential problem. If an individual fails to complete the section of the SDR questionnaire on academic rank after being promoted, we will overstate the time the individual took to achieve the senior ranks. In the sample we used, men are about 3.5 percent more likely than women to have failed to report academic rank before promotion to associate professor and are about 3.0 percent more likely to have failed to report this information before promotion to full professor. This issue holds for the Phase II tenure analysis as well. Men are about 3.5 percent more likely than women to have failed to report tenure status before earning tenure.

doctorate recipients who fail to receive tenure in their first academic job. Many doctorate recipients who take first jobs at prestigious research institutions fail to earn tenure. Their ability to earn tenure at a subsequent position is likely to depend on the freedom they have to choose jobs that are well suited to their experience and skills.

This study provides evidence that gender differences in the influence of family variables—marital status and family size—are related to women's chances for career success. Accordingly, we recommend that future studies be designed to control for potential gender differences in the influence of family characteristics.

New IMA Grant

press release

The University of Minnesota Institute of Mathematics and its Applications (IMA), part of the Institute of Technology, has been awarded a $19.5 million renewal grant by the National Science Foundation. The new grant is 77 percent more than the IMA's previous funding level and is the largest single research investment in mathematics ever made by the NSF. The grant covers a five-year period.

"We've set an ambitious goal for the University of Minnesota to be one of the top three public research

Sonia Kovalevsky High School Mathematics Days

Through grants from Elizabeth City State University (ECSU) and the National Security Agency (NSA), the Association for Women in Mathematics will 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.

An additional selection cycle will be held in February 2006 for Spring 2006 using funds remaining after the August 2005 selection cycle. AWM anticipates awarding up to six additional grants ranging on average from $1500 to $2200 each ($3000 maximum per school) 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) a cover letter including the proposed date of the SK Day, expected number of attendees (with 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, b) plans for activities, including specific speakers to the extent known; c) qualifications of the person(s) to be in charge; d) plans for recruitment, including the securing of diversity among participants; e) detailed itemized budget (i.e., food, room rental, advertising, copying, supplies, student giveaways, etc. 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. This grant does not permit reimbursement for indirect costs or fringe benefits. Please itemize direct costs in budget.); f) local resources in support of the project, if any; and g) tentative follow-up and evaluation plans.

The decision on funding will be made in late February for high school days to be held in Spring 2006. If selected, a report of the event along with receipts (originals or copies) for reimbursement must be submitted to AWM within 30 days of the event or by June 1, 2006, whichever comes first. Reimbursements will be made in one disbursement; no funds will be disbursed prior to the event date.

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: phone 703-934-0163, e-mail awm@awm-math.org, or visit www.awm-math.org. Applications must be received by **February 4, 2006**; applications via e-mail or fax will not be accepted.

universities in the world," said University of Minnesota President Robert Bruininks. "Accomplishments such as this move us closer to achieving that goal."

"The IMA has become a preeminent mathematics institute that serves as a model for other institutes worldwide," said William Rundell, director of mathematical sciences, NSF. "Its innovative interdisciplinary programs are an essential component of the NSF's portfolio."

"Since the IMA opened its doors nearly 25 years ago, we have focused on harnessing the awesome power of mathematics to contribute to other sciences, technology, industry and society," said Douglas Arnold, director, IMA. "The past investments of the NSF and the University of Minnesota in the IMA have brought a tremendous return, contributing to the health, prosperity and security of the nation."

Recent projects of note developed by researchers affiliated with the IMA include:

- A new system to detect enemy aircraft while remaining undetectable.
- A math-based system to diagnose potentially fatal cardiac irregularities via electrical conduction patterns.
- A mathematical model of insect movements that was used to build a new class of six-legged robots with unprecedented mobility.
- A mathematical theory that led to the development of alloys whose shapes can be modified with magnetism.

In 2005–2006, IMA activities will be focused on the field of imaging, ranging from medical MRI to military radar.

The IMA was established in 1982. It increases the impact of mathematics by fostering interdisciplinary research applying math to important scientific and technological problems from other disciplines and industry. The IMA also expands and strengthens the talent base engaged in mathematical research applied to or relevant to such problems. It has no permanent faculty but each year brings more than 1000 mathematicians, statisticians, scientists, engineers and social scientists to the IMA to conduct research and collaborate. See ad, page 29. ..

Women in Mathematics: Study Shows Gains

press release

The comments of Harvard University president Lawrence Summers have brought renewed attention to the participation of women in mathematics and science. A new study released on July 6 offers data showing that women are participating in mathematics in greater numbers than ever before.

The study, carried out by the American Mathematical Society in cooperation with three other national organizations, shows that women received close to one third of all doctorates granted in the mathematical sciences in the US during the academic year 2003–2004, the most recent year for which data are available. A total of 333 women received mathematical sciences Ph.D.'s that year, the largest number recorded since the AMS began gathering statistics on women Ph.D.'s more than 30 years ago.

These numbers reflect a longstanding trend of increasing participation by women in the mathematical sciences. The percentage of women receiving Ph.D.'s in the field has risen steadily, from around 15 percent in the early 1980s, to the low 20 percent range in the early 1990s, to around 30 percent in recent years.

What is more, women are excelling in the top mathematics departments in the nation. Using rankings published by the National Research Council, the study aggregates data from the 48 top mathematics departments. Women received 25 percent of all doctorates granted by these departments in 2003–2004, up from 21 percent the previous year.

There are other signs that women are making gains in mathematics. Since the early 1990s, women have been receiving around 45 percent of all bachelor's degrees in the subject. Recent years have seen substantial strides by female students in activities such as the Mathematical Olympiad, which is a highly challenging competition for high school students, and the Putnam Competition, which is aimed

at undergraduate mathematics majors. In previous years, the high scorers in these competitions were all male.

"These encouraging statistics show that there are plenty of women with a high level of talent in mathematics and a strong motivation to succeed in the field," noted Ellen Kirkman, a professor of mathematics at Wake Forest University and a lead author of the study. "We need to continue to work against the social barriers that historically kept women out of mathematics and to ensure that all students, male and female, have the opportunities and support they need to excel in the field."

The study, "2004 Annual Survey of the Mathematical Sciences," by Ellen E. Kirkman, James W. Maxwell, and Colleen A. Rose, appeared in the August 2005 issue of the AMS *Notices* and is available online at www.ams.org/notices/200507/200507-toc.html. The study is a joint project of the AMS, the American Statistical Association, the Institute of Mathematical Statistics, and the Mathematical Association of America.

Honors and Awards

CONGRATULATIONS to all on their meritorious achievements.

Radcliffe Institute 2005–2006 Fellows

press release

Radcliffe Institute for Advanced Study Dean Drew Gilpin Faust has announced the names of 51 women and men selected from an applicant pool of 782 as 2005–2006 Radcliffe Institute fellows. While at Radcliffe, the fellows—among them 10 creative artists, 16 humanists, 13 social scientists and 12 scientists working on projects ranging from pipeline issues in higher education to cancer treatments to installation art on the theme of loss—will work individually and across disciplines on projects chosen for both quality and long-term impact. Together, the fellows' distinguished academic, professional and creative endeavors are the center of a scholarly community convened to pursue and generate new knowledge.

The Radcliffe Institute for Advanced Study is unique among its peers because it accepts scholars from all academic disciplines and the creative arts into its residential community. "The purpose of a residential fellowship like ours is to bring artists and scholars together to interact in ways that will change both them and their work," says Dean Faust. "We strive to offer enough similarity—clusters of common intellectual concern—and enough difference to generate intersections that are predictable as well as ones that are unanticipated and even surprising."

PIERRETTE CASSOU-NOGUÈS, a professor of mathematics at the Institut de Mathématiques de Bordeaux, Université Bordeaux I in France, is known for her contributions to number theory, and at Radcliffe she will work on a project called "Newton Trees and Algebraic Curves." RINA DECHTER, University of California at Irvine, Computer Science, will work on "Strategies for High-Performance, Graph-Based Reasoning" as Emeline Bigelow Conland Fellow. ANNA NAGURNEY, University of Massachusetts, Mathematics, will pursue "Dynamic Networks with Applications: The Unified Theory of Projected Dynamical Systems and Evolutionary Variational Inequalities." JAMES ROGERS, Earlham College, Computer Science, will be Jeanne Rosselet Fellow with "New Logical Foundations for Linguistics." The project of DIANE SOUVAINE, Tufts University, Computer Science, is "Impact of Computational Geometry on Depth-Based Statistics."

For more information about the Radcliffe Institute Fellowship Program, please call 617-495-8212 or visit www.radcliffe.edu/fellowships/.

NSF Awards and Grants, FY 2004

Faculty Early Career Development (CAREER) awards went to ANNIE QU, Oregon State University: Semiparametric and Nonparametric Models for Correlated Data and Irena Peeva, Cornell University: Free Resolutions.

NSF Postdoctoral Research Fellowships (name, Ph.D. institution, fellowship institution) were earned by KARIANE CALTA (University of Chicago), Cornell University; JOY KO (New York University), Brown University; HELENA G. MCGAHAGAN (New York University), University of California, Santa Barbara; MARIA G. REZNIKOFF (New York University), University of Bonn; and JULIANNA S. TYMOCZKO (Princeton University), University of Michigan, Ann Arbor.

Travel Grants for ICM 2006

The AMS has received support from the NSF to provide partial travel support for US mathematicians attending the 2006 International Congress of Mathematicians (ICM06) August 22–30, 2006, in Madrid, Spain. The Society is administering the selection process, which will be similar to previous programs, and expects to make about 130 awards, with an average award of approximately $2,000.

The application is a paper form which must be filled out and mailed (*eight* copies) to the AMS by **October 31, 2005**. Application forms and further information about the funding are available online at www.ams.org/employment/icmapp.html. Applications for support may also be found in the September *Notices*. The program will be administered by the Membership and Programs Department, AMS, 201 Charles Street, Providence, RI 02904-2294; ICM06@ams.org; 800-321-4267, ext. 4170 or 401-455-4170.

This program is open to US mathematicians. Early career mathematicians, women and members of US groups underrepresented in mathematics are especially encouraged to apply. ICM06 Invited Speakers from US institutions should submit applications, if funding is desired.

All information currently available about the ICM2006 program, organization, and registration procedure is located on the ICM 06 website, www.icm.org. The IMU is conducting a travel grant program to ICM2006 which is open only to mathematicians from certain other countries. For details see www.icm2006.org/financialsupport/.

AMS Election

We have discontinued the practice of including statements by AMS candidates in this newsletter, as in recent years almost all statements were repetitions of the statements supplied by candidates to the AMS (in part because some of our early positions are now non-controversial). We reserve the right to reinstate the practice should it seem advisable, of course. We encourage you to continue to vote in the elections of all professional societies to which you belong; your votes and your interest in the process have made an impact.

NSF-AWM Travel Grants for Women

The objective of the NSF-AWM Travel Grants program is to enable women to attend research conferences in their fields, thereby providing a valuable opportunity to advance their research activities and their visibility in the research community. By having more women attend such meetings, we also increase the size of the pool from which speakers at subsequent meetings may be drawn and thus address the persistent problem of the absence of women speakers at some research conferences.

Travel Grants. These grants provide full or partial support for travel and subsistence for a meeting or conference in the applicant's field of specialization. A maximum of $1000 for domestic travel and of $2000 for foreign travel will be applied. 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 of NSF, and the research conference must be in an area supported by DMS. (See http://www.nsf.gov/od/lpa/news/publicat/nsf03009/mps/dms.htm#1 for the list of supported areas.) Applicants must be women holding a doctorate (or equivalent experience) and having a work address in the US (or home address, in the case of unemployed mathematicians). Anyone who has been awarded an AWM-NSF travel grant in the past two years is ineligible. Anyone receiving significant external governmental funding (more than $1000 yearly) for travel is ineligible. Partial travel support from the applicant's institution or from a non-governmental agency does not, however, make the applicant ineligible.

Target dates. There are three award periods per year. An applicant should send *five* copies of 1) a cover letter, including the conference name, conference dates and location (city/state/country), and amount of support requested, 2) a description of her current research and of how the proposed travel would benefit her research program, 3) her curriculum vitae, 4) a budget for the proposed travel, and 5) a list of all current and pending travel funding (governmental and non-governmental) and the amounts available for your proposed trip to: Travel Grant Selection Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. If you have questions, contact AWM by phone at 703-934-0163 or e-mail awm@awm-math.org. Applications via e-mail or fax will not be accepted. The next two deadlines for receipt of applications are **October 1, 2005** and **February 1, 2006**.

Flexibility in Tenure-Track Faculty Careers

press release

Higher education leaders urgently need to examine and proactively address the institutional climate that governs the entire career cycle for faculty, according to the findings of a new report from a national panel of university presidents and chancellors and the American Council on Education (ACE). In *An Agenda for Excellence: Creating Flexibility in Tenure-Track Faculty Careers,* ACE and the national panel outline an ambitious agenda to reform and enhance the academic career path for tenured and tenure-track faculty.

"Colleges and universities face a compelling need for change in the current rigid structure of the traditional academic career path," said David Ward, president of ACE. "In order for American higher education to sustain its leading role in a diverse and changing environment, we need to create greater flexibility in the tenure-track career path. Flexibility is central to recruiting and retaining the most talented scholars and critical to preserving excellence in teaching and innovative research."

The report is the first product of a grant to ACE from the Alfred P. Sloan Foundation to fund the project "Creating Options: Models for Flexible Tenure-Track Career Pathways." Through the project, ACE and the national panel are striving to: raise awareness of faculty work-life issues, spark a national dialogue to encourage change in the career cycles of tenured and tenure-track faculty, and generate thoughtful, tested approaches to assist campuses in adapting promising practices to address faculty work-life issues.

"The critical work-life dilemmas detailed in this report indicate an urgent need for higher education leaders to examine and proactively address the institutional climate that governs the entire career cycle of faculty—from entry into tenure-track positions to retirement," said Claire Van Ummersen, vice president and director of the Office of Women in Higher Education at ACE. "This is necessary to attract and retain those who are most talented in order to maintain excellence in teaching and cutting-edge research and to provide incentives for older faculty to retire with satisfaction and financial security, thereby accommodating the next generation of scholars and teachers."

"The Foundation is convinced that higher education can achieve workplace excellence by providing flexible career paths that meet the needs of both the institution and the faculty," said Kathleen Christensen, program director for Workplace, Workforce and Working Families at The Alfred P. Sloan Foundation.

Members of the National Panel of Presidents and Chancellors are: Lawrence Bacow, president of Tufts University; Molly C. Broad, president of The University of North Carolina System; Nancy Cantor, chancellor of Syracuse University; Mary Sue Coleman, president of the University of Michigan; France A. Cordova, president of the University of California, Riverside; Gordon Gee, chancellor of Vanderbilt University; Kermit Hall, president of the University of Albany, SUNY; Karen A. Holbrook, president of Ohio State University; William E. Kirwan, chancellor of the University System of Maryland; and Graham Spanier, president of Pennsylvania State University.

The National Panel found that an increasing number of new Ph.D.'s are leaving academia or opting for careers outside the traditional tenure-track path. Many are forced to do so because of the tightening academic job market in a wide range of disciplines. Others, especially women, find themselves in adjunct and non-tenure-track positions—despite low pay, minimal or no benefits, and lack of potential job security—for a better balance between personal/family life and professional life. Such positions provide them with the time and flexibility they seek to place family as their priority at particular stages of their lives and careers.

The panel concluded that institutional leaders must act immediately to attract the best faculty to the tenure-track professorate at research universities. As student enrollments of women and people of color continue to grow—both at the undergraduate and graduate levels—these demographic groups will represent a substantial proportion of the pipeline to the professorate. However, current data show that women tend to be less likely to pursue tenure-track faculty positions at research universities after earning doctorates, and anecdotal evidence suggests the same is true for Ph.D.'s of color.

In certain disciplines, namely science and technology, US higher education cannot afford to lose any of its potential intellectual workforce and desperately needs the best talent in research and teaching. Talented scholars are necessary for innovative research and development to contribute to economic development of the country and to keep US higher education in a competitive position worldwide, as well as for the country's security.

The National Panel of Presidents and Chancellors advocates creating flexible tenure-track faculty career paths at higher education institutions nationwide. The panel strongly recommends changing the current rigid structure of traditional tenure-track faculty career paths. The National Panel plans to investigate financial models for various scenarios of flexible faculty career pathways while posing a key question to institutional leaders: "Can we afford not to invest in the future of our institutions by not investing in our faculty?" The panel argues that by spending money to establish flexible faculty career pathways, institutional leaders are investing in a more diverse, more satisfied, and more productive faculty, especially among those who are hardest to attract and hold. Such an investment in tenure-track faculty members will bring a handsome return in terms of loyalty and productivity and will expand the pool of potential faculty members through supportive and friendly policies, programs, and environments. In this way, institutions will be better able to attract and keep the best talent available.

The National Panel is convinced that effective and strategic implementation of the policies, programs, and practices set forth in this report will ensure the preservation and nourishment of American colleges and universities' most valuable asset: faculties of bright, talented, committed and diverse individuals, whose scholarship, research and teaching will build on the excellence that is our institutions' hallmark and retain the nation's position as having the finest system of higher education in the world.

Founded in 1918, ACE is the nation's largest higher education association, representing more than 1600 college and university presidents and more than 200 related associations nationwide. It seeks to provide leadership and a unifying voice on key higher education issues and influence public policy through advocacy, research, and program initiatives. The Alfred P. Sloan Foundation is a philanthropic non-profit institution; one of its programmatic interests is supporting the needs of the Workplace, Workforce and Work-ing Families.

Recommendations of the National Panel of Presidents and Chancellors

Enhance Recruitment Efforts

- Uncover and eliminate the preventable causes of talented Ph.D.'s opting out of tenure-track faculty positions.
- Create re-entry opportunities (e.g., postdoctoral fellowships) for Ph.D.'s who seek tenure-track faculty careers later in life after having decided to opt out of academia or work part time in order to manage career and family responsibilities.
- Abolish penalties in the hiring process for documented dependent care–related résumé gaps.
- Provide assistance to new faculty hires with spousal/partner employment needs and other family-related relocation issues.
- Allow couples employed by the same institution to select from a cafeteria-style health-care and dependent-care benefits plan (e.g., the family might be covered under one employee's plan for health care, and the other's healthcare allotment might be used toward the cost of dependent care).

Improve Career Satisfaction, Retention, and Advancement

- Create incentives for faculty to develop more collegial environments, in which all ranks are encouraged and rewarded for collaborating with, guiding, and mentoring their colleagues.
- Provide training to evaluators to put in place clear and consistently applied promotion and tenure guidelines that are (and are seen as) fair, non-discriminatory, and consonant with alternative career path policies the institution has adopted.
- Allow colleges, schools, and departments within a university to establish their own agreed-upon guidelines for interpreting criteria for promotion and tenure, taking into account heavy teaching loads, professional service activities, student advising, and the four distinct functions of scholarship, as outlined by Ernest Boyer in *Scholarship Reconsidered: Priorities of the Professorate.*

- Develop opportunities throughout the career cycle for tenured and tenure-track faculty members to opt for part-time positions that can be used for a specified period (up to five years) as personal needs arise.
- Establish guidelines for faculty to have the option of multiple-year leaves for personal or professional reasons.
- Create flexibility in the probationary period for tenure review without altering the standards or criteria. Longer probationary periods should not be required for all faculty, but flexible time frames of up to 10 years with reviews at set intervals should be offered. This option could benefit faculty who may need to compensate for lost time or be given additional time to prepare because of unanticipated professional or personal circumstances.
- Provide quality, affordable childcare to tenured and tenure-track faculty, particularly new hires (or information about available services); establish or provide information for childcare programs for emergency back up, evening and overnight care, and school and summer breaks.

Improve the Climate for All

- Create a professional climate in which the use of family-friendly and work-life policies is acceptable and not penalized.
- Examine and proactively address the work-life issues and professional climate of faculty members throughout the entire career cycle.
- Assess the degree to which campus environments are amenable to and supportive of the achievements of their faculty.
- Allow units to determine how best to meet their productivity goals and objectives and provide block grants to colleges, schools, and departments to help them do so. This will help curtail the level of competition among colleagues within a given unit.

Develop Incentives for Faculty Retirement

- Provide phased retirement plans under which senior retirement-age professors may continue teaching or conducting research, or both, part time for a limited number of years.
- Offer partial or full coverage for health insurance to faculty for a set number of years after retirement, or implement retirement health savings programs.
- Provide space on campus where faculty retirees can convene to share intellectual ideas, presentations, and so forth with each other and the campus community. Find appropriate ways to continue to engage retired faculty.

Project NExT/Young Mathematician's Network Poster Session

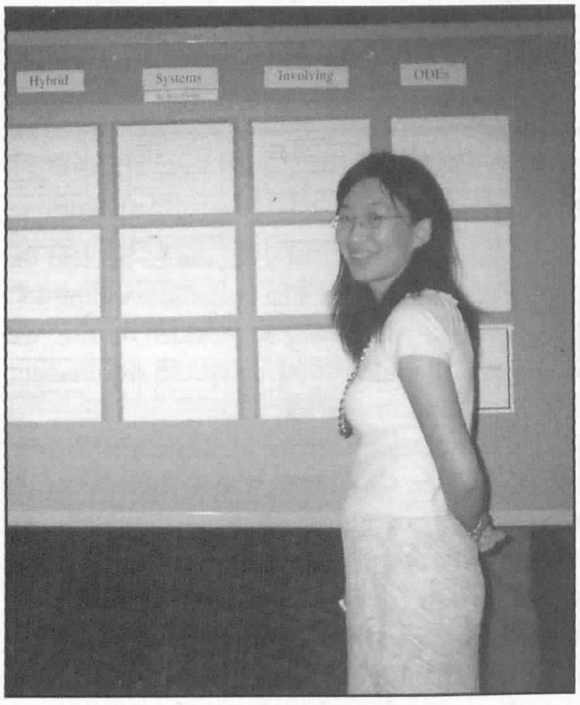
Project NExT and the Young Mathematician's Network invite submissions of abstracts for a poster session to be held on Friday, January 13, 2006 from 2:00 to 4:00 p.m. at the Joint Mathematics Meetings in San Antonio. The poster size will be 48" by 36"; it is best to have the posters 36" high. Posters and materials for posting pages on the posters will be provided on-site. We expect to accept about thirty posters from different areas within the mathematical sciences. 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. Ken Ross, Department of Mathematics, University of Oregon, Eugene, OR 97403-1222; e-mail ross@math.uoregon.edu *and* Prof. Kevin Charlwood, Department of Math & Statistics, Morgan Hall, Washburn University, Topeka, KS 66621; e-mail: kevin.charlwood@washburn.edu.

Our poster sessions over the past nine years have been great successes. Visitors to the session each year were numerous and included prospective employers. This session provides an excellent way to showcase one's work in a relaxed, informal environment. The deadline for final consideration is **December 6, 2005**. Preference will be given to those who did not earn a Ph.D. prior to 2000; 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, but not as 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/2005/Posters/ before the Joint Meetings.

AWM-SIAM Workshop

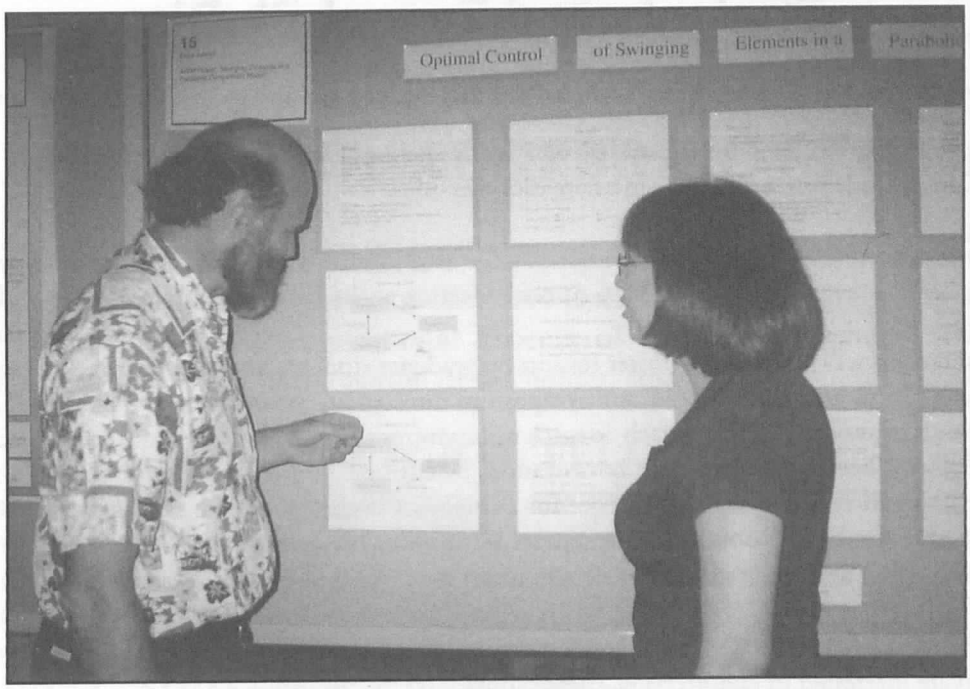
Marty Golubitsky (SIAM President), Ingrid Daubechies (SK Lecturer), and Barbara Keyfitz (AWM President)



Wandi Ding (University of Tennessee) at her poster

At the forefront of the interested audience: Vickie Kearn (Princeton University Press), Pat Bowland, and kathy Brenan (Aerospace Corp.)

New Orleans



Erika Asano (University of Tennessee) explaining her poster to Mac Hyman (Los Alamos National Laboratory)

Bettye Anne Case (AWM Meetings Coordinator) and Jennifer Lewis (AWM Managing Editor)

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

supported by the Office of Naval Research, the National Security Agency, 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: The next summer AWM Workshop is scheduled to be held July 10–12, 2006, in conjunction with the Society for Industrial and Applied Mathematics (SIAM) 2006 Annual Meeting at the Boston Park Plaza Hotel, July 10–14, 2006.

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.

DISCUSSION GROUP LEADERS: 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 applications should include a cover letter, a summary of research work (one or two pages), a title and abstract (75 words or less) of the proposed poster or talk, and a curriculum vitae. A supporting letter of recommendation from a faculty member or research mathematician who knows their research is required for graduate student applicants and recommended but not required for recent Ph.D.'s. Additional letters of support are encouraged. 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.

Send ***five*** complete copies of the application materials (including the cover letter) to:

Workshop Selection Committee
11240 Waples Mill Road, Suite 200
Fairfax, VA 22030

Phone: 703-934-0163
E-mail: awm@awm-math.org URL: www.awm-math.org

APPLICATION DEADLINE

Applications must be received by **January 26, 2006**. Applications via e-mail or fax will not be accepted.

IMA INSTITUTE FOR MATHEMATICS AND ITS APPLICATIONS

Membership opportunities

in connection with the 2006-2007 thematic program on

APPLICATIONS OF ALGEBRAIC GEOMETRY

IMA POSTDOCTORAL FELLOWSHIPS provide an excellent opportunity for mathematical scientists near the beginning of their career who have a background in and/or an interest in learning about applied and computational aspects of algebraic geometry. IMA postdoctoral fellowships run one to two years, at the option of the holder, starting September 5, 2006.

IMA INDUSTRIAL POSTDOCTORAL FELLOWSHIPS are designed to prepare mathematicians for research careers in industry or involving industrial interaction. IMA industrial postdoctoral fellowships run two years starting September 5, 2006. They are funded jointly by the IMA and an industrial sponsor, and holders devote 50% effort to their own research and the IMA program and 50% effort working with industrial scientists.

IMA GENERAL MEMBERSHIPS provide an opportunity for mathematicians and scientists employed elsewhere to spend a period of one month to one year in residence at the IMA, and to participate in the 2006-2007 thematic program. The residency should fall in the period September 2006 through June 2007 (in special cases extending into the summer months). Logistic support such as office space, computer facilities, and secretarial support will be provided, and local expenses may be provided.

IMA NEW DIRECTIONS VISITING PROFESSORSHIPS provide an extraordinary opportunity for established mathematicians–typically mid-career faculty at US universities– to branch into new directions and increase the impact of their research by spending the 2006 -2007 academic year immersed in the thematic program at the IMA. Visiting Professors will enjoy an excellent research environment and stimulating scientific program connecting algebraic geometry and related areas of mathematics with a broad range of fields of application. New Directions Visiting Professors are expected to be resident and active participants in the program, but are not assigned formal duties.

For more information and application materials see
www.ima.umn.edu/docs/membership.html or phone 612-624-6066.

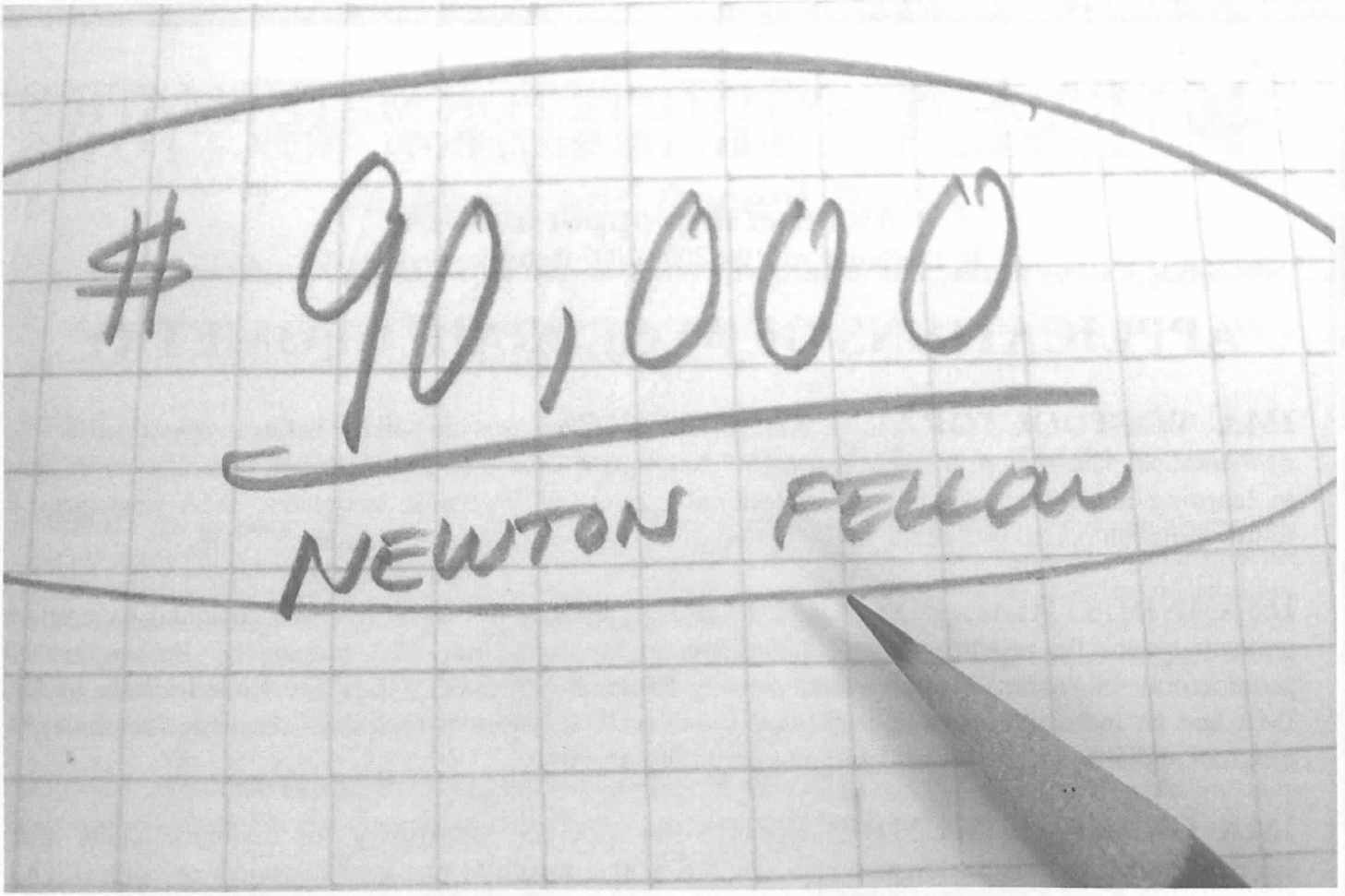
The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

The IMA is an NSF funded Institute

www.ima.umn.edu

UNIVERSITY OF MINNESOTA

— ADVERTISEMENT —



You do the math.

The Newton Fellowship Program is looking for mathematically sophisticated individuals to teach in NYC public high schools. Newton Fellows earn competitive starting salaries on par with scientists, engineers and architects. The Fellowship provides an aggregate $90,000 in stipends, full tuition scholarship for a master's, mentoring, coaching, and professional development.

Nobody goes into teaching for the money. The best teachers do it out of love for the subject and a passion to inspire. As a Newton Fellow, you can have it all. So who better to teach math than you?

For a more rewarding future, apply for the Newton Fellowship at mathforamerica.org/newton

MfA Math for America

The infinite possibilities of mathematical literacy.

Graduate Fellowships for Women at the University of Wisconsin

The University of Wisconsin-Madison has a long tradition of excellence in graduate education in mathematics (1000 PhD's since 1897). The Department has strong research groups in Algebra, Analysis, Applied Mathematics, Combinatorics, Differential Equations, Geometry, Logic, Number Theory, Probability, and Topology.

Thanks to a variety of sources which provide opportunities for women in science, the Department will award a number of Fellowships to talented women who apply to the PhD program. We have three categories of Fellowships:

- Hirschfelder Fellowship
- University of Wisconsin Fellowships for Women in Mathematics
- NSF VIGRE Fellowships (open only to United States citizens and residents)

The Admissions Committee will automatically consider every female applicant for these awards. Application deadline for the PhD program: December 31st.

For more information on the graduate program and application materials, see

http://www.math.wisc.edu

Questions can be directed to the Graduate Program Secretary by email to

grad_program@math.wisc.edu

and by regular mail to

Graduate Program Secretary
Department of Mathematics
480 Lincoln Drive
Madison, WI 53706

The University of Wisconsin is an Affirmative Action, Equal Opportunity Employer and encourages applications from women and minorities.

Division of Applied Mathematics

Brown University

Positions in Probability and Statistics

The Division of Applied Mathematics seeks applicants for two positions in the general areas of probability and statistics. One position will be filled at any professorial rank. The other will be filled at the Associate or Assistant level with preference for the Assistant level. The starting date for the positions is July 1, 2006. Preference will be given to applicants who combine research in probability and statistical theory or computation with important applications to science, who add distinct new dimensions to the Division's current research and who bridge current activities in the Division. At the Assistant Professor level, preference will be given to individuals with postdoctoral experience. Applicants at the Associate and Full Professor levels should have achieved international recognition for first-class contributions in their specialties. Additionally, candidates for Full Professor are expected to be acknowledged leaders and should be prepared to assume a leadership role in probability and/or statistics at Brown. Good communication and teaching skills are required.

Applicants should submit curriculum vitae, representative preprints and reprints, and a concise description of research interests and goals to:

Attn: Probability and Statistics Search
Professor Paul Dupuis, Chairman
Division of Applied Mathematics
Brown University
PO BOX F
Providence, Rhode Island 02912 USA

Applicants for Assistant Professor should arrange to have at least three letters of recommendation sent directly to the Search Committee at the same address. Applicants for Associate or Full Professor should arrange to have at least five letters of recommendation sent directly to the Search Committee and should provide the names and contact information for the references at the time of application. (Applicants for Full Professor may postpone having letters sent until requested by the search committee, but they should provide the requested contact information for the references.)

To receive full consideration, complete applications should be received by November 30, 2005.

Brown University is an affirmative-action/equal-opportunity employer.
Women and minorities are encouraged to apply.

— ADVERTISEMENT —

MSRI

The Mathematical Sciences Research Institute in Berkeley, California, solicits applications for membership in its 2006-07 programs:

Geometric Evolution Equations (Academic Year)

Computational Applications of Algebraic Topology (Fall 2006)

Dynamical Systems (Spring 2007)

Apply online for Research Professorships, Postdoctoral Fellowships, or General Memberships.

***

FURTHER INFORMATION:
www.msri.org

ONLINE APPLICATION:
www.mathjobs.org

ADVERTISEMENTS

BROWN UNIVERSITY — MATHEMATICS DEPARTMENT — The Mathematics Department, pending budgetary approval, invites applications for an opening at the level of Associate Professor with tenure to begin July 1, 2006. [Exceptionally qualified senior candidates may be considered for appointment as Full Professor.] Candidates should have a distinguished research record and a strong commitment to excellence in undergraduate and graduate teaching. Preference will be given to applicants with research interests consonant with those of the present members of the Department (for more information see **http://www.math.brown.edu/faculty/faculty.html**). Qualified individuals are invited to send a letter of application, a curriculum vitae, and three letters of recommendation, one of which should address teaching, to be forwarded to: Senior Search Committee, Department of Mathematics, Box 1917, Brown University, Providence, Rhode Island 02912. Applications received by October 15, 2005 will receive full consideration, but the search will remain open until the position is closed or filled. For further information or inquiries, write to **srsearch@math.brown.edu**. Brown University is an Equal Opportunity/Affirmative Action employer and encourages applications from women and minorities.

BROWN UNIVERSITY — Division of Applied Mathematics — Prager Assistant Professorship — The Division of Applied Mathematics seeks applicants for the Prager Assistant Professorship: A three year non-tenured non-renewable appointment, beginning July 1, 2006. The teaching load is one course per semester. Candidates are required to have received a Ph.D. degree or equivalent by the start of this 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 consistent with the current research interests of the Division faculty. Consideration of the applications will begin on January 1, 2006. To ensure full consideration, applicants are urged to have a curriculum vitae, a research statement, sample publications or preprints, and three letters of recommendation (at least one of them should address teaching ability) in by this date. All inquiries and materials should be addressed to: **Search Committee Prager Assistant Professorship, Division of Applied Mathematics, Brown University, Providence, RI 02912, dam@dam.brown.edu**. Brown University is an Equal Opportunity/Afirmative Action Employer and encourages applications from women and minorities.

ADVERTISEMENTS

CLAREMONT MCKENNA COLLEGE — Ruth and Joseph Reed Professorship in Applied Mathematical Statistics — The Department of Mathematics, Statistics, and Computer Science of Claremont McKenna College announces a tenure track position at the Associate/Full professor level beginning July 1, 2006. Candidates must have a Ph.D. in mathematical or applied statistics. Both teaching and professional accomplishments are highly valued. Data analysis experience and cross-disciplinary interests are preferred. Salary is competitive, summer support is available, and the normal teaching load is four courses per year. For the complete ad, see **http://math.mckenna.edu/**. Send vita, teaching philosophy, program for professional activity, undergraduate and graduate transcripts and three or more recommendations letters to Prof. Janet Myhre, Chair Search Committee, Department of Mathematics, Statistics and Computer Science, Claremont McKenna College, 850 Columbia Ave., Claremont, California, 91711-6420. Review of applications will begin on November 1, 2005, and will continue until the position is filled. Claremont McKenna College is a highly selective undergraduate institution ranked among the top liberal arts colleges nationally. CMC is a member of The Claremont Colleges that also include Pomona, Scripps, Pitzer, Harvey Mudd, the Claremont Graduate University and the Keck Graduate Institute for Applied Science. Collectively, The Claremont Colleges constitute an academic community of 6,000 students. Claremont is located 35 miles east of downtown Los Angeles. Claremont McKenna College is an equal opportunity employer. Women and minorities are encouraged to apply. For more information on CMC visit our website **HTUwww.claremontmckenna.eduUTH**.

CONNECTICUT COLLEGE — Department of Mathematics and Computer Science — Connecticut College invites applications for a tenure-track position in mathematics to begin in the fall of 2005 at the rank of assistant professor. Applicants must have a Ph.D. in Mathematics, Applied Mathematics, or Statistics, a strong commitment to excellence in undergraduate teaching, and the potential to carry on a successful research program in the setting of a small liberal arts college. Candidates must have the ability and willingness to make connections with other disciplines and to teach a variety of courses in the undergraduate mathematics curriculum. Preference will be given to applicants whose research is in applied mathematics, partial differential equations, probability, statistics, or other areas that have applications to the natural or social sciences. Connecticut College is a private, highly selective college with a strong commitment to the liberal arts tradition and an emphasis on broad interdisciplinary teaching and research. The normal teaching load is five courses annually, and faculty members are expected to contribute to the College's general education program, which includes a first year seminar component. Salary is competitive. Tenure-track faculty receive a research stipend for their first two summers and a semester's leave at full salary after their third year if they are reappointed for the full probationary period. The College is a member of the Academic Career Network, a resource for dual-career couples (**http://acn.fivecolleges.edu**), and is an Affirmative Action/Equal Opportunity Employer. The College is committed by mission to developing diversity and sustaining a diverse faculty and staff. Applications should include a letter of application, curriculum vitae, graduate transcripts, a statement describing teaching experience and philosophy, a research plan, and 3-5 letters of reference, at least one of which should address teaching. All application materials should be sent to: **Professor Kathleen A. McKeon, Connecticut College, Box 5561, New London, CT 06320, (860) 439-2012, (860) 439-2722 (fax), e-mail: math-dept@conncoll.edu**. Review of applications will begin December 5, 2005 and will continue until the position is filled. More information about this position and the College may be obtained at our web page **http://math.conncoll.edu/**.

THE DEPARTMENT OF MATHEMATICS AT CORNELL UNIVERSITY invites applications for one or more tenure-track or tenured positions. Our highest priority is differential geometry/geometric analysis. For further information and application instructions, see **http://www.math.cornell.edu/Positions/facpositions.html**. Start date July 1, 2006. Application deadline November 1, 2005. Early applications will be regarded favorably. Cornell University is an Affirmative Action/Equal Opportunity Employer.

THE DEPARTMENT OF MATHEMATICS AT CORNELL UNIVERSITY invites applications for academic-year or one-semester visiting teaching positions (any rank) beginning August 16, 2006. For information about our positions and application instructions, see **http://www.math.cornell.edu/Positions/facpositions.html**. Applicants will be automatically considered for all eligible positions. Deadline December 1, 2005. Early applications will be regarded favorably. Cornell University is an Affirmative Action/Equal Opportunity Employer.

THE CORNELL UNIVERSITY DEPARTMENT OF MATHEMATICS invites applications for our Teaching Program Visiting Faculty Positions beginning August 16, 2006. Two or more half-time visiting positions (any rank) for mathematics professors on sabbatical/other leaves from colleges, universities, and engineering schools. Candidates with substantial experience teaching undergraduate mathematics, and with teaching and research interests compatible with current faculty, are sought. Successful candidates are expected to pursue a program of study and/or research at Cornell. For information about these positions and application instructions, see **http://www.math.cornell.edu/Positions/vp.html**. Deadline December 1, 2005. Cornell University is an Affirmative Action/Equal Opportunity Employer.

DARTMOUTH: John Wesley Young Research Instructorship, 2 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, nonrenewable; monthly salary of $4,500.00, including two-month research stipend for Instructors in residence during 2 of 3 summer months in 2007 and 2008; if not in residence, salary adjusted accordingly. Applications may be obtained at **http://www.math.dartmouth.edu/recruiting/**. Or, send letter of application, curriculum vitae, graduate school transcript, thesis abstract, statement of research plans and interests, and at least three, preferably four, letters of recommendation to **Donna Black, Department of Mathematics, Dartmouth College, 6188 Bradley Hall, Hanover, New Hampshire 03755-3551**. Files complete by January 3, 2006 considered first. Dartmouth College is committed to diversity and strongly encourages applications from women and minorities.

DARTMOUTH COLLEGE: Tenure-track Mathematics Assistant Professorship beginning 2006-2007. In extraordinary cases, appointment at higher rank is possible. Candidates should be working in discrete or combinatorial mathematics with connections to existing research interests in the department. Examples include discrete probability, graph theory, algebraic combinatorics, combinatorial number theory, and discrete geometry. In exceptional circumstances, other research areas may be considered. Candidates must have strong commitment to outstanding teaching and interaction with students at all levels of undergraduate and graduate study. New faculty members are offered grants for research-related expenses, one quarter of sabbatical leave for each three academic years in residence, and flexible scheduling of teaching responsibilities. Teaching load is three courses spread over three of four ten-week terms. Applications may be obtained at **http://www.math.dartmouth.edu/recruiting/**. Or, send application letter, vita, research statement, four recommendation letters (one teaching), to **Donna Black, Department of Mathematics, Dartmouth College, 6188 Bradley Hall, Hanover, NH 03755-3551**. Applications completed by December 15, 2005 considered first. Women and minorities encouraged to apply.

INDIANA UNIVERSITY BLOOMINGTON — DEPARTMENT OF MATHEMATICS — ZORN RESEARCH POSTDOCTORAL FELLOWSHIPS — The Department of Mathematics invites applications for Zorn Research Postdoctoral Fellowships beginning in the Fall of 2006. 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 or statistics are encouraged to apply. Zorn postdocs are paired with mentors with whom they have compatible research interests. The Department maintains strong research groups in all principal fields of mathematics, and the Bloomington campus offers a rich variety of musical and cultural attractions. Interested applicants should send a letter of application, vita, and research and teaching statements, and should arrange to have

ADVERTISEMENTS

four letters of recommendation, including one letter evaluating teaching experience, sent to: **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 January 1, 2006. Indiana University is an equal opportunity / affirmative action employer.

KANSAS STATE UNIVERSITY Department of Mathematics — Subject to budgetary approval, applications are invited for tenure-track and visiting positions commencing August 13, 2006; rank and salary commensurate with qualifications. The Department seeks candidates whose research interests mesh well with current faculty. The Department has research groups in the areas of analysis, algebra, geometry/topology, and differential equations. Applicants must have strong research credentials as well as strong accomplishment or promise in teaching. Letter of application, current vita, description of research, and at least three letters of reference evaluating research should be sent to: **Louis Pigno, Department of Mathematics, Cardwell Hall 138, Kansas State University, Manhattan, KS 66506**. The Department also requires that the candidate arrange for letters to be submitted evaluating teaching accomplishments and potential. Offers may begin by December 1, 2005, but applications for positions will be reviewed until February 1, 2006, or until positions are closed. AA/EOE.

MICHIGAN STATE UNIVERSITY Department of Mathematics — The Department of Mathematics, pending budgetary approval, will have a tenure track position available, beginning in the fall of 2006. It is expected that the successful candidate will be appointed at the rank of assistant professor, but truly outstanding applicants for appointment at a higher rank will be considered. Excellence is essential in both research and teaching, and it is expected that the successful candidate will have at least two years of experience beyond the Ph.D. While outstanding applications from all mathematical research areas may be considered, preference will be given to those with significant research accomplishments in interdisciplinary mathematics, especially in scientific computation as applied to nanoscience, or biological, optical/electromagnetic, or materials science. Application information: Applicants should send a vita and a brief statement of research interests and arrange for at least four letters of recommendation, one of which must specifically address their ability to teach, to be sent to the department. Interested applicants should go to the Web site: **http://www.mth.msu.edu/Hiring** in order to complete an online job application and to find a description of other required application materials. Application materials can be addressed to: **Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027**. Completed applications (including letters of recommendation) received by November 15, 2005, are assured of consideration, but applications will be considered until the position is filled. MSU is an affirmative action/equal opportunity institution. Women and minorities are strongly encouraged to apply. Handicapped applicants have the right to request and receive reasonable accommodation.

MICHIGAN TECHNOLOGICAL UNIVERSITY — Department of Mathematical Sciences Department Chair Position, 1400 Townsend Drive, Houghton, MI 49931-1295. The Department of Mathematical Sciences invites applications for the position of Department Chair. The appointment will be at the senior level and will be effective July 1, 2006. Applicants should possess a Ph.D. in the Mathematical Sciences and have a strong record of teaching and research and external funding. Special consideration will be given to candidates with administrative experience and whose research interests are compatible with the existing departmental research strengths. Michigan Technological University, located in the scenic Upper Peninsula of Michigan, is a state university with strong research programs in engineering and the sciences. The department has 29 tenure-track positions, 6 lecturer positions, and has research strength in applied mathematics, discrete mathematics, and statistics. More than 30% of the faculty receive external grant support from federal and state agencies. The department offers B.S., M.S., and Ph.D. degrees and has about 80 undergraduate majors and 35 graduate students. Applications should include a letter of interest, a current vita and four letters of reference. Formal review of applications will begin on December 1, 2005 and continue until the position is filled. Additional information can be obtained at www.math.mtu.edu. Applications should be sent to: **Math Chair Search Committee, Department of Mathematical Sciences, Michigan Technological University, 1400 Townsend Drive, Houghton, MI 49931-1295**. Michigan Technological University is an Equal Opportunity Educational Institution/Equal Opportunity Employer/Affirmative Action Employer.

NORTH CAROLINA STATE UNIVERSITY Department of Mathematics — Applications are invited for at least one tenure track assistant professorship beginning Fall 2006. We are seeking an exceptionally well qualified individual with research interests compatible with those in the department. All areas of pure and applied mathematics will be considered. Candidates must have a PhD in the mathematical sciences, an outstanding research program, a commitment to effective teaching at the undergraduate and graduate levels and demonstrated potential for excellence in both research and teaching. She or he will likely have had successful post-doctoral experience. The Department of Mathematics has strong research programs in both pure and applied mathematics. Many members of the department participate in interdisciplinary programs and research groups on campus and in the broader Research Triangle community. More information about the department can be found at http://www.math.ncsu.edu. Applicants should send a vita, research plan and three letters of recommendation to **Mathematics Search Committee, Department of Mathematics, NC State University, Box 8205, Raleigh, NC 27695-8205**. NC State University is an Equal Opportunity and Affirmative Action Employer. In addition, NC State welcomes all persons without regard to sexual orientation. ADA Accommodations: **Dr. Aloysius Helminck, loek@math.ncsu.edu, (919) 515-2382**. Applications that are complete by December 1, 2005 will receive full consideration.

NORTH CAROLINA STATE UNIVERSITY Department of Mathematics — Applications are invited for one tenure track assistant professorship in the area of partial differential equations beginning Fall 2006. Candidates must have a PhD in the mathematical sciences, an outstanding research program, a commitment to effective teaching at the undergraduate and graduate levels and demonstrated potential for excellence in both research and teaching. The Department of Mathematics has strong research programs in both pure and applied mathematics. Many members of the department participate in interdisciplinary programs and research groups on campus and in the broader Research Triangle community. More information about the department can be found at **http://www.math.ncsu.edu**. Applicants should send a vita, research plan and three letters of recommendation to **PDE Search Committee, Department of Mathematics, NC State University, Box 8205, Raleigh, NC 27695-8205**. NC State University is an Equal Opportunity and Affirmative Action Employer. In addition, NC State welcomes all persons without regard to sexual orientation. ADA Accommodations: **Dr. Aloysius Helminck, loek@math.ncsu.edu, (919) 515-2382**. Applications that are complete by December 1, 2005 will receive full consideration.

NORTHWESTERN UNIVERSITY DEPARTMENT OF MATHEMATICS, 2033 Sheridan Road, Evanston, Illinois 60208-2730. Applications are invited for an anticipated tenure-track position starting September 2006. Priority will be given to exceptionally promising research mathematicians. We invite applications from qualified mathematicians in all fields. Application material should be sent to Personnel Committee, at the department address and include: (1) the American Mathematical Society's Application Cover Sheet for Academic Employment, (2) a curriculum vitae, and (3) at least four letters of recommendation including one which discusses in some detail the candidate's teaching qualifications. Applications may also be made electronically at MathJobs.org: **www.mathjobs.org**. Inquiries may be sent via e-mail to: **hiring@math.northwestern.edu**. Applications are welcome at any time, but the review process starts in November 2005. Northwestern University is an affirmative action, equal opportunity employer committed to fostering a diverse faculty; women and minority candidates are especially encouraged to apply.

ADVERTISEMENTS

DEPARTMENT OF MATHEMATICS NORTHWESTERN UNIVERSITY, 2033 Sheridan Road, Evanston, Illinois 60208-2730, Lecturer. Applications are invited for a new full-time non-tenure-track Lectureship in Mathematics beginning in September 2006 for an initial term of two years. The primary responsibilities will be concentrated in the calculus program, including teaching six courses over the three quarters of the regular academic year, advising and placement, and coordinating some multi-section courses; other duties may be assigned by the Chair. Candidates must have a Ph.D. in mathematics and a demonstrated record of excellent teaching.Applications should be made electronically at MathJobs.org (www.mathjobs.org) and should include (1) the American Mathematics Society's Application Cover Sheet for Academic Employment, (2) acurriculum vitae, (3) a teaching portfolio, and (4) at least three letters of recommendation, all of which address the candidate's teaching qualifications. Inquiries may be sent to **lecturer@math.northwestern.edu**. While applications are welcome at any time, the review process will begin on November 15, 2005. Women and members of underrepresented minority groups are urged to apply. AA/EOE

NORTHWESTERN UNIVERSITY DEPARTMENT OF MATHEMATICS, 2033 Sheridan Road, Evanston, Illinois 60208-2730, Boas Assistant Professor. Applications are solicited for up to three Ralph Boas assistant professorships of three years each starting September 2006. 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 MathJobs.org: www.mathjobs.org and should include (1) the American Mathematical Society Cover Sheet for Academic Employment, (2) a curriculum vitae, (3) a research statement, and (4) 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, 2004. Northwestern University is an affirmative action, equal opportunity employer committed to fostering a diverse faculty; women and minority candidates are especially encouraged to apply.

OREGON STATE UNIVERSITY — The Department of Mathematics invites applications for a tenure track Assistant Professor position specializing in numerical analysis and/or scientific computing. Applicants should have a Ph.D in mathematics or a closely related field, significant active research engagement in numerical analysis and/or scientific computing, and excellence in teaching. The appointee will be expected to maintain a vigorous research program while participating in teaching, advising and mentoring at the graduate and undergraduate levels. The duties associated with this position include some teaching and advising in mathematics in connection with an interdisciplinary graduate program in Ecosystem Informatics. For this effort, we seek candidates whose numerical and/or computing background is complemented by a broad interest in mathematical modeling, especially as applied to problems involving multiple space and time scales and/or stochastic behavior. Further information about this position is available at **http://www.math.oregonstate.edu/hiring**. Applicants should send a letter of interest and a detailed curriculum vitae including a description of current and future research interests and a list of publications to: **Search Committee: Numerical Analysis, Department of Mathematics, Oregon State University, Corvallis, OR 97331**. Additionally three letters of recommendation are required. One letter should address teaching. These should be sent directly to the above address. For full consideration, complete application materials must arrive by December 15, 2005. OSU is an Affirmative Action/Equal Opportunity Employer.

PURDUE UNIVERSITY — Applications are invited for tenure-track Assistant Professor or three-year Research Assistant Professor appointments beginning August 2006. Ph.D. by August 14, 2006, exceptional research promise, and strong teaching record are required. Applications will also be accepted for possible appointments at the Associate Professor/Professor level. Ph.D. and excellence in research and teaching are required. Outstanding applicants from various mathematical research areas will be considered. Because the department has several openings in applied mathematics, candidates who have significant research accomplishments in applied mathematics or computational applied mathematics are especially encouraged to apply. Several positions will be available for terms ranging from one semester to two years beginning August 2006. All applicants should have research interests in common with Purdue faculty. Send vita, summary of research interests/plans, and arrange for three letters of recommendation (one addressing teaching) to be sent to: **Head, Department of Mathematics Purdue University, 150 N. University St., West Lafayette, IN 47907-2067**. Review of applications will begin November 15, 2005 and continue until available positions are filled. Offers for tenured and tenure-track positions may be made at any time; some offers for RAP positions will be made before the end of January 2006.The Mathematics Department is participating in the development of several interdisciplinary research clusters at Purdue. Please refer to **http://www.science.purdue.edu/COALESCE/** for details about these positions and application procedures. Purdue University is an Affirmative Action/Equal Access/Equal Opportunity Employer.

SEATTLE UNIVERSITY — MATHEMATICS DEPARTMENT FACULTY POSITIONS FOR THE ACADEMIC YEAR 2006-2007. Seattle University invites applications for two tenure-track positions in mathematics beginning September 2006. One position is open to mathematicians in any area of applied mathematics. The second position is open to applicants whose current research is in abstract algebra. The positions will be filled at the rank of assistant professor or, possibly, at the rank of associate professor for an exceptional applicant with qualifications and teaching experience appropriate to the associate professor level. Seattle University, founded in 1891, continues a four hundred and fifty year tradition of Jesuit higher education. The University's Jesuit Catholic ideals underscore its commitment to the centrality of teaching, learning and scholarship, of values-based education grounded in the Jesuit and Catholic traditions, of service and social justice, of lifelong learning, and of educating the whole person. Located in the heart of dynamic Seattle, the University enrolls approximately 6800 undergraduate and graduate students in eight colleges and schools. Students enjoy a university ethos characterized by small classes, individualized faculty attention, a strong sense of community, a commitment to diversity, and an outstanding faculty. The Mathematics Department is a vital component of the College of Science and Engineering, providing teaching support for all areas of the University as well as for mathematics majors. Requirements for the first position include a Ph.D. in applied mathematics or a Ph. D. in mathematics with an applied specialization. Requirements for the second position include a Ph.D. in mathematics in the area of abstract algebra. Requirements for both positions include: demonstrated excellence in teaching undergraduate mathematics; strong teaching recommendations; a commitment to continued scholarly growth, to undergraduate research, to the use of technology in teaching, and to contributing to the mission of Seattle University.A complete application must include an AMS Standard Cover Sheet, curriculum vitae, unofficial graduate transcripts, statements of your teaching philosophy and research plans, and three confidential letters of reference including phone numbers. Your application must also include a cover letter which addresses how you could contribute to the Mission of Seattle University. Please send to: **Mathematics Search Committee, Mathematics Department, Seattle University, 901 12th Avenue, P.O. Box 222000, Seattle, WA 98122-1090**. Closing date: Wednesday, November 30, 2005. Seattle University is an equal opportunity, affirmative action employer. For more information about the Mathematics Department at Seattle University as well as this position, visit our website at **http://www.seattleu.edu/scieng/math**

DEPARTMENT OF MATHEMATICS UNIVERSITY OF BUFFALO SUNY — The Department of Mathematics anticipates the appointment of several tenure-track assistant professors, effective August 2006. Salary will be competitive. We seek candidates from all fields, particularly Algebra, Applied Mathematics, and Geometry/Topology. Applicants should have excellent research accomplishments and potential, a Ph.D in the mathematical sciences and a strong commitment to teaching. A complete application consists of a curriculum vitae, a statement of research interests and four letters of recommendation. These materials should be sent to: **Search Committee, Department of Mathematics, University of Buffalo, SUNY, Mathematics Building 244, Buffalo, NY 14260-2900**. The deadline for applications is November 7, 2005. Late applications will be considered

ADVERTISEMENTS

until the positions are filled. No electronic applications will be excepted. The University of Buffalo is an Equal Opportunity Employer/Recruiter. We are interested in identifying prospective minority and women candidates. No person, in whatever relationship with the University of Buffalo, shall be subject to discrimination on the basis of age, color, creed, handicap, marital status, national origin, race, religion, sex, sexual orientation or veteran status.

UNIVERSITY OF CALIFORNIA, SANTA CRUZ — Mathematics Department. One or more Youngs Visiting Assistant Professorships, subject to availability of funding, effective Fall 2006. We invite applications from qualified mathematicians in all fields. Appointees are expected to teach and pursue their research. Available for periods of two years, with a possible extension to a third year depending on teaching performance. Minimum qualifications: Ph.D. (or equivalent expected by 6/30/06) in Mathematics or a closely related field. Demonstrated excellence in teaching and research. Salary Range: $48,900–51,700. Deadline: Application materials and reference letters must be postmarked by November 28, 2005. Interested applicants must submit a Curriculum Vitae, a research statement, a teaching statement, and three letters of recommendation (at least one letter must address teaching experience and ability). All letters will be treated as confidential documents (Please direct your letter writers to the UCSC Confidentiality Statement at http://www2.ucsc.edu/ahr/policies/confstm.htm). All application materials should be sent to: **VAP Recruitment Committee, Mathematics Department, University of California, 1156 High Street, Santa Cruz, CA 95064**. Please refer to provision #T05-39 in your reply. Inquiries [not applications] can be sent to **mathrcr@ucsc.edu**. UCSC is an EEO/AA employer. See **http://www.math.ucsc.edu/Jobs/Current.html** for complete job description

UNIVERSITY OF MICHIGAN — DEPARTMENT OF MATHEMATICS — Pending authorization, the Department anticipates having one or more openings at the tenure –track or tenure level. Candidates should hold a PhD in mathematics or a related field, and should show outstanding promise and/or accomplishments in both research and teaching. Applications are encouraged from any area of pure, applied, computational, or interdisciplinary mathematics, including mathematical biology, theoretical computer science, scientific computation, and actuarial or financial mathematics. Salaries are competitive and are based on credentials. Junior candidates should furnish a placement dossier; senior candidates should send a letter of application, curriculum vitae, and names of suggested reviewers. In all cases please provide a research statement and evidence of teaching excellence. Application materials should be sent to: **Personnel Committee, University of Michigan, Department of Mathematics, 2074 East Hall, Ann Arbor MI 48109-1043**. Applications are considered on a continuing basis but candidates are urged to apply by November 1, 2005. Inquiries may be made by e-mail to math-fac-search@umich.edu. More detailed information regarding the Department may be found on our web page: **www.math.lsa.umich.edu**. Women and minority candidates are encouraged to apply. The University of Michigan is responsive to the needs of dual career couples and is an equal opportunity/affirmative action employer.

T. H. HILDEBRANDT AND OTHER TERM ASSISTANT PROFESSORSHIPS, UNIVERSITY OF MICHIGAN, ANN ARBOR —These positions are designed to provide mathematicians with favorable circumstances for academic career development in research and teaching. Assistant Professorships have a teaching responsibility of two courses per semester; T.H. Hildebrandt positions have a responsibility of one course per semester. These positions may be combined with other funding sources giving additional reductions in teaching responsibility. Preference is given to candidates who receive the Ph.D. degree in 2004 or later and who submit a completed application by December 15, 2005. Salary is competitive and there are opportunities for supplemental summer salary. An application form for these positions, along with a list of current tenured mathematics faculty, is available for download in Microsoft Word or PDF format, at **www.math.lsa.umich.edu/information/positions**. Please provide evidence of teaching excellence. This form may also be obtained by e-mail from **math-postdoc-search@umich.edu**. You may apply at the AMS website: **www.ams.org/employment** (math jobs) The University of Michigan is an equal opportunity, affirmative action employer. Women and minorities are encouraged to apply. The University is responsive to the needs of dual career couples. Deadline for Applications: December 15, 2005

DEPARTMENT OF MATHEMATICS UNIVERSITY OF NOTRE DAME — NOTRE DAME, IN 46556. Regular Position in Interdisciplinary Applied Mathematics. The Department of Mathematics of the University of Notre Dame invites applications from an interdisciplinary applied mathematician with a special interest in multiscale methods, discrete mathematics, stochastic dynamical systems, reaction-diffusion systems, stochastic optimization and other fields. Applicants at all levels are welcome. The starting date for the position is August 22, 2006. Teaching load is one course one semester and two courses the other semester. The salary is competitive. Applications, including a curriculum vitae, a letter of application, and a completed AMS standard cover sheet, should be sent to: **William G. Dwyer, Chair**, at the above address. Applicants should also arrange for at least three letters of recommendation to be sent to the chair. These letters should address the applicant's research accomplishments and supply evidence that the applicant has the ability to communicate articulately and teach effectively. Notre Dame is an equal opportunity employer. Women and minorities are urged to apply. The evaluation of candidates will begin December 1, 2005. Information about the department is available at **http://www.math.nd.edu**.

DEPARTMENT OF MATHEMATICS, UNIVERSITY OF NOTRE DAME — NOTRE DAME, IN 46556, Regular Position in Algebra. The Department of Mathematics of the University of Notre Dame invites applications for a position in the area of algebra, including algebraic geometry and number theory. The starting date for the position is August 22, 2006. Candidates at any rank will be considered. The teaching load is one course one semester and two courses the other semester. The salary is competitive. Applications, including a curriculum vitae, a letter of application, and a completed AMS standard cover sheet, should be sent to: **William G. Dwyer, Chair**, at the above address. Applicants should also arrange for at least three letters of recommendation to be sent to the chair. These letters should address the applicant's research accomplishments and supply evidence that the applicant has the ability to communicate articulately and teach effectively. Notre Dame is an equal opportunity employer. Women and minorities are urged to apply. The evaluation of candidates will begin December 1, 2005. Information about the department is available at **http://www.math.nd.edu/**.

DEPARTMENT OF MATHEMATICS, UNIVERSITY OF NOTRE DAME — NOTRE DAME, IN 46556, Regular Position in Numerical Analysis. The Department of Mathematics of the University of Notre Dame invites applications from an applied mathematician with a special interest in numerical analysis. The starting date for the position is August 22, 2006. Candidates at any rank will be considered. The teaching load is one course one semester and two courses the other semester. The salary is competitive. Applications, including a curriculum vitae, a letter of application, and a completed AMS standard cover sheet, should be sent to: **William G. Dwyer, Chair**, at the above address. Applicants should also arrange for at least three letters of recommendation to be sent to the chair. These letters should address the applicant's research accomplishments and supply evidence that the applicant has the ability to communicate articulately and teach effectively. Notre Dame is an equal opportunity employer. Women and minorities are urged to apply. The evaluation of candidates will begin December 1, 2005. Information about the department is available at **http://www.math.nd.edu/**.

THE DEPARTMENT OF MATHEMATICS OF THE UNIVERSITY OF NOTRE DAME — NOTRE DAME, IN 46556 seeks applications and nominations for its Howard J. Kenna Chair in Mathematics. The successful candidate for this senior chair will be an internationally recognized mathematician in a central discipline of pure or applied mathematics. The department is particularly interested in candidates whose research activities are related to those of current faculty, but all applications are welcome. For an overview of the department, see **http://www.math.nd.edu/**. Applications should include a letter of interest, curriculum vitae, and the names, addresses, and telephone numbers

ADVERTISEMENTS

of three references. Applications and nominations should be sent to: **Professor William Dwyer, Department of Mathematics, University of Notre Dame, Notre Dame, IN 46556.** Notre Dame is an equal opportunity employer. Women and minorities are urged to apply. The review of candidates will begin immediately and continue until the position is filled. The desired starting date for the position is August 22, 2006.

DEPARTMENT OF MATHEMATICS, UNIVERSITY OF NOTRE DAME — NOTRE DAME, IN 46556. Special Professional Faculty Position. The Department of Mathematics of the University of Notre Dame invites applications for a Special Professional Faculty position. Candidates should have a doctorate in Mathematics or Mathematics Education, a passion for undergraduate teaching, and a record of excellence in the classroom. The starting date for these positions is August 22, 2006. Candidates at any rank will be considered. The teaching load can vary between two and three courses a semester, depending on class size and other duties. These are not tenure track positions, but they provide all usual faculty benefits, and have the possibility of being renewed indefinitely. The salary is competitive. Applications, including a curriculum vitae, a letter of application, and a completed AMS standard cover sheet, should be sent to: **William G. Dwyer, Chair**, at the above address. Applicants should arrange for at least three letters of recommendation to be sent to the chair. These letters should document the applicant's ability as a creative and effective teacher of undergraduate mathematics. Notre Dame is an equal opportunity employer. Women and minorities are urged to apply. The evaluation of candidates will begin December 1, 2005. Information about the department is available at **http://www.math.nd.edu/**.

HEAD, DEPARTMENT OF MATHEMATICS, UNIVERSITY OF TENNESSEE — The Department of Mathematics at the University of Tennessee invites applications for the position of Head. A Ph.D. in Mathematical Sciences is required. The successful candidate should be qualified to be tenured at rank of full professor in the department. Evidence of a distinguished record of research and a commitment to teaching as well as administrative experience should be provided at the time of application. A commitment to supporting both pure and applied mathematics is expected. Strong leadership skills and the ability to work effectively with colleagues, staff, and students are especially important characteristics. Experience with curricular matters, notable activity in professional associations, and experience with generating external funding are highly desirable. The successful candidate will also have an understanding of and demonstrated commitment to equal employment opportunities and affirmative action. The Mathematics Department currently consists of 39 full-time faculty, 30 full and part-time lecturers and 60 full-time graduate students representing both pure and applied mathematics. Research is of fundamental importance to the department. The faculty has a strong commitment to graduate and undergraduate teaching, is associated with many interdisciplinary programs, and maintains close research relationships with the Oak Ridge National Laboratory. For more information about the Mathematics Department, please visit the department web site: **http://www.math.utk.edu**. The university welcomes and honors people of all races, creeds, cultures, and sexual orientations, and values intellectual curiosity, pursuit of knowledge, and academic freedom and integrity. Applicants should submit a letter of application including current research interests and administrative philosophy, a curriculum vitae, and the names of at least four references. Women and minorities are encouraged to apply. Address material to: **Dr. Soren Sorensen, Chair, Head Search Committee, Department of Mathematics, 121 Ayres Hall, University of Tennessee, Knoxville, TN 37996-1300**. Review of applications will begin December 15, 2005 and will continue until the position is filled. 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.

DEPARTMENT OF APPLIED MATHEMATICS, UNIVERSITY OF WATERLOO—Tenure Track Position in Mathematical Medicine. The Department of Applied Mathematics, University of Waterloo, invites applications for a tenure-track faculty position in the area of mathematical medicine, to begin on or after July 1, 2006. Appointment at the Assistant Professor level is preferred, but extraordinarily strong candidates would be considered for a more senior position. Salary will be commensurate with experience and research record. Current research in this area includes projects being carried out in collaboration with medical practitioners at Princess Margaret Hospital and the Hospital for Sick Children, which focus, on the development of mechanical modesl that accurately describe a variety of diseases and clinical conditions. Candidates should exhibit potential for outstanding research, and should have a strong mathematical background. We are looking for applicants with enthusiasm for teaching at both the undergraduate and graduate level. Applicants should send a curriculum vitae (including a statement of research interests and teaching philosophy) and the names and addresses of at least three references to **J. Wainwright, Chairman, Department of Applied Mathematics, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1** (reference letters should not be sent at this stage). Screening of applications will begin on December 15, 2005, and the final deadline for receiving applications is January 15, 2006. Applications received after this date will be considered only if the position has not been filled. The Department of Applied Mathematics, together with the Departments of Combinatorics & Optimization, Pure Mathematics, Statistics & Actuarial Science and the School of Computer Science, form the Faculty of Mathematics, which is a major center for research in the mathematical sciences. Further information about the Department may be obtained from our webpage at **www.math.uwaterloo.ca/AM_Dept/index.html**. The University of Waterloo encourages applications from all qualified individuals, including women, members of visible minorities, native peoples, and persons with disabilities. All qualified candidates are encouraged to apply; however, Canadian citizens and permanent residents will be given priority.

UNIVERSITY OF WISCONSIN — MADISON UNIVERSITY OF WISCONSIN — MADISON — The Department of Mathematics anticipates an opening for one or more positions to begin August 28, 2006, at the tenure-track (assistant professor) or beginning tenure (associate professor) level. Applications are invited in all areas of mathematics. Candidates should exhibit evidence of outstanding research potential, normally including significant contributions beyond the doctoral dissertation. Applicants in the areas of topology/geometry and probability are particularly encouraged to apply. A strong commitment to excellence in instruction is also expected. Additional departmental information is available on our website: **http://www.math.wisc.edu**. Applicants should send a completed AMS Standard Cover Sheet, a curriculum vitae which includes a publication list, and brief descriptions of research and teaching to: **Hiring Committee, Dept. of Mathematics, Van Vleck Hall, University of Wisconsin-Madison, 480 Lincoln Drive, Madison, WI 53706-1388**. Applicants should also arrange to have sent to the above address,three to four letters of recommendation, at least one of which must discuss the applicant's teaching experiences and capabilities. Review of applications will begin on November 14, 2005. Applications will be accepted until the position is filled. Additional letters will be solicited by the department for candidates who are finalists for a tenured position. The Department of Mathematics is committed to increasing the number of women and minority faculty. The University of Wisconsin is an Affirmative Action, Equal Opportunity Employer and encourages applications from women and minorities. Unless confidentiality is requested in writing, information regarding the applicants must be released upon request. Finalists cannot be guaranteed confidentiality.

WAKE FOREST UNIVERSITY — Applications are invited for a tenure track position in mathematics at the assistant professor level beginning August 2006. We seek one person whose research is in Topology or Geometry. Duties include teaching at the undergraduate and graduate levels and continuing research. A Ph.D. in mathematics or equivalent is required. The department has 18 members and offers a B.A., B.S., and M.A. in mathematics and a B.S. in each of mathematical business and mathematical economics. Send letter of application and resume to **Stephen Robinson, Department of Mathematics, Wake Forest University, P.O. Box 7388, Winston-Salem, NC 27109-7388**. AA/EO employer.

2005/2006 Membership Form

AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

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

LAST NAME _____ FIRST NAME _____ M.I. _____

ADDRESS _____

CITY / STATE/ ZIP _____

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 part of your membership. Any questions, contact AWM at awm@awm-math.org; (703)934-0163 or refer to our website at: http://www.awm-math.org.

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

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

PROFESSIONAL INFORMATION:

Position: _____

Institution/Company: _____

City, State, Zip: _____

If student, check one:

☐ Graduate ☐ Undergraduate

If not employed, leave position and institution blank.

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

Individual Dues Schedule

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

☐	FIRST YEAR REGULAR INDIVIDUAL MEMBERSHIP	$ 30	
☐	REGULAR INDIVIDUAL MEMBERSHIP	$ 55	_____
☐	2ND FAMILY MEMBERSHIP	$ 30	_____
	(NO newsletter) *Please indicate regular family member:* _____		
☐	CONTRIBUTING MEMBERSHIP	$125	_____
☐	RETIRED or PART-TIME EMPLOYED MEMBERSHIP *(circle one)*	$ 30	_____
☐	STUDENT or UNEMPLOYED MEMBERSHIP *(circle one)*	$ 20	_____
☐	ALL FOREIGN MEMBERSHIPS (INCLUDING CANADA & MEXICO)....For additional postage, add	$ 10	_____
	All payments must be in U.S. Funds using cash, U.S. Postal orders, or checks drawn on U.S. Banks.		
☐	BENEFACTOR [$2,500] or FRIEND [$1,000] *(circle one)*	$	_____
☐	I am enclosing a DONATION to the "AWM GENERAL FUND"	$	_____
☐	I am enclosing a DONATION to the "AWM ALICE T. SCHAFER PRIZE"	$	_____
☐	I am also enclosing a DONATION to the "AWM ANNIVERSARY ENDOWMENT FUND"	$	_____

☐ Indicate if you wish for your contribution(s)/donation(s) to remain ANONYMOUS.
Dues in excess of $15 and all cash contributions/donations are deductible from federal taxable income.

Institutional Dues Schedule

☐	CATEGORY 1 (includes 10 student memberships; 1 free ad; 25% off additional Newsletter & online ads)	$300	_____
☐	CATEGORY 2A (includes 3 student memberships; 1 free ad; 10% off additional Newsletter & online ads)	$175	_____
☐	CATEGORY 2B (includes 6 student memberships; 10% off Newsletter & online ads)	$150	_____

ADVERTISING: Institutional members on Categories 1 and 2a receive ONE FREE job link ad or ONE FREE Newsletter ad (up to 4 lines) for the membership year Oct. 1 to Sept. 30. All institutional members receive discounts on other eligible advertisements (25% off for Category 1 and 10% off for Categories 2a and 2b). Eligible advertisements: The institutional discount applies to both classified and job link online ads as well as classified Newsletter ads, but it *does not apply* to Newsletter display ads. If institutional dues *have not been received* by the invoice date, the full advertising rate will be charged. Newsletter advertising deadlines are the 1st of every *even* month. All institutions advertising are Affirmative Action/Equal Opportunity Employers. **STUDENT NOMINEES:** Institutions have the option to nominate students to receive the newsletter as part of their membership. List names and addresses of student nominees on opposite side or attach a separate page. [ADD $20 ($25 for foreign members) to listed institutional rate for *each* student add-on over the initial 10 students for Category 1; over the initial 3 students for Category 2a & over the initial 6 students for Category 2b]. For more advertising/membership info see www.awm-math.org

☐ Indicate if gift membership from: _____ **TOTAL ENCLOSED $** _____

Volume 35, Number 5, September–October 2005

ADDRESS CORRECTION FORM

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

Name _____

Address _____

City _____ State _____ Zip _____

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

Position _____ Institution/Org. _____

Telephone: Home _____ Work _____

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

MAIL TO:

AWM
11240 Waples Mill Rd
Suite 200
Fairfax, VA 22030

or E-MAIL:

awm@awm-math.org

AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

AWM
11240 Waples Mill Road
Suite 200
Fairfax, VA 22030

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

Marie A. Vitulli
University of Oregon
Department of Mathematics
Eugene, OR 97403-1222

Printed in the U.S.A.