AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 35, Number 6 NEWSLETTER November–December 2005

AWM ELECTION!

Please vote online or via paper ballot! For further info, see pages 4-9. Ballot due: December 15, 2005.

IN THIS ISSUE

President's Report

What is the Right Number of Women?

An article in the October issue of *University Affairs* (the magazine of the Association of Universities and Colleges of Canada) features the work of the University of Toronto's Lisa Jeffrey, a well-known symplectic geometer and a member of AWM. While Lisa concentrates on making the point that research in symplectic geometry provides the rigorous mathematical basis of string theory, the author of the article was clearly also struck by the gender situation. The "hook" for the article (available at http://www.universityaffairs.ca/issues/2005/october/braid_apart_01.html) is the sentence, "Mathematics is often viewed as a male domain, but the field called symplectic geometry seems to be attracting an inordinate number of women." That word "inordinate" certainly catches the eye.

Now, perhaps one should not make too much of this sentence, even though it appears in the Canadian equivalent of the *Chronicle of Higher Education*—that is, a paper read by every academic department chair and senior university administrator. Perhaps in the US some politically correct editor would have blue-penciled it, fearing either that "inordinate" is not a term of approbation or that reminding twenty-first century readers of gender bias in mathematics is not appropriate these days. In fact, the curious readers who get hooked by this lead-in are treated to a well-written outline of the relation between geometry and physics, with some admiring comments about Lisa's work and about the high quality of mentoring of women in her field—encouragement by both women and men mentors that is credited with contributing to the large number of successful and prominent women now making their careers there. My dictionary defines "inordinate" as "immoderate, excessive, intemperate, disorderly," and one can be quite sure that this was not the sense intended in the article. And why shouldn't we be saying, at this point in history when 24% of Ph.D.'s at top-ranked institutions are earned by women, that a workshop without a single woman speaker has "inordinately few" women participants?

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.

One thing I've discovered, since beginning my job at the Fields Institute fifteen months ago, is that one can't just say to organizers, "Invite more women," and expect that to happen. So I have fantasy conversations. Here is one. Trust me, it did not take place.

I invite the chair of the organizing committee into my office and say, with a sweet smile, "Our participants, our funding agencies, and our academic sponsors expect to see more women speakers. It's something we feel committed to bring about."

The organizer, male, says, "We cannot compromise quality."

I say, confident and imperturbable, "Sometimes it's not a matter of lowering one's standards but just looking more widely. Perhaps not quite in the subfield you're thinking of, but in a closely related area, there is someone who can bring a lot to your meeting."

Now, we deal with very bright people. He does a quick calculation. "If everyone invites men in a narrow area and women from wider areas, then those women are going to be represented at a much larger range of conferences. Women are going to get many more invitations than men of comparable quality. That isn't fair."

I'm ready for him, though. "That argument sounds familiar," I say. "I know where I've seen it. Now that many universities require that every committee have a woman on it, many of my colleagues are complaining about how many committees they are assigned to sit on—some of them useful, and many of them less so. Why shouldn't the women who have been willing to assume those extra, time-consuming and often stressful tasks be rewarded by getting a few extra invitations to meetings in nice places with interesting people? My colleagues have taken on extra work because they want to set a good example and to smooth the way for the next generation. It seems only fair that they might occasionally get an extra reward."

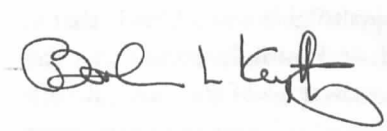
I told you, it didn't happen.

It can be fascinating to sit on an organizing or selection committee and to watch the dynamics change, often in response to the quiet urging of one supportive member. Someone will observe that not very many women, or visible minorities, or junior researchers, have yet been included in the participant list, and then will start to mention the names of a few people. Not insistently, just musingly. Other people will chime in with more names. Within a few minutes, everyone on the committee has joined the competition to see who can think of the most, and the most interesting, names. Of course, in order for me to have witnessed this, the committee must have had at least one woman on it. Sometimes it is not the woman's voice that first raises the point (though often it is the women on the committee who come up with the most imaginative names). But how does one ensure that this first, quiet voice is at the table? Some organizations, such as MSRI, are now ensuring this by requiring that each organizing committee designate one of its members to perform the task. Although this might not be optimal, it might be effective. In my fantasy, it happens spontaneously, serendipitously. I recall a lunchtime conversation with an engineering faculty

member who, at some point, began asking me, more and more insistently, how to help get young women to study more mathematics. It turned out that he had two daughters in high school and had begun to realize that he needed to help them prepare for careers that would challenge and reward them. When it comes to committee dynamics, in reality, I have no idea what motivates that voice. But in my mental screenplay I can imagine a number of causes, and of course I can imagine the sense of satisfaction of the player who made it all happen.

In remarking on the large number of talented women who are making their mark in symplectic geometry, several people interviewed in the *University Affairs* article spoke of the influence of a few mentors. Perhaps those mentors and advisors have played a role similar to the conference organizer I described in the previous paragraph. Perhaps they have simply been willing to put aside their preconceptions, and to challenge others to do so, too—including, of course, the preconceptions of their students who are unsure that they will be able to succeed. Should each mathematics department designate a "professional encourager"? Or should each field of research in the mathematical sciences designate a person, perhaps chosen from one of the top departments in that field, so that the distribution of women researchers among different fields becomes more uniform?

Maybe that word "inordinate" hides a bit of envy, as fields that have not yet attracted a sizable number of women wonder about the magic of fields that have had more success. Maybe we can help. Can we encourage a colleague who would like to see women in his field but feels awkward and is nervous about being misunderstood when he approaches women students? Can we steer our women students towards colleagues we know to be supportive, even if their reputation has not spread to the students yet? Above all, can we keep reminding everyone that, when it comes to participation of women in the mathematical enterprise, no number is too large?



Barbara L. Keyfitz
Toronto, Canada
September 26, 2005

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.

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

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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::
February 1, 2006 and May 1, 2006

NSF-AWM Mentoring Travel Grant:
February 1, 2006

Ruth Michler Collaborative Travel Grant:
February 1, 2006

AWM-SIAM Workshop: January 26, 2006

Sonia Kovalevsky High School Mathematics Days: February 4, 2006

AWM/MSRI Workshop
Funding: March 1, 2006
Registration: April 1, 2006

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AWM Election

This year, we are electing a President-Elect, Clerk, and four Members-at-Large of the Executive Committee. We are electing more Members-at-Large than in the past due to the recent change in our bylaws that enlarges the Executive Committee. The Member-at-Large positions are contested, so we encourage you to vote. Statements and biographical data provided by the candidates follow. Those elected will take office on February 1, 2006.

The bylaws change also authorized us to hold elections via electronic means. You will receive an e-mail inviting you to vote on November 21, 2005. At that time the electronic ballot link (www.awm-math.org/ballot.htm) will be activated. You will be asked to provide your membership number when you vote; this number will be included in the e-mail that you receive. Also, a ballot is included on page 43 of this issue, for those who prefer to vote the old-fashioned way. A validating signature is required on the envelope if you vote via paper ballot. Institutional, affiliate, and corporate memberships do not carry voting privileges. Electronic ballots must be cast by **December 15, 2005**, which is also the due date for paper ballots.

PRESIDENT-ELECT

Cathy Kessel, mathematics education consultant, Berkeley, California

Since AWM began in 1971, some aspects of the situation for women in mathematics have changed for the better. Approximately one third of US citizen Ph.D.'s in mathematics now go to women, and an increased percentage of mathematicians in senior positions is female. But misleading stereotypes about women and mathematics persist. This year they were invoked by remarks from the president of Harvard. In years past similar stereotypes have been invoked by textbook scenarios, "jokes" about women in mathematics, and Barbie (who said, "math is hard"). In the 1980s, Benbow and Stanley found that the ratio of high-scoring boys to girls was 13 to 1 when a test of "mathematical reasoning ability" (the SAT) was not randomly administered. These findings received much publicity—unlike the findings of later "talent searches," in which the ratio of high-scoring boys to girls was 2.8 to 1. Part of what AWM does is to address the stereotypes and misinformation that can accompany such publicity. In response to media coverage of Summers, Barbie, and Benbow and Stanley, AWM members have written letters to editors, given interviews, and thoughtfully covered the events in the *Newsletter.* Every year, women's achievements in mathematics and mathematics education are made visible by the AWM Essay Contest, the Schafer Award, the Hay Award, and the Noether, Falconer, and Kovalevsky Lectures.

Over the years, AWM members have asked those uncomfortable questions: Why are there no women giving talks at—fill in the blank—meeting? How

many women have tenure at the "top ten" mathematics departments? How many women are receiving NSF postdocs?

Another part of what AWM does is to provide women and girls with some of the advice, support, and experiences that weren't always available to previous generations—in the *Newsletter,* on the Web site, and through a remarkable array of workshops, programs, and conferences. These are all due to the members who put time and thought into designing and putting them into action, the support of our staff, and the generosity of our funders.

Since AWM began, the situation for mathematicians has changed. More attention is now paid to diversity—of culture, ethnicity, race, sexual orientation, disability, personal lives, and career path. A larger percentage of mathematicians now work in industry, and many more academic jobs are part-time. It is not surprising that a large percentage of those mathematicians in part-time jobs are women. Reasons for this may include overt discrimination and unconscious bias as well as "work–life balance" concerns, which tend to affect women disproportionately.

My career may be more non-standard than that of any previous president, but that hasn't precluded my involvement in AWM. I've served as a book reviewer, as a book review editor, and on committees, and have organized and spoken on AWM panels. Directly and indirectly, AWM has supported me in my non-standard career. I look forward to working with AWM officers and staff to support women and girls in mathematics. To be nominated as president of AWM is an honor.

Biographical Sketch: I received my B.A. from the University of Chicago, M.A. from the University of California at Berkeley, and Ph.D. from the University of Colorado at Boulder. My research interest was mathematical logic, especially model theory. I have taught mathematics in various colleges and universities, including Mills College, Vista Community College, and Ohio State University (where I shared an office with Kyewon Park, the first president of Korean Women in the Mathematical Sciences). As part of a workplace literacy program, I taught arithmetic to hospital workers.

During the 1990s I shifted from being a mathematician to being a researcher in mathematics education—auditing courses and working on research projects at the School of Education at the University of California at Berkeley and at Melbourne University in Australia. While in California, I served on the Math/Science Network board and on its Expanding Your Horizons advisory board. I have worked as a developer for the New Standards High School Reference Exam, as an editor for Liping Ma's *Knowing and Teaching Elementary Mathematics,* as a developer of worksheets for calculus at the University of California, as an additional writer for *Principles and Standards of School Mathematics,* and as an editor for the Conference Board on the Mathematical Sciences report on the *Mathematical Education of Teachers.* My publications include articles on a grade 8 student's understanding of linear functions, on Alan Schoenfeld's problem solving course, on cognition and gender, mathematics and gender, and assessment and gender. Some recent projects involve curriculum: an intervention for students in grades 4–6 written with Liping Ma and grades 6–9 curriculum units for the National Center for Education and the Economy.

Currently, I serve on the Mathematical Association of America Committee on Undergraduate Programs in Mathematics Illustrative Resources Editorial Board, on the AWM Long-range Planning Committee, and as the chair of the AWM Education Committee.

CLERK

Maura Mast, University of Massachusetts Boston

I have been a member of AWM since I was a graduate student. It has been very important to me to be a member of a group that shares my passion for encouraging women and girls in the mathematical sciences. The support that family and friends gave me was key to my success as a mathematician. As a result, I have worked as a teacher, as a mentor, and as a friend to help other women succeed in mathematics. Through my work, participation in conferences, and involvement with AWM, I have learned more about the issues surrounding women in the mathematical sciences. I have benefited in other ways from my membership in AWM: I participated in several AWM-sponsored workshops, attended panel discussions at national meetings, and gained new friends and colleagues through the AWM network. As Clerk, I feel that I can give something back to the organization. I have held the position of Clerk since December 2003, and my primary duty has been to write and keep official records of meetings and conference calls for

the Executive Committee. In addition, I tallied votes during elections and prepared summaries of member surveys for the President. During the past two years, the Executive Committee has worked to develop and implement a strategic plan. It has been exciting to be involved in this process and rewarding to see the changes resulting from the plan. It has been an honor to support AWM in my role as Clerk and I look forward to continuing this work, and my involvement with AWM, during the next several years.

Biographical Sketch: Maura Mast was an undergraduate mathematics and anthropology major at the University of Notre Dame and received her Ph.D. from the University of North Carolina in 1992. Her research area is differential geometry, with a focus on the geometry of Riemannian nilmanifolds. She is currently an Associate Professor of Mathematics at the University of Massachusetts Boston. She has held visiting positions at Wellesley College and the University of Notre Dame and visited Northeastern University as the recipient of a National Science Foundation Visiting Professorship for Women. Before joining the faculty at UMass Boston, she was a faculty member at the University of Northern Iowa. She has won several awards for her teaching. Over the past several years, she has been involved in developing the quantitative reasoning program at UMass Boston. In January 2006 she will become the chair of SIGMAA QL, the MAA's Special Interest Group for Quantitative Literacy.

MEMBER-AT-LARGE

Magnhild Lien, California State University Northridge

I am honored to have been nominated as a candidate for the AWM Executive Committee. Professional organizations play an important role in promoting and supporting its members, and the AWM in particular has, since its beginning, been concerned with issues of special interest to women mathematicians. The AWM should continue to: serve as a liaison between its members and the other professional organizations in our field; ensure that issues of concern to women mathematicians are in the forefront; support and encourage women to take on leadership roles both at the local and national level; promote and increase the visibility of women as research mathematicians; spread the "I can do mathematics" message to young girls. As a member of the Executive Committee I will be proud to help carry forward the excellent work already done by the AWM and explore new ways to further expand women mathematicians' role in the greater mathematical community.

Biographical Sketch: Magnhild Lien, professor of mathematics at California State University Northridge (CSUN), received her Ph.D. in mathematics from the University of Iowa in 1984. Her area of specialization is knot theory. She is currently in her eighth year as Department Chair of the Mathematics Department at CSUN. She served on the Board of the Southern California-Nevada Section of the MAA for four years, the last year as Section Chair. Lien created and continues to organize the SoCalNev Section NExT. She is a member of the Management Council of the NSF funded MAA project PMET (Preparing Mathematicians to Educate Teachers) and a co-coordinator of the California effort of the PMET project; she has been the co-leader of two PMET summer workshops. Lien is a member of AWM's Committee on Committees and the Professional Development Committee of the MAA. In 1997, she organized and directed a four-week residential summer program for women in mathematics, funded by a grant from the National Security Agency. She has been a mentor for young women mathematicians at the AWM Workshops at two annual AMS-MAA meetings. In addition to articles published in mathematics research journals, she has written two papers entitled "Influences on Female Math Majors' Choice of Discipline" and "Gender-Typing of Science Occupations." Both papers were presented at professional sociology conferences.

Dawn A. Lott, Delaware State University, Dover

I currently enjoy producing meaningful research and providing quality training and advising of undergraduate and graduate students as part of my responsibility as an associate professor at Delaware State University. I have been associated with the AWM in many arenas and I continue to hold a passion for its work and its goals. I want to inspire other women in mathematics as women have inspired me. I believe in the mission of the AWM and I continue to work diligently toward its goals. I believe that each success I achieve reflects positively on the organizations in which I

hold membership. I would bring to the Executive Committee the leadership qualities that I have acquired through service to several mathematical organizations. I look forward to serving on the Executive Committee of the Association for Women in Mathematics and representing the AWM with excellence and grace. I am dedicated to the academic needs of future mathematicians and scientists.

Biographical Sketch: Dawn Alisha Lott is an Associate Professor of Applied Mathematics at Delaware State. Her major research interest is the numerical study of solutions of nonlinear partial differential equations that model physical phenomena in solid and fluid mechanics, biomechanics and physiology; she is particularly interested in the development and implementation of effective numerical methods for equations exhibiting localized regions of rapid variations and/or large deformations. Her research addresses the medical concerns of women and people of color whose presence is lacking in the mathematical sciences. Lott works with mathematical predictions for aneurysm treatment, wound closure, and breast cancer reconstructive surgery. The latter process improves the self-esteem of women and the quality of their lives; Lott's objective is to make a significant mathematical and biomedical contribution toward the improvement of non-invasive medical technology.

Currently, Lott is a member of the AWM, the MAA, SIAM, the AMS, and the Biomedical Engineering Society; she is Vice-President of the National Association of Mathematicians (NAM). Lott served as the Vice-chair of Speakers for the NJ Section of the MAA from 2000 to 2003. Lott is an advisor to the EDGE Program (Enhancing Diversity through Graduate Education) and has taught in its summer program at Spelman College (2004). She has also taught in the GEMS Program (Girls' Explorations in Math and Science) at Delaware State University (2004) and the Upward Bound Program at the New Jersey Institute of Technology (2001, 2002). Lott has given numerous motivational speeches during 2003–2005 to encourage women and minorities to pursue graduate level mathematics.

Lott is an avid supporter of the AWM. She presented a poster at the AWM workshop in Philadelphia as a graduate student and a talk on her research as a postdoctoral fellow. She served as Chair of the Sonia Kovalevsky Selection Committee in 1999 and Chair of the Graduate Student Selection Committee from 1999 to 2003. She has been a member of the AWM mentor network since 2001, and she served on the Nominating Committee in 2001. Her most recent contribution to the AWM was serving as Chairperson of the AWM Workshop for Graduate Students and Recent Ph.D.'s at the Atlanta JMM in January 2005. At this conference she also participated in the panel on "Shaping a Career in Mathematics."

Lott has refereed papers for the *SIAM Journal on Scientific Computing,* the *SIAM Journal on Applied Mathematics,* the *Journal of Computational Physics* and the *Journal of Women and Minorities in Science and Engineering,* among others. She presents her research in various forums, both national and international, several times a year.

The GEMS Program at DSU, the MAA, NAM, and AMP, and the Ronald E. McNair Post-baccalaureate Achievement Program have recently honored her. She was instrumental in the development of the Interdisciplinary Ph.D. Program in Applied Mathematics and Mathematical Physics at DSU and is the Principal Investigator of a pending grant entitled "The Development of an Interdisciplinary Ph.D. Program in Computational Biology and Applied Mathematics at an HBCU." She is an active member of the Department of Mathematics, the Department of Biotechnology and the Applied Mathematics and Theoretical Physics Graduate Department at DSU.

Lott is sensitive to the needs of the maturing student, as individuals mature at different paces. As an applied mathematics professor, her goal is not only to present material, but to help students satisfy their desire for comprehension and analytical thinking and to meet their need to acquire knowledge. In the past decade, she has tried to make a difference in her students' education. Lott continually seeks out excellent students and encourages them to pursue graduate or professional degrees. In May 2005, she graduated her first master's degree student; she is currently advising two students in pursuit of doctoral degrees.

Alice Silverberg, University of California at Irvine

I believe that the reason I was asked to run for the Executive Committee of the AWM is my strong interest in working towards equal opportunity. We can work to accomplish this by increasing fairness and openness in our

profession. We are not there yet and have a long way to go. I believe that making information widely accessible will help the mathematics and academic communities move away from the traditional old boy network way of operating. I hope that the AWM will play a supportive role in helping the people in our communities learn to behave professionally, fairly, and legally. I would like to see the AWM become a helpful resource for departments and universities that would like to change the way they do business so as to insure that (1) the best people are selected, and women and minorities are not overlooked, and (2) all of their members are treated fairly, supportively, and with respect.

Biographical Sketch: Alice Silverberg earned her A.B. summa cum laude from Harvard-Radcliffe in 1979, a Certificate of Advanced Study from Cambridge in 1980, and her Ph.D. from Princeton in 1984. She rose through the ranks at Ohio State and is now a professor at UC Irvine. She has held Humboldt, Bunting, Sloan, IBM, and NSF fellowships and an MSRI Research Professorship; she has also held a number of visiting research positions at institutions in the US and abroad, including the Institute for Research on Women and Gender and the Bunting Institute. She has served the AMS on a number of committees, including Member-at-Large of the AMS Council, the Committee on Committees, Chair of the Centennial Fellowship Committee, and program committees. Her interests include number theory, arithmetic algebraic geometry, and cryptography, and her hobbies include composing mathematically inspired Scottish country dances. For more information, see http://math.uci.edu/~asilverb.

Margaret Symington, Mercer University

I am honored to be nominated for the executive committee of the AWM. I am currently an associate professor in the College of Liberal Arts at Mercer University. My prior background includes graduate studies in engineering, teaching at a small progressive high school, and graduate study in pure mathematics followed by nine years at large research departments (University of Texas, University of Illinois, and Georgia Tech) in post-doctoral, visiting and tenure-track positions. My current shift from primarily research institutions to a liberal arts college brings me full circle, allowing the educator half of my professional identity to develop more fully.

I owe a great deal to the mathematicians who have been my mentors. Their encouragement, advice, and occasional directives at critical moments have been instrumental in my professional development. In turn, I have been a mentor in the AWM mentoring network since 2001 and have participated in the IAS/PCMI Mentoring Program for Women as both a student and a mentor. I have also run mathematics workshops for middle school girls as part of Expanding Your Horizons. Currently I am involved in outreach efforts to support middle school teachers in my area.

Through all of its activities, the AWM serves a crucial role in helping women, school age girls through professional mathematicians, connect with people who can offer the inspiration, mentoring, and support that have a lasting effect on their choices, opportunities and careers. Furthermore, the travel grants offered by the AWM play an important role in maintaining or reinvigorating the research programs of women.

If elected as a member-at-large of the AWM, my focus would be on raising the profile of the AWM in order to strengthen the current programs and broaden the spectrum of women mathematicians and school age girls who are supported by the AWM.

Abigail Thompson, University of California, Davis

There are not enough women in mathematics. One of the aims of the AWM is to rectify this. While there has been substantial progress in the 19 years since I received my Ph.D., the disparity remains striking, particularly if we examine the most prestigious institutions. What are the reasons for it? What can we do about it? One thing we can do about it is to provide a forum for open discussion with the promise that participants will not be vilified for their remarks. While I think Lawrence Summers' hypotheses about probable causes are mostly nonsense, I was distressed at the instantaneous stifling of all discussion of the topic, and of his ideas. And the result of the whole brouhaha? Harvard is preparing to throw $50 million dollars into the abyss of politically correct bureaucracies and special diversity task forces. Is this going to help? Without spending $50 million we could sponsor a truly open discussion, which might get us somewhere.

Twenty years ago the answer to the question "what should we do about it?" was obvious: stop overt discrimination against

women at every level. We have made tremendous progress towards that goal, and the AWM has been a driving force. Yes, we need to continue to work on this. But from my experience with students, serving on admissions committees for graduate students and on hiring committees for faculty, we're doing pretty well. Things aren't perfect. There are holdouts, and I'm sure there are some very unpleasant departments. But I don't think ascribing the current situation to current discrimination explains much. When will a woman win the Fields Medal? What does explain the shortage of women in math, especially at the very highest levels of research mathematicians? I have lots of guesses, but I don't know, and from what I've read, no one else really does either. We're not going to find out if we can't talk about it.

Elizabeth (Betsy) Yanik, Emporia State University

I have been increasingly involved with a variety of groups that I believe should have a closer collaboration. Having served on the AWM Education Committee for a number of years, I realize that there are a number of possibilities for partnering with the NCTM affiliate Women and Mathematics Education, which I currently serve as president. I am also a member of the MAA Committee on the Participation of Women and the MAA Board of Governors and the national director of the Women and Mathematics Network, a group of mathematics outreach program directors. At my institution, I am the co-director of three special outreach programs for young women: Sonia Kovalevsky Mathematics Day (11 years), Expanding Your Horizons in Science and Mathematics (11 years), and a one week summer program, MASTER IT (6 years). I have organized three Women Count conferences (2001, 2003, 2005) to reenergize current outreach program directors and support the efforts of prospective directors. This year I was honored to receive the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring. I would welcome the opportunity as an at-large member of AWM's Executive Committee to be involved in collaborative work to further the numbers of and opportunities for women in mathematics.

NSF-AWM Travel Grants for Women

The objective of the NSF-AWM Travel Grants program is to enable women researchers in mathematics or in mathematics education 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. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM.

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 $1500 for domestic travel and of $2000 for foreign travel will be applied. For foreign travel, U.S. air carriers must be used (exceptions only per federal grants regulations; prior AWM approval required).

Eligibility. These travel funds are provided by the Division of Mathematical Sciences (DMS) and the Division of Research, Evaluation and Communication (REC) of the NSF. The conference or the applicant's research must be in an area supported by DMS. Applicants must be women holding a doctorate (or equivalent experience) and with a work address in the USA (or home address, in case of unemployed mathematicians). Anyone who has been awarded an AWM-NSF travel grant in the past two years is ineligible. Anyone receiving a significant amount of external governmental funding (more than $2,000 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.

Applications. An applicant should send *five* copies of 1) the AWM Travel Grant Form, where conference name, conference dates and location (city/state/country), and amount of support requested should be provided, 2) a cover letter, 3) a description of her current research and of how the proposed travel would benefit her research program, 4) her curriculum vitae, 5) a budget for the proposed travel, and 6) 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 by e-mail at awm@awm-math.org. Applications via e-mail or fax will not be accepted. There are three award periods per year. The next two deadlines for receipt of applications are **February 1, 2006** and **May 1, 2006**.

AWM Welcomes New Executive Director

AWM press release

Effective October 1, the Association for Women in Mathematics (AWM) has named Jennifer J. Quinn as its executive director. In conjunction with the association management company engaged by the AWM earlier this year, Quinn will support the work of the volunteer officers on its main governing body, the AWM Executive Committee. She will be actively involved with the AWM membership at the Joint Mathematics Meetings, the SIAM Annual Meeting, and other events in which AWM participates. Her duties will include generating new membership, grant reporting, facilitating committee rotation and volunteer efforts, and carrying out new initiatives.

Jennifer L. Quinn

Barbara Keyfitz (University of Houston), President of AWM and current Director of the Fields Institute in Toronto, says: "Following a year-long quest for a governance and staff structure in keeping with the increased reach and responsibilities of AWM, we are excited to have reached this point. AWM's capable staff understands and satisfies its infrastructure needs, allowing the volunteer leadership to focus on the mission of AWM: advocacy and support for women and girls in the mathematical sciences. Quinn will greatly enhance these efforts."

Catherine Roberts (College of the Holy Cross), chair of the hiring committee and member-at-large of the AWM Executive Committee, adds: "We have been lucky enough to attract, for the position of Executive Director, a senior member of the mathematics community. We are proud to welcome Jennifer J. Quinn as the 'public face' of AWM."

Quinn received her B.A. magna cum laude from Williams College with majors in mathematics and biology. Working as an actuary in Chicago after graduation convinced her to return to academic life. She earned her M.S. in pure mathematics from the University of Illinois at Chicago and her Ph.D. in combinatorics, working with Richard Brualdi at the University of Wisconsin, Madison. For the past twelve years, she has taught at Occidental College, rising to the rank of full professor and serving as chair of her department.

Quinn's research interests include graph theory, combinatorial matrix theory, and exploring the connections between partitions and quantum physics. Her mathematical passion is for combinatorial proof. One lifelong goal is to prove Ernst Mach correct when he said: "There is no problem in all mathematics that cannot be solved by direct counting." To this end, she and co-author Arthur Benjamin from Harvey Mudd College wrote *Proofs that Really Count: The Art of Combinatorial Proof.* Published in 2003 by the Mathematical Association of America (MAA), it has been called "ingenious," "elegant," and "a masterpiece." Selected by *Choice,* the principle review journal for academic libraries, as an Outstanding Academic Title for 2004, it continues to earn acclaim.

In 2001, Quinn was awarded the MAA Southern California Section Award for Distinguished Teaching and in 2005, Occidental College's Graham L. Sterling Award for Faculty Excellence. She has served on the boards of the *Spectrum* book series of the MAA, *Mathematics Magazine,* and the Phi Beta Kappa Alumni Association of Southern California.

While serving the AWM as Executive Director, Quinn continues her work with Art Benjamin as co-editor of the magazine *Math Horizons* and as a Visiting Research Scholar at the University of Puget Sound. She works from Tacoma, Washington where she lives with her husband Mark Martin, a microbial geneticist, and two young sons, Anson and Zachary.

Quinn writes, "I chose to pursue this position because of its importance promoting mathematics and the role of women in mathematics. The major decisions regarding organizational operations are complete; now we can refocus on better serving and expanding our membership. I'm looking forward to my involvement in the enterprise. This is an exciting time for the AWM."

Childcare at the JMM

The American Mathematical Society and the Mathematical Association of America will be offering childcare services to registered participants at the San Antonio Joint Mathematics Meetings. These child care services will again be offered through KiddieCorp Children's Program on a trial basis. KiddieCorp is an organization that has been providing high quality programs for children of all ages at meetings throughout the United States and Canada since 1986; it provided similar services at the JMM in Atlanta last year. Read all about them at http://www.kiddiecorp.com/.

The childcare services provided at the JMM are for children ages 6 months through 12 years old. Space per day will be limited and is on a space-available basis. The dates and times for the program are January 12–15, 2006, 8:00 a.m. to 5:00 p.m. each day. It will be located in the Hilton Palacio del Rio (.20 mile/1.5 blocks/across the street from south side of the Convention Center). Parents are encouraged to bring snacks and beverages for their children, but items such as juice boxes, cheerios and crackers will be provided. KiddieCorp can arrange meals for children at cost plus 15%, or parents can be responsible for meals for their children.

Registration has already begun. To register, visit http://www.kiddiecorp.com/jmmkids.htm or call KiddieCorp at 858-455-1718 to request a form. The registration fee is $25 per family (nonrefundable). The additional cost will be $8 per hour per child ($6 per hour per child for graduate students). These reduced child care rates are made possible to the meeting participant by the AMS and the MAA. If parents do not pick up their children at the time scheduled or by the end of the day (no later than 5:00 p.m.), they will be charged a late fee of $5.00 per child for every 15 minutes thereafter.

Parents must be registered for the JMM to participate. Full payment is due at the time of registration with KiddieCorp. The registration deadline is **December 22, 2005**. Cancellations must be made to KiddieCorp prior to December 22, 2005 for full refunds. Cancellations made after that date will be subject to a 50% cancellation fee. Once the program has begun, no refunds will be issued.

Collaborative Research Grants for Women

Dedicated to the memory of Ruth Michler

AWM will continue to offer Collaborative Research Grants to enable women who are already tenured to carry out collaborative research at other institutions. (Women who are not yet tenured are referred to the Mentoring Grants Program.) We anticipate offering one or two grants for amounts up to $2500 in 2006. Each grant may be used to fund travel, accommodations, and other required expenses for a tenured woman mathematician to travel to an institute or a department to do research with a specified individual. All travel must be completed within one year of the award. For foreign travel, US air carriers must be used (exceptions only by prior approval from AWM).

Applications: Applicants must be women holding tenure or equivalent experience and must have a work address in the US. The applicant's research must be in a field that is supported by the Division of Mathematical Sciences of the National Science Foundation. (See http://www.nsf.gov/od/lpa/news/publicat/nsf03009/mps/dms.htm#1 for the list of supported areas.)

An application should consist of: 1) the AWM Collaborative Research Grant Form; 2) a cover letter; 3) a curriculum vita; 4) a research proposal (approximately five pages in length) which specifies why the proposed travel would be particularly beneficial; 5) a supporting letter from the proposed collaborator (who must indicate his/her availability at the proposed travel time), together with the curriculum vita of the proposed collaborator; 6) a proposed budget; and 7) information about other sources of funding available to the applicant. A final report will be required from each awardee. Awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM.

Send *five* complete copies of the application materials (including the cover letter) to: Collaborative Research Grant Selection Committee, AWM, 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 1, 2006**; applications via e-mail or fax will not be accepted.

From There To Here

Constance Reid

When I was in high school (1931–34), only one girl took mathematics after elementary algebra and plane geometry. That girl was my sister Julia, who became the first woman mathematician to be elected to the National Academy of Sciences and the first woman to serve as president of the American Mathematical Society.

Although I received A's in the two mathematics courses required for admission to the University of California, my high school counselor never suggested that I major in mathematics, nor—in all honesty—would I have been interested in doing so. I majored in English and became a teacher of English and Journalism. I had vague ideas of becoming a writer.

My first book, *Slacks and Calluses* (1944), was a lighthearted account of a summer vacation spent working on a bomber production line during World War II, republished by The Smithsonian Press (1999). My second book, after I had married and left teaching, was *From ZERO To INFINITY* (1955). This book originated in an article for *Scientific American* titled "Perfect Numbers." The article was about the first successful application of the then newly invented electronic computer to a problem in pure mathematics—the testing of potential primes necessary for the formation of "perfect numbers"—numbers that are the sum of all their divisors except themselves; for example, $6 = 1 + 2 + 3$.

When I was in high school (1931–34), only one girl took mathematics algebra and plane geometry. That girl was my sister Julia, who became the first woman mathematician to be elected to the National Academy of Sciences and the first woman to serve as president of the American Mathematical Society.

Under "AUTHORS" I described myself as "a California free-lance writer and housewife who has always had a lively interest in mathematics." A housewife. Still more embarrassing to me today is that in my correspondence with the editor, I signed Constance Reid above a typed "Mrs. Neil D. Reid."

Although later a subscriber wrote to object that when he read an article in *Scientific American* he expected the author to be a Ph.D., not a housewife, my being a housewife did not concern the publisher Robert L. Crowell anymore than it had concerned Dennis Flanagan, the editor of *Scientific American.* After reading my article, Crowell wrote immediately to ask if I would be interested in writing a little book on numbers that he could pair with a book on the alphabet.

It was unquestionably the most surprising proposal I ever received.

At this point I have to admit that my "lively interest in mathematics," mentioned under "AUTHORS," had referred to the fact that during a period when my younger sister Julia and I shared a room I used to keep her awake by having her tell me interesting things about numbers that she had learned from E. T. Bell's *Men of Mathematics* (1937).

Nevertheless, as a writer trying not too successfully to have what she wrote published, I began to think—twenty-six letters, ten digits. The article in *Scientific American* would be a model for each chapter: number lore, number history, and then something of the mathematics that related to each digit, either unique or as the first in a series of numbers—infinite or finite? In the *Scientific American* article the digit had been SIX, so I had one chapter essentially written. The article had been about the fact that computer testing had turned up five new perfect numbers. That was the news. But that was not what had aroused my interest. Perfect numbers had been known since the time of Euclid. What was most interesting to me was the fact that mathematicians still did not (and still do not) know how many perfect numbers there are, are there finitely or infinitely many? To my understanding no "giant brain" would ever be able to answer that question. Only a mathematician.

What Makes Numbers Interesting—that was what I would call the book I was going to write.

Could I do it? I consulted my sister and her husband, Raphael Robinson. He was the Berkeley professor who had

programmed the Bureau of Standards Western Automatic Computer to test such astronomically large numbers for primality—never having seen a computer and working only from the manual!

Julia and Raphael had always been eager to interest me in things mathematical. Although Robert Crowell's proposal was something of a joke to them—Constance writing a book about "mathematics"—they said that they thought I could do what I proposed. They also agreed to educate me where education was required.

I promptly, very promptly, sent off a proposal to Robert Crowell. He replied that he had found my sample chapter on ZERO "pretty tough sledding," but he was sending me a contract for a book.

Today I don't really know how I managed to write the book that I wrote at that stage in my life. I know I learned a lot in the course of doing so, and I found what I was learning extremely interesting. I didn't see how it could fail to interest others. In one case I remember Raphael insisted on my giving the readers some real mathematics. That was the chapter on NINE, where my plan to write about the ancient arithmetical check of casting out nines evolved into an exposition of the Law of Quadratic Reciprocity.

The book was finished in a little over a year.

Then came a problem.

The sales department flatly vetoed my proposed title, *What Makes Numbers Interesting.* It was the word interesting that bothered them. Nobody would want to buy a book about things that were described merely as interesting.

Mr. Crowell agreed.

Could Mrs. Reid come up with another title?

I gave them a dozen or so, none of which I liked. The sales department simply loved the one that I disliked the most—*From ZERO To INFINITY.* My reasons for disliking it were as follows. First, in ascending order of importance, it was similar to the title of a then very popular novel by James Jones, *From Here to Eternity.* (A later reviewer noted that my title sounded like that of a novel.) Second, it was too similar to George Gamow's 1947 title *One Two Three ... Infinity* (although he had begun with the number 1 while I had begun with the number 0, the first of the natural numbers—after writing the chapter on ZERO, I knew this). My real objection, however, was that I had not written about infinity in my book. Just 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

But I didn't have a chance. So I added three dots after the chapter on NINE to indicate that the natural numbers continued "to infinity," and held out for my original title as a subtitle. It is still there fifty years later—*What Makes Numbers Interesting,* along with a neat little proof that there is no such thing as an uninteresting number.

The book did quite well. It was recommended for teachers and libraries and selected by book clubs, described as doing for number what George Stewart's *Storm* had done for weather: "breath[ing] life into a seemingly lifeless body." Its modest success was of course gratifying, but there was always a problem. When the subject of *From ZERO To INFINITY* came up in conversation, people invariably asked if I was a mathematician. When I said no, they protested, as if I had offended them, "But how can you write about mathematics if you are not a mathematician?"

After a while I stopped saying I was not a mathematician, but I felt like a hoax—and the problem continued to bother me for a long time, even after I had written two more mathematical books for Crowell and the first edition of *From ZERO To INFINITY* had been so popular that a second and then a third edition had followed. I got over the feeling of being a hoax only in 1970 when Springer-Verlag published my life of David Hilbert and promoted it all over the mathematical world. Mathematicians—everywhere—read *Hilbert* and liked it. They knew that I was not a mathematician, but they liked the book for what it was. I was no longer a hoax. It was also after *Hilbert* that I stopped signing Constance Reid over "Mrs. Neil D. Reid."

For a new edition Crowell always wanted a new chapter. With the title *From ZERO To INFINITY,* a chapter on infinity was obviously required for the second edition (1960). But four years later Crowell wanted a third edition—and still another chapter—to follow infinity.

Here Raphael again came to the rescue, proposing a chapter on the base of the natural logarithm. As he reasonably pointed out, it was only with e that mathematicians had been able finally to establish—by mathematical proof—the distribution in the large of the primes numbers so, he

reasoned, *e* was not out of place in my book on the natural numbers—even though it was not such a number.

After the third edition Robert Crowell sold his company and the copyright came back into my hands eventually. The fourth edition (1992) was published by the MAA with an autobiographical preface.

It is only recently that I have come to appreciate *From ZERO To INFINITY.* In the course of half a century, I have received many letters from readers who liked it, who had questions, who pointed out errors or what they considered errors, and some who even on occasion submitted proofs of unprovable theorems. Recently, however, I received a truly surprising letter from a friend who on a flight home had been seated next to a retired mathematics teacher named John Moulter. Making conversation, my friend remarked that he knew a woman, Connie Reid, who wrote about mathematics.

"Not Constance R-E-I-D?" Mr. Moulter demanded. "That woman changed my life!"

The story John Moulter told was the following. In 1956, then a high school history teacher, he had been waiting for a haircut when he picked up a copy of *Esquire* that contained a review of *From ZERO To INFINITY.* The review prompted him to buy the book; the book inspired him to switch from teaching history to teaching mathematics. Eventually, in addition to his own teaching, he received a number of grants to give classes to cross-over teachers in college and university departments of education about the beauty and power of mathematics.

Mr. Moulter's story led me to write to several mathematicians whose interest in mathematics—so I had heard over the years, although never directly from them—had been sparked by *From ZERO To INFINITY.*

Hugh Williams of the University of Calgary had written in the preface to his book *Eduoard Lucas and Primality* that his interest in this subject had been aroused when he read *From ZERO To INFINITY* in his early teens:

> In Chapter 3 [the author] briefly described Lucas' method for determining the primality of the 39-digit 2^127 – 1, and I was hooked. At the time it seemed absolutely incredible to me that a very large number like this could be established as prime without the need for an unimaginably large number of trial divisions. I must confess that it still does.

I have wondered: is there no woman mathematician whose interest in mathematics was stimulated by reading *From ZERO to INFINITY*? I know that if in my sister Julia's high school days there had been such a book...but of course there was not. There was almost nothing, and certainly nothing at all in the school library.

In reponse to a letter from me, Professor Williams added:

> I want to thank you for having written such a wonderful book. It was pitched at just the right level for a young teenager, but more to the point, it expressed the right mix of beauty and wonder. I just had to learn more. I very much believe that this small book, which still occupies an important place in my personal library, enriched my life immeasurably. It is very rare that we find what we really want to do in life, and I am very grateful that your book led me in the right direction.

There were other cases I had heard about, but they all involved male mathematicians. I have wondered: is there no woman mathematician whose interest in mathematics was stimulated by reading *From ZERO To INFINITY*? I know that if in my sister Julia's high school days there had been such a book ... but of course there was not. There was almost nothing, and certainly nothing at all in the school library. In Julia's papers when she died (1985) I found only a newspaper clipping that she had saved since her high school days—"Largest Prime But Nobody Cares."

This winter the publisher AK Peters, Ltd., is planning to issue a Fiftieth Anniversary Edition of *From ZERO To INFINITY.* It makes me particularly happy that Klaus Peters, the president of the firm, will be republishing my first "mathematical" book, because he was also the publisher, as mathematics acquisitions editor at Springer-Verlag, who accepted for publication my book on the life of David Hilbert. He thus opened up to me a whole new field of mathematical writing—the writing of mathematical lives—which has occupied me since that time.

So we come full circle.

Women Count Conference

Jennifer Hontz, Department of Mathematics and Computer Science, Meredith College and Elizabeth (Betsy) Yanik, Department of Mathematics and Computer Science, Emporia State University

On August 2, 2005, the Women Count Conference was held in Albuquerque, New Mexico, preceding this year's MAA MathFest meeting. This conference is designed to benefit both experienced and prospective directors of mathematical outreach programs to young women. The organizers anticipate hosting this biennial conference in San Jose, California, in 2007 if funding can be obtained. The Women Count Conference is organized by the Women and Mathematics Network under the auspices of the MAA Committee on the Participation of Women. Funding for this year's conference was provided by grants from the National Security Agency and the Tensor Foundation as well as a contribution from the Association for Women in Mathematics.

The conference began with introductions by all twenty participants, with each providing descriptions of current programs or plans for future programs. The group then broke into two groups to discuss either single day outreach programs or summer outreach camps. These fruitful discussions allowed participants to exchange ideas and discuss solutions for common problems across programs. After the breakout sessions, several participants shared successful mathematics activities that they have used in their outreach programs. First Carolyn Connell of Westminster College, who runs AWE+SUM for 8th grade girls, shared three projects used during her camp: Building Wind Chimes, Whitewings (a paper glider activity), and programming ballerinas with ALICE. Next, Lisa Reznac of the University of St. Thomas discussed the mini-courses taught during her summer camp, Girls Experiencing Mathematics in the Summer (GEMS). These mini-courses include animations, signals and processing, circles in geometry and Mandelbrot and Julia sets. The last morning presenter was Joan Saberhagen, who talked about Sonya Kovaleskaya and appropriate mentoring for young girls.

After lunch, there was a session on writing grant proposals by Florence Fasanelli from AAAS. Fasanelli talked about the most important aspects of writing successful grant proposals. She then led the group through a critique of a grant proposal and highlighted common errors made in writing a proposal. Following the grant writing workshop, more participants shared their mathematics activities. Jerry Dwyer of Texas Tech University allowed the group to solve Latin Square problems which he uses with middle school children on school visits. The final mathematics presenter was Joe Yanik from Emporia State University. He first divided the participants into three groups. Yanik had each group find two three-digit primes and then had each group challenge another group to factor the product of their primes. He described the application of this problem in the RSA encryption method.

The conference concluded with a session on assessment. Lynda Wiest from the University of Nevada shared her attitude survey and camp-end survey for Girls Math and Technology Program. Elizabeth Yanik distributed several assessment instruments used for participants, parents, and presenters. The participants then had a brain-storming session on how one might better assess these different programs. The day-long conference ended with a wonderful dinner in a nearby Italian restaurant.

The purpose of this conference was to provide a forum for sharing information about sponsoring mathematics outreach programs for young women among both current directors of such programs and those who are interested in creating such programs. One major outcome of this conference was the formation of a support network in the form of a list-serve for current and prospective directors of outreach programs.

The evaluations completed by Women Count participants at the end of the conference were extremely positive (4.7 on a scale of 1-poor to 5-excellent). Sample comments included: "These sessions were very helpful. I had the opportunity to ask lots of questions."; "wonderful to analyze a proposal and learn how to write one"; "new info and ideas—in particular networking with others with similar interests"; and "it was a great learning experience." The participants were unanimously in favor of offering future Women Count conferences and recommending it to their colleagues. One participant summarized this sentiment by writing, "Please hold this conference again. We shared great ideas. We support each other in our work. We form a network."

Education Column

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

Katrina

Fair warning: this is going to be heavy. I was nicely on track for a cheery column translating and synopsizing a Dutch essay on soccer, mathematics and women that just re-emerged from my files. Then came Katrina, and the horrors she revealed about our society and the backs upon which it is built. I re-learned for the umpteenth time the difference between acknowledging a horrifying situation intellectually and really, deeply accepting its truth. My attempts to grapple with that truth brought to the surface two issues about K–12 mathematics that I had stashed because they made me feel helpless. Dealing with that threesome swamped the Dutch essay altogether, so I succumbed to the onslaught and made them the topic for this column—a topic with no discernable up-beat elements. Fortunately, just as the gloom was threatening to settle in totally, some unexpected good news jolted me out of abandoning hope and into just praying for another such miracle.

Katrina needs no introduction, and I'm quite sure many of you, like me, are still shivering in the cold wind of the revelation that the government that theoretically represents us has absolutely no interest in saving, much less repairing, the lives of the people who were too poor to escape. The second of my painful issues is also familiar, but I doubt if everyone is aware how it is progressing. This is the No Child Left Behind Act. Since its passage in 2002 I have been angry that yet more teaching time was being converted to mindless testing time, angry that overburdened school systems were having to divert funding into administering yet more tests, and especially angry at the stress produced at all levels by a mandate that was all stick and, at the level of struggling schools, not even a mini-carrot, much less any genuine support. For all that, though, until this summer I never really managed to grasp the degree to which its title masked an absolute lack of concern for the education of children of poverty. In fact, possibly thanks to Katrina, I am currently inclined to see it as an active effort to ensure that they can't escape that poverty, but that may be paranoia. In any case, the evidence clarifying the situation for me came from various reports of schools that failed to meet the NCLB testing standards. The one closest to home for me was at the northwest tip of Washington on the Makah Indian reservation. I have a huge admiration for the Makah Nation, which has pulled itself together to build a museum (the Makah Cultural and Research Center) and to turn an abandoned Air Force base into a pleasant resort for outdoors-oriented tourists. The community was handed the demoralizing edict that its school was inadequate, and that parents had the right to withdraw their children from it. Those who withdrew are being sent by bus thirty miles along a narrow highway to the nearest school. Some of them are, that is. How many of the rest have simply withdrawn is anybody's guess. A handful get off the bus each morning—not necessarily the same handful. This then adds a further burden to the testing results of the school to which they are being bussed, which was already struggling. If it is closed down, the next school will be one that is fifty miles further down that highway. This is helping children? Not in my books. And stories like that are accumulating faster and faster. One lively collection can be found at www.susanohanion.org, and a particularly well researched single example in Jo Boaler's article "When learning no longer matters: Standardized testing and the creation of inequality" [*Phi Delta Kappan,* 84(7), 502 – 506] (also online at www.stanford.edu/~joboaler/pubs.html).

While I was digesting this information, there came into my hands an article by David Berliner entitled "Our Impoverished View of Educational Reform." It originated as a plenary address to the American Educational Research Association, which Berliner then expanded into a paper (online at various places—just Google it!). After disposing of NCLB in a few trenchant paragraphs, Berliner goes on to state his thesis, which he backs up with solid research results: educational reform that addresses only what happens within the schools has no chance of achieving the goal that most of us dream of, that of having an impact on the whole educational system. In fact, for all the hullabaloo, our educational results are not bad, even as measured by the international tests like the TIMSS, provided we only look at the children whom the system is reaching. In the regions where the poverty is deep, circumstances put many, many children beyond the reach of any teaching. Berliner points to a number of such circumstances. One that particularly struck me was a health aspect: most children experience

several ear infections before they reach school age. It's not that serious a problem, thanks to penicillin and its descendants. But if you can't afford to go to a doctor, much less to pay for antibiotics, then it is indeed serious. Lots of children reach school age with their hearing partially destroyed—not a good state for starting learning. The examples go on and on, but the message is clear: if you want to do something about educating every child, do something about poverty. For a start, provide health care and day care. After that, but not before, schooling might be able to have some impact.

That's a tiny sketch of a cogent and highly convincing paper. I had accepted its message intellectually, but it stayed a bit abstract. Then came Katrina. There were the children, suffering visibly and acutely the same things they and millions of others in our country have been and are suffering invisibly and continuously. The loss of abstraction was devastating.

I'm not sure how long that devastation would have continued to push me into a deepening gloom if a ray of hope had not landed with a thud in my inbox. It had to do with the infamous Math Wars. I wrote a column in 2002 proposing an attempt at Math Pacifism. It was written in a fit of optimism, but since then the optimism has eroded considerably. It seemed to me that acrimony reigned supreme and no one was really listening to anyone else. I am delighted

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.

to report that I was wrong. Thanks to the efforts of Richard Schaar, a respected authority on math and science education who has managed to maintain neutrality, a small group of extremely articulate leaders from each side of the apparent chasm gathered in December, 2004. Acting on his suspicion that some of the disagreements might have more to do with how things were being said than with the actual content, they got to work exploring "flashpoint" topics and getting past the loaded terms that both sides use and the knee-jerk reflexes that both have developed. The resulting document, "Reaching for Common Ground in K–12 Mathematics Education," may be found at www.maa.org/commonground/cg-report2005.html.

For me, the very existence of that document is inspiring, and the description in it of how it came about even more so. It's not that the Math Wars are in the same category as poverty in the US. It's that the emergence of this effort in a situation where I had pretty much abandoned hope makes it possible for me to believe that maybe, possibly, perhaps some miraculous development might begin to change the way we as a country treat our poor. And with that tiny spark of hope, I can turn back to the teaching and learning and outreach that I am able to do, with a renewed conviction that it has value. A very welcome conviction, since I have so much fun doing them all!

Book Review

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

The Science Glass Ceiling, Sue V. Rosser, Routledge, New York, 2004, ISBN 0-415-94512-7, 165 + xxv pp.

Reviewer: Margaret Bayer, University of Kansas

The literature on women's participation in math, science and engineering offers plenty of data and analysis of the progress or lack of it. We can read of the shining stars who overcame tremendous obstacles to achieve recognition, often long overdue. We can read of the missed opportunities, the many women who have left careers in science for more congenial choices. This book looks at a third group, a group that will, we hope, find sufficient support to continue to lead productive scientific lives.

Sue Rosser did a study of women in math, science and engineering who have received research support from one of two sources, the NSF POWRE program and the Clare Boothe Luce Professorships. The author is well-qualified to conduct such a study. She has a Ph.D. in zoology. Her professional roles have included Professor of Family and Preventive Medicine and Director of Women's Studies (University of South Carolina), Senior Program Officer for Women's Programs (NSF), Professor of Anthropology and Director for the Center for Women's Studies and Gender Research (University of Florida), and, since 1999, Dean of Ivan Allen College, the liberal arts college at Georgia Tech. She herself is co-PI on Georgia Tech's NSF ADVANCE grant.

Chapter 2 includes a brief history of programs for women at the NSF. I found this quite discouraging. In the 1980s and 1990s NSF offered a number of different programs to increase the representation of women and minorities in the sciences. How many of these still exist? None (at least not in their cross-directorate form). The longest lasting was the Visiting Professorships for Women (VPW). The VPW program supported established women for temporary positions at research universities, where they had contact with new colleagues, new ideas and (in some cases) new equipment. Participants were also expected to devote 30% of their time or resources to projects to attract and retain other women in science. Many other programs were short-lived. The Faculty Awards for Women was an extreme case; it had only one program solicitation, in 1990. Evidently, many of these programs were introduced without a coherent vision or sufficient commitment to sustain them and to defend them in the face of criticism. Affirmative action became a dirty word, and political pressures hastened the demise of these programs.

In the 2000s at NSF there has been a shift in focus from individuals to institutions, with the introduction of the ADVANCE program. "The goal of the ADVANCE program is to increase the representation and advancement of women in academic science and engineering careers, thereby contributing to the development of a more diverse science and engineering workforce." [www.nsf.gov] An earlier solicitation offered individual grants as ADVANCE Fellows, but that has been eliminated in the current program. The current

program has three components: Institutional Transformation Awards, Leadership Awards, and Partnerships for Adaptation, Implementation, and Dissemination Awards. The program has the potential for supporting important institutional changes. However, this should complement, not replace, research support for individuals.

Professional Opportunities for Women in Research and Education (POWRE) was the last NSF program of individual research awards for women. In the years 1997 through 2000, 598 awards were made based on 2307 proposals.

The Clare Boothe Luce (CBL) Professorship (in existence since 1989) provides colleges and universities with funds to hire women mathematicians, scientists and engineers in tenure-track positions. The college or university takes over funding the positions after five years. Fourteen colleges are permanent members of the program, and others are invited to submit proposals. Half of the support goes to Catholic institutions. As of the publication of Rosser's book, 133 Clare Boothe Luce Professors had been appointed.

Rosser's research study started with an e-mail survey of the NSF POWRE awardees and the Clare Boothe Luce Professors. She wished to learn about women who had been recognized for their research accomplishments or potential. Almost 400 POWRE awardees and 49 Clare Boothe Luce Professors responded to the survey. Rosser followed up on the survey with telephone interviews, 40 with POWRE awardees and 11 with Clare Boothe Luce Professors.

The e-mail survey asked four open-ended questions:

1. What are the most significant issues/challenges/opportunities facing women scientists today as they plan their careers?
2. How does the laboratory climate (or its equivalent in your subdiscipline) impact upon the careers of women scientists?
3. What do you like least/find most problematic about POWRE/CBL?
4. What do you like best/find most useful about POWRE/CBL?

(The surveys were designed before the cancellation of the POWRE program was announced.)

Rosser coded and categorized the responses to these questions. The most common responses to question #1 were (with the first the most common by far): balancing work with family responsibilities (children, elderly relatives, etc.); time management/balancing committee responsibilities with research and teaching; low numbers of women, isolation and lack of camaraderie/mentoring; gaining credibility/respectability from peers and administrators; "two career" problem (balance with spouse's career).

The responses to question #2 showed less uniformity. Some responded that they did not work in a lab, or did not understand the question. Among the common responses were: balancing career and family/time away from home; have not experienced problems; lack of camaraderie/communications and isolation; "boys' club" atmosphere; hostile environment/intimidating/lack of authority; establishing respectability/credibility; positive impact; lack of numbers/networking.

POWRE awardees identified the following problems with the program: fund limit; perception as less prestigious/competitive; fact that it is for women only; no problem; time limit. They identified the following positive factors: open doors for advancement/research opportunities; flexibility of funds allows for "nontraditional" research; getting funding for various needs; foot in the door for other funding; helps women who have had career interruptions.

Clare Boothe Luce Professors responded differently to questions (3) and (4), not surprisingly, given that CBL is administered in a very different way from the POWRE program. A large minority reported no problems. Common problems cited were: administrative/bureaucratic hold-ups; need ability to conduct research abroad; and doesn't facilitate networking/only benefits recipients. Benefits most often cited were: flexibility of funds allows for "nontraditional" research; getting funding for various needs; student-faculty collaboration; and the honor of holding the distinguished position. The Clare Boothe Luce Professorship allows exceptional flexibility in the use of funds. Responses from CBL Professors mentioned using discretionary funds to hire research assistants, buy course release time, renovate laboratories, buy computer equipment, travel domestically (but not internationally), and even pay for child care.

Rosser looked for differences in responses from women in different fields of science, categorized by NSF directorate. The main finding was that there was little difference. The biggest differences were between the mathematics and physical sciences (MPS) directorate and the others. MPS respondents

were less likely to cite low numbers of women, isolation and lack of camaraderie/mentoring as a problem and more likely to cite active recruitment of women/more opportunities as a benefit. It is, perhaps, surprising that there weren't greater differences in responses. Respondents from engineering are among the 6% of all engineering faculty who are women, while women biologists make up 28% of biology faculty. Should we not expect their experiences would lead them to assess and prioritize the issues differently?

Rosser concludes that her study points to the need for institutional change to improve the climate for women scientists and their chances for success. Universities should take steps to make it easier for their faculty to balance family and career. These include policies that adjust the tenure clock, provide daycare and facilitate spousal/partner accommodation. They need to address problems resulting from low numbers of women in certain departments; even among mathematics, science and engineering departments in one university, the numbers of women faculty can vary widely. Problems of isolation, lack of role models, and excessive service demands affect women and minority faculty especially. University administrations must be alert for and respond effectively to overt and subtle discrimination and harassment, which may be localized in a single department. Institutions should provide clear support and guidance on research funding issues. Rosser hopes that the NSF ADVANCE program will help to develop such institutional measures.

In quotes from the written surveys and particularly from the phone interviews we see a familiar picture: women who have faced discrimination and gender-specific obstacles, but who have also found support in family, teachers and colleagues; women who are committed to science and who have gotten recognition for their work; women who struggle with the varied demands of teaching, research, service, and family, but who are basically successful in this struggle; women who are role models for women (and men) students in math, science and engineering.

The EDGE Program

The Enhancing Diversity in Graduate Education (EDGE) Program is a post-baccalaureate summer enrichment program designed to strengthen the ability of women and minority students to successfully complete graduate programs in the mathematical sciences. The summer program consists of two core courses in analysis and algebra/linear algebra, a minicourse in a current area of mathematical research, short-term visitors from academia and industry, guest lectures, graduate student mentors, and problem sessions. In addition, a follow-up mentoring program and support network will be established with the participants and their respective graduate programs.

Applicants to the program should be women who either (i) have been accepted to a graduate program in the mathematical sciences or (ii) have just completed their first year of graduate school in the mathematical sciences. All applicants should have completed standard junior/senior level undergraduate courses in analysis and abstract algebra and have a desire to earn the doctorate. Women who have taken time away from formal education as well as women from minority groups who fit into one of the above two categories are especially encouraged to apply. Final acceptance to the program is contingent upon acceptance to a graduate program in the mathematical sciences.

In 2006, the ninth summer session of the EDGE Program will be held at the New College of Florida in Sarasota, Florida. The dates for the summer program are June 12–July 7, 2006. It will be co-directed by Sylvia Bozeman (Spelman College), Rhonda Hughes (Bryn Mawr College), and local coordinator Eirini Poimenidou (The New College of Florida). A stipend of $2,000 plus room and board will be awarded to participants. Applicants chosen to participate in the program will be notified by April 14, 2006. Applications should consist of the following: (1) a completed application form; (2) a statement describing the expected value of this program to the applicant's academic goals; (3) two letters of recommendation from mathematical sciences faculty familiar with the applicant's work; (4) a transcript and current resume; and (5) a list of graduate programs to which the applicant has applied, together with a ranked list of her two or three top choices.

The application deadline is **March 1, 2006**. Applications should be sent to: EDGE Program, PO Box 63, Swarthmore, PA 19081. The EDGE program is funded by the Andrew W. Mellon Foundation. For more information, visit the program's Web site at http://www.edgeforwomen.org/.

Non-standard Careers

Ginger Warfield

Maria M. Klawe

This month's column once again describes someone whose acquaintance I made on the pages of Betty Anne Case and Anne Leggett's book, *Complexities: Women in Mathematics.* It's a wonderful book, but even it is not infinite, so I would like to renew my request for leads to women outside of its covers who have had, or are having, careers that are both satisfying and in some way not part of the conventional tenure-track academic pattern. If that's you or someone you know, please drop me a note (warfield@math.washington.edu).

Maria Klawe received her Ph.D. in 1977, with a thesis in amenable semigroups. Those were thin times for employment, with the result that she wound up at a small university that she tactfully refrains from identifying, where she liked her colleagues but was completely frustrated and disheartened by her attempts to teach apathetic students who, as she puts it, "couldn't add a half to a third." This discouragement gave her a heightened awareness that some of her peers were getting multiple excellent job offers. The difference, she discovered, was that they knew computer science. So she flung herself back to the other end of the red pen and spent a year intensively studying computer science. It was not an enjoyable year, because she overloaded herself, and because she found a disturbing difference between what she and the computer scientists found important. Enjoyable or not, she hung in there, and at the end of the year had several job offers. She opted for the IBM Research Laboratory in San José, and loved it. She had an enormous amount of freedom and could really concentrate on research. On the other hand, she was increasingly bothered by one thing: the computer scientists seemed unaware of the potential contributions of pure mathematicians. Several excellent mathematicians who could have made good contributions were turned down. Once again she flung herself into making a change—this time into convincing IBM to establish a mathematics group within the computer science department. Once again she had a not-too-enjoyable year at the end of which she accomplished what she had set out to accomplish, and felt that it was worth the effort.

The book chapter on Klawe is based on an article she wrote for this *Newsletter* in 1985. Since then she has made her way to the University of British Columbia and then Princeton, where she is a dean and a computer science professor. Definitely a successful career, and definitely not a standard path.

Klawe finishes her article with some advice for folks who might be interested in winding up at the likes of IBM:

> Let me finish by mentioning the attributes that I think are necessary to work in this kind of group: First of all, you have to be willing to talk with non-mathematicians and be interested in listening to mathematical problems that come from other areas. You have to be very flexible. You have to be willing to learn a lot of things that might not seem interesting on the first round but end up generating good problems. I think you have to be more of a problem solver than a theory builder. [p. 230]

That looks to me like excellent advice, and the issue of adaptability is a vital one. What strikes me most in her story, though, is her willingness to leap out of her comfort zone and spend time working hard on some efforts that didn't necessarily come naturally to her or give her much immediate pleasure but that enabled her to achieve one of her goals. Admirable, I call that!

UPDATE: Women in Mathematics: The Legacy of Ladyzhenskaya and Oleinik

This workshop, to be held May 18–20, 2006, is jointly sponsored by AWM and the Mathematical Sciences Research Institute (MSRI). The organizers of this celebration of careers of women in mathematics are Susan Friedlander, Barbara Keyfitz, Irene Gamba, and Krystyna Kuperberg. An updated version of the workshop webpage is now available at http://www.msri.org/calendar/workshops/WorkshopInfo/328/show_workshop. Please note that application deadlines for the workshop have been changed: the due date for requests for funding is now **March 1, 2006**, and the registration deadline is **April 1, 2006**.

Nebraska Conference for Undergraduate Women

See also ad, page 27.

The eighth annual Nebraska Conference for Undergraduate Women in Mathematics will take place February 3–5, 2006, at the University of Nebraska–Lincoln. This conference is a national showcase for research projects by undergraduate women. In addition to the main program of undergraduate research talks, the organizers are very pleased to have plenary addresses by Lenore Blum of Carnegie Mellon University and Krystyna Kuperberg of Auburn University. There will also be panel discussions about such topics as "Choosing a Graduate School" and "Careers Using Mathematics." Lloyd Douglas from NSF and Michelle Wagner from NSA will be on hand to discuss opportunities, and the banquet speaker will be Bettye Anne Case of Florida State University, who co-edited the book *Complexities: Women in Mathematics* (Princeton University Press, 2005). The conference attracts students from all over the US and Puerto Rico. Participants hear a lot of interesting mathematics, meet with other women who share their interest in mathematics, and, if they have participated in research programs, present their research.

The conference began in 1999 as part of the UNL Department of Mathematics' effort to continue their work in mentoring women students and was funded in part by the Department's 1998 Presidential Award for Excellence in Science, Mathematics & Engineering Mentoring. That year, about 50 undergraduates participated in the conference. Over the years, the conference has grown in both size and prestige and now averages about 150 undergraduate participants each year. The conference has hosted such prominent keynote speakers as Karen Uhlenbeck and Dusa McDuff. The conference is funded by a grant from the NSA and as part of the department's MCTP grant from the NSF.

Not only does the conference offer a wonderful mathematical program, it also offers young women the opportunity to meet other women, in various stages of their careers, who share their interest in mathematics. Starting a professional network of colleagues and mentors can help participants become part of the mathematical community. In addition, there is a wealth of information about opportunities for such things as undergraduate research, fellowships and careers in mathematics.

Past participants have been very enthusiastic about their conference experience. One participant said, "I wish I'd known about this program two years ago—I needed the confidence even more then. I will spread the word about this program to all I know." Another said, "The conference has been a pivotal piece of my undergraduate math career and a great forum to learn about other opportunities out there and meet my future female peers in mathematics." And more than one participant has said that the conference was "one of the best experiences of my undergraduate career."

This year's organizers are UNL professors Allan Donsig, Brian Harbourne, Wendy Hines, Glenn Ledder, Richard Rebarber, and Judy Walker and UNL students (and conference alumni) Laurel Burk, Melissa Desjarlais, Raegan Higgins, Shannon Jessie, and Deanna Turk. More information may be found at the conference Web site: www.math.unl.edu/~ncuwm.

In Memoriam: Ruth Bari

Ruth Aaronson Bari died August 25, 2005 at the age of 87. An emeritus professor of mathematics at George Washington University (GWU), she earned her Ph.D. in graph theory in 1966 at the age of 47 from Johns Hopkins University (JHU). Her education had been interrupted when JHU suggested that she give up her fellowship in favor of returning soldiers at the end of World War II.

For more information on her career, see the excellent obituary from the *Washington Post* made available at the GWU website: click the link at www.gwu.edu/~math. Her daughter Gina Kolata, well-known science journalist, wrote an essay about her mother for the Biographics of Women Mathematicians Web Site; see www.agnesscott.edu/lriddle/women/bariruth.htm. See also Florence D. Fasanelli's account of Bari's career in *Women of Mathematics: A Biobibliographic Sourcebook,* Grinstein and Campbell, Editors, Greenwood Press, 1987, 13–16.

AAAS Meeting to Offer Strong Mathematics Program

Warren Page (wxpny@aol.com), *Secretary of Section A of the AAS*

The 2006 Annual Meeting of the American Association for the Advancement of Science, February 16 – 20, in St. Louis, MO, will feature many outstanding expository talks by prominent mathematicians. The following symposia sponsored by Section A (Mathematics) are part of the special mathematical event "Beyond Pi: Grand Challenges in the Mathematical Sciences."

- Paradise Lost? The Changing Nature of Mathematical Proof (organized by Keith Devlin)
- Million-Dollar Mathematics: Challenge Problems in the 21st Century (organized by John Ewing and James Carlson)
- NUMB3RS and the Challenge of Changing Public Perception of Mathematics (organized by Robert Osserman and Tony Chan)
- Astrodynamics, Space Missions, and Chaos (organized by Edward Belbruno)
- Tsunamis: Their Hydronamics and Impact on People (organized by Walter Craig, Jerry Bona, and John Mutter)
- How Insects Fly (organized by Jane Wang)
- Arches: Gateways From Science to Culture (organized by Kim Williams)

Other symposia that will be of interest to the mathematical community include: Physics of Virtual Worlds; Frontiers in Biological Imaging: From Cells to Humans; Imaging Dynamical Diseases in the Brain; Refining Einstein: The Search for Relativity Violations; Science and Engineering Challenges and Opportunities in Homeland Security; Overcoming Gender Stereotypes: Girls in Science, Engineering, and Technology; Computer Science Behind Your Science; Expanding Universe of Digital Data Collections; Evaluating Curricular Effectiveness: Judging the Quality of K–12 Mathematics Evaluations; and Four Eye-Opening Science Education Research Studies: Connecting Science and Educational Research.

The above symposia are only a few of the 200 or so AAAS program offerings in the physical, life, social, and biological sciences. For further details about the 2006 AAAS program, see the October 21st, 2005 issue of *Science*. (See also www.aaasmeeting.org under "Program and Events.")

AAAS annual meetings are the showcases of American science, and they encourage participation by mathematicians and mathematics educators. (Section A acknowledges the generous contributions of AMS for travel support and SIAM for support of media awareness.) In presenting mathematics-related themes to the AAAS Program Committee, I have found the committee to be genuinely interested in offering symposia on mathematical topics of current interest. Thus, Section A's Committee seeks organizers and speakers who can present substantial new material in an accessible manner to a large scientific audience. Toward this end, I invite you to attend our Section A business meeting 7:45 – 10:00 p.m. Friday, February 17, 2006 in the Benton room of the Renaissance Grand Hotel. I invite you also to send me, and encourage your colleagues to send me, symposia proposals for future AAAS annual meetings.

The Importance of Effective Webpages

Christina Sormani, CUNY Graduate Center and Lehman College, http://comet.lehman.cuny.edu/sormani, sormani@comet.lehman.cuny

As a conference organizer, seminar organizer and mathematician who is regularly solicited for my impressions of job candidates, I cannot stress too much how important it is to have an effective webpage. The page should have links to your latest reprints and preprints, as well as an up-to-date vita if you are on the job market. The preprints are essential for evaluating possible speakers, and posting them at arXiv.org is a good way to get found when an organizer is searching for speakers in a given subfield.

Your webpage can also have the usual teaching links and address that many departments provide automatically. If it is linked through a university and you hit it a few times from home and other locations, it should quickly become the first page someone finds when googling your name along with the word "mathematics." If you don't have an up-to-date vita, you can list your Ph.D. advisor, thesis, and where you've worked on your webpage, with dates if you wish. Links to MathSciNet reviews of your papers can replace a lengthy list of publications.

It is very easy to create a webpage, but if you are having difficulty, spend the $30 and have a computer science undergraduate help you out!

Stress Upsets Work/ Family Balance

University of Arkansas, Fayetteville, press release

It is the "IT" thing—one of the nation's fastest-growing professions. Why then are women leaving IT, the information technology field, in droves? A new study by four University of Arkansas professors has uncovered previously undocumented reasons why women in the information technology field feel uniquely intense pressures and are leaving the booming profession at such a staggering rate.

Women comprise 46.6 percent of the overall US workforce, but the percentage of women in information technology was 41 percent in 1996 and plunged to 35 percent in 2002. The downward spiral is gaining momentum.

"Women in IT are facing what you call a vicious cycle," said Deb Armstrong, assistant professor of information systems, who co-authored the study with professors Myria Allen, communication; Margaret Reid, political science; and Cynthia Riemenschneider, information systems.

"We found three loops, which are circular relations between managing family responsibilities and the increasing need for a flexible work schedule, which then causes more stress at work, which then impacts the family and the scheduling needs. Each loop is its own vicious cycle."

The study found a type of feedback loop unique to women in the IT profession that differs from the traditional re-ciprocal two-way relationship between work and family in most professions. The very job qualities that are desirable to IT workers cause work stress, which adds to the challenge of managing family responsibilities.

"Some of the qualities IT folks crave in a job, such as challenge and learning, are causing more stress," said Armstrong. "It's very important to women to have a challenging job where they're performing well, as well as flexibility. We have to understand there's a whole system, a cycle, at work here, not just the reciprocal relationship between only work and family."

Armstrong and her colleagues set out to look at possible reasons. Armstrong presented their study, titled "Voluntary Turnover & Women in IT: A Cognitive Study of Work Family Balance," in December at the Fourth Annual SIG-IS Cognitive Research Workshop (Pre-ICIS) 2004.

Armstrong et al conducted focus groups with female IT professionals at a Fortune 500 company. Using a methodology known as revealed causal mapping, they developed a mental model for the knowledge structures of the women.

"This means we developed a map of what issues women think are important (as expressed through their comments) and how these issues all fit together," explained communications professor and co-author Myria Allen. "For example, women indicated the work-family relationship was important to them and through what they said this work-family relationship seems to be related to how they feel about the flexibility they experience in their workplace."

The women were asked questions regarding what they perceived as barriers to promotion and their challenges at work. "What's interesting is that what came out were issues surrounding work and family," Armstrong recounted. "We identified the cause and effect relationships within the women's cognitions surrounding these issues, such as: 'When I have to work late it's stressful and causes problems with my family.' "

The research confirmed previous findings about stress being caused by the interaction between managing work and family, but revealed two additional components to the traditional work-family conflict. For women in information technology, the work-family conflict has three elements: the cyclic (as opposed to reciprocal) nature of the work-family balance, the importance of particular IT job qualities (e.g., project orientation) and the importance of a flexible work schedule. "This work schedule flexibility is more of a control issue," said Armstrong. "Some of these women had very ad hoc flex-time or reduced schedules, but it is stressful if they feel they can't control their schedule."

Studies have indicated individuals in information technology have a high need for challenging work and a lower need for social interaction and are more ambitious than the average population. They constantly are being challenged by rapid technological change and the speed with which technical skills become obsolete.

Armstrong and her colleagues are already working on a follow up research project aimed at confirming these findings.

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 Web site.

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.

NSF-AWM Mentoring Travel Grants for Women

The objective of the NSF-AWM Mentoring Travel Grants is to help junior women to develop a long-term working and mentoring relationship with a senior mathematician. This relationship should help the junior mathematician to establish her research program and eventually receive tenure. AWM expects to award up to seven grants, in amounts up to $5000 each. Each grant will fund travel, accommodations, and other required expenses for an untenured woman mathematician to travel to an institute or a department to do research with a specified individual for one month. Awardees may request to use any unexpended funds for further travel to work with the same individual during the following year. In such cases, a formal request must be submitted by the following February 1 to the selection committee, or the funds will be released for reallocation. (Applicants for mentoring travel grants may in exceptional cases receive two such grants throughout their careers, possibly in successive years; the second such grant would require a new proposal and would go through the usual competition.) For foreign travel, US air carriers must be used (exceptions only per federal grant regulations; prior AWM approval required).

Eligibility. Applicants must be women holding a doctorate or equivalent experience and with a work address in the US (or home address if unemployed). The applicant's research may be in any field that is supported by the Division of Mathematical Sciences of the National Science Foundation. (See http://www.nsf.gov/od/lpa/news/publicat/nsf03009/mps/dms.htm#1 for the list of supported areas.)

Each applicant should submit *five copies* of each of the following: 1) the AWM Mentoring Travel Grant Form; 2) a cover letter (if a prior AWM-NSF mentor grant has been awarded, indicate so); 3) a curriculum vita; 4) a research proposal, approximately five pages in length, which specifies why the proposed travel would be particularly beneficial; 5) a supporting letter from the proposed mentor (who must indicate his/her availability at the proposed travel time), together with the curriculum vita of the proposed mentor; 6) a proposed budget; and 7) information about other sources of funding available to the applicant. A final report will be required from each awardee. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM. Send all application materials to: Mentoring Travel Grant Selection Committee, AWM, 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 via e-mail or fax will not be accepted. The deadline for receipt of applications is **February 1, 2006**.

DIRECTOR OF PUBLICATIONS

Mathematical Association of America, Washington, D.C.

The Mathematical Association of America (MAA) seeks a Director of Publications to begin by July 2006. The Association, with nearly 30,000 members, is dedicated to the advancement of mathematics, particularly at the collegiate level. The Director will oversee the publications program which includes three journals, three magazines, nine book series, a variety of columns and articles, and the MAA Digital Library (MathDL). Appointments are for two or three years and may be renewed for multiple years.

Candidates should have a significant record of work in publications in the mathematical sciences; a Ph.D. degree in a mathematical science or mathematics education is preferred. A candidate should have successful experiences in all or most of the following areas: book publishing; journal production; administration including financial management; editorial/reviewing experience; mathematical writing not limited to research publications; and electronic publications.

More information about this position and about the MAA may be found at **www.maa.org** and in the November issue of FOCUS. The deadline for submission of applications is **January 21, 2006**. Candidates should send a resume and letter of interest to:

Ms. Julie Kraman
Mathematical Association of America
1529 18th Street, NW
Washington, D.C. 20036.

Applications may be submitted electronically to **jkraman@maa.org**. References will be requested after review of applications. Applications from individuals from underrepresented groups are encouraged. AA/EOE.

Association for Symbolic Logic ASL Travel Awards

Student Travel Awards: The 2006 ASL Annual Meeting, 2006 ASL European Summer Meeting, and other ASL or ASL-Sponsored Meetings. The ASL will make available modest travel awards to graduate students in logic and (for the European Summer Meeting only) to recent Ph.D.'s so that they may attend the 2006 ASL Annual Meeting in Montreal, Canada, or the 2006 ASL European Summer Meeting in Nijmegen, The Netherlands. Student members of the ASL also may apply for travel grants to other ASL or ASL-sponsored meetings. To be considered for a Travel Award, please (1) send a letter of application, and (2) ask your thesis supervisor to send a brief recommendation letter. The application letter should be brief (preferably one page) and should include: (1) your name; (2) your home institution; (3) your thesis supervisor's name; (4) a one-paragraph description of your studies and work in logic, *and, in the case of an ASL student member application to attend an ASL or ASL-sponsored meeting other than the Annual Meeting or European Summer Meeting, a paragraph indicating why it is important to attend the meeting;* (5) your estimate of the travel expenses you will incur; (6) (for citizens or residents of the USA) citizenship or visa status; and (7) (voluntary) indication of your gender and minority status. Women and members of minority groups are strongly encouraged to apply. In addition to funds provided by the ASL, the program of travel grants to the ASL Annual Meeting and the European Summer Meeting is supported by a grant from the US National Science Foundation; NSF funds may be awarded only to students at USA universities and to citizens and permanent residents of the USA. Air travel paid for using NSF funds must be on a US flag carrier. Application by email is encouraged; put "ASL travel application" in the subject line of your message.

For the 2006 ASL Annual Meeting, applications and recommendations should be received before the deadline of March 4, 2006, by the Program Chair: Matt Valeriote, Department of Mathematics Statistics, Hamilton Hall, McMaster University, Hamilton, Ontario Canada L8S 4K1; Fax: (905) 522-0935; e-mail: **matt@math.mcmaster.ca**.

For the 2006 ASL European Summer Meeting, applications and recommendations should be received before the deadline of April 3, 2006, by the Organizing Committee: Logic Colloquium 2006, ICIS Faculty of Science, Radboud University Nijmegen, P.O. Box 9010, 6500 GL Nijmegen, The Netherlands; e-mail: **lc2006@cs.ru.nl**.

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

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

https://aslonline.org/Meetings.htm
ASL, Box 742, Vassar College
124 Raymond Ave., Poughkeepsie, NY 12604
e-mail: asl@vassar.edu; Fax: 845-437-7830

Also visit the ASL website: http://www.aslonline.org.

AMERICAN UNIVERSITY

The Department of Mathematics and Statistics in the College of Arts and Sciences

The Department of Mathematics and Statistics in the College of Arts and Sciences at American University has an opening for a tenure track assistant professor in Statistics or Mathematics for Fall 2006.

Qualifications: earned doctorate in Mathematics or in Statistics by Fall 2006, as well as evidence of effective teaching and either a record of or the potential for continuing productive scholarship. Responsibilities: teaching undergraduate and graduate level mathematics or statistics courses; conducting research; advising and mentoring students, with particular sensitivity to women and minority students; institutional service.

Application review will begin immediately and continue until the position is filled. Submit letter of application and vitae to:

Search Committee
Department of Mathematics and Statistics
American University
4400 Massachusetts Avenue, NW
Washington, DC 20016-8050.

Have official transcripts and three letters of reference sent directly to the department. At least one letter should specifically mention teaching experience.

All applicants are encouraged to review full application instructions, available at our website at **www.mathstat.american.edu/positions**, or from the department at (202) 885-3124, or by e-mail at **mathstat@american.edu**.

American University is an Equal Employment Opportunity / Affirmative Action employer, committed to a diverse faculty, staff, and student body. Women and minority candidates are strongly encouraged to apply.

AMERICAN INSTITUTE OF MATHEMATICS — AIM/ARCC is seeking an Associate Director for a two-year position. The primary responsibility is to oversee ARCC focused workshops at our facility in California. A successful candidate for this position should have research experience and should be open-minded about new paradigms for how mathematical research is conducted. Grant writing experience, a willingness to travel, and an outgoing personality are plusses. Please send a CV, names of three references, and a letter explaining why you are interested in this position to AIM, 360 Portage Ave., Palo Alto, CA 94306 by **Dec. 15, 2005** for full consideration. See **http://www.aimath.org/Associate_Director** for more information about this position.

ARIZONA STATE UNIVERSITY — An Equal Opportunity/Affirmative Action Employer. ALGEBRA — The Department of Mathematics and Statistics at Arizona State University invites applications for a tenure-track position at the Assistant Professor level, beginning in the fall semester of 2006. Applicants are required to have a Doctorate in mathematics by August 16, 2006, with a research emphasis in algebra. Preference will be given to those whose specialty supports the department's existing strengths in number theory (including arithmetic algebraic geometry and cryptography) or algebraic combinatorics. Candidates must also have demonstrated potential for excellence in mathematical research and teaching at all levels. The successful candidate will be expected to secure external funding for research, to publish in the area of algebra or closely related fields, to provide quality teaching of undergraduate and graduate students, and to perform appropriate professional service. The Tempe campus of Arizona State University has approximately 50,000 students and is located in the rapidly growing metropolitan Phoenix area, which provides a wide variety of recreational and cultural opportunities. The Department of Mathematics and Statistics currently has 50 full time faculty members and 140 Graduate Students. The Department has excellent computing resources, including individual faculty workstations and access to the University's central computing facilities. Applicants must send: (1) a curriculum vita, (2) an AMS Cover Sheet available at **http://www.ams.org/coversheet/**, (3) a personal statement addressing their research agenda, and (4) a statement of teaching philosophy, and must also arrange for three letters of recommendation to be sent to: Algebra Search Committee, Department of Mathematics and Statistics, Arizona State University, PO Box 871804, Tempe, AZ 85287-1804. A background check is required for employment. Review of the applications will begin on **December 15, 2005**; if not filled weekly thereafter or until the search is closed.

BOISE STATE UNIVERSITY — DEPARTMENT OF MATHEMATICS — The Department of Mathematics at Boise State University invites applications for an Assistant Professor position beginning the Fall of 2006. A Ph.D. in mathematics or statistics is required and preference will be given to applicants who can assume a leadership role in the development of research programs, which interact with Biology, Electrical and Computer Engineering, or Geophysics. Review of applications will begin on January 9, 2006 and continue until finalists have been identified. For more information consult **http://math.boisestate.edu**, or contact us at **facultysearch@math.boisestate.edu**. Boise State University is an EEO/AA Institution. Veteran's preference may be applicable.

BOWDOIN COLLEGE — Applications are invited for a tenure-track position in applied mathematics, starting in the fall of 2006. Strong preference will be given to applicants whose primary interest is Mathematical Biology. The appointment will be made at the junior or senior level, with tenure if appropriate. A Ph.D. is required and evidence of a strong research program is expected. Applicants must also demonstrate excellence in teaching. Normal teaching load is two courses per semester. Bowdoin College is a private, undergraduate institution located half an hour from Portland and two hours from Boston. More information about the department and college can be found on the website at **http://www.bowdoin.edu**. Applicants should send a completed AMS application cover sheet (**see http://www.ams.org**), a resume, and three letters of recommendation to: Search Committee Chair, Department of Mathematics, Bowdoin College, 8600 College Station, Brunswick, ME 04011-8486. Materials sent via e-mail will not be accepted. The department will begin reviewing applications on December 5, 2005, but applications will be accepted and considered until the position is filled. Bowdoin College is committed to equality through affirmative action and is an equal opportunity employer. We encourage inquiries from candidates who will enrich and contribute to the cultural and ethnic diversity of our college. Bowdoin College does not discriminate on the basis of age, race, creed, color, religion, marital status, gender, sexual orientation, veteran status, national origin, or disability status in employment or in our education programs.

BROWN UNIVERSITY — MATHEMATICS DEPARTMENT – The Mathematics Department 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.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA — Math & Stat Dept. 4 tenure track positions: 2 in Math Ed, 1 in Stat & 1 in Math beginning 9/2006. Rank/salary dep. on quals. Good benefits. Start-up funds, reduced teaching first year. Potential for excellent teaching, scholarship & directing master's theses. We have a student body with diverse socio-economic, cultural backgrounds & learning styles. We are looking for faculty who can work successfully in this environment. Math Ed (Asst/Assoc. Prof. Level) Ph. D in **Math Ed.** (or rel field) w/ MA in Math (or equiv). Teach undergrad/grad Math Ed. Supervise sec. math student teachers, work w/teachers in local schools, grant work related to K-16 teaching and learning, dev. curriculum in new master's emphasis in Math Ed. **Statistics** (Asst/Assoc. Prof. Level): Ph.D. in Stats (or rel area). Teach undergrad/grad statistics. Stats consulting expected. Preferred area/s: stats consulting, design of experiments, multivariate analysis, time series analysis, & biostatistics. **Mathematics** (Asst. Prof. Level): Ph.D. in Math (or rel area). Teach broad range of undergrad/grad mathematics. Interested in those who can teach some of following: combinatorics, geometry, graph theory & op. research. Application deadlines: Math Ed, 12/7/05 Stat, 1/19/06 & Math 1/26/06 Late appls. may be reviewed until position filled/closed. Submit appl. form, curr. vitae, teaching philosophy, research statement, undergrad and grad transcripts, min, 3 recent ref letters. Indicate position. Address potential to meet position description listed above. Send to: Faculty Search Committee, Math & Stat Dept, Cal Poly Pomona, 3801 W. Temple Ave., Pomona, CA 91768-4007; 909-869-4008; Fax: 909-869-4904; See **http://www.csupomona.edu/~math/position**. AA/EEO.

CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS — CSUCI, the newest campus of the CSU System located in Camarillo, invites applications for tenure/tenure track faculty positions within the discipline of Mathematics beginning fall 2006. Excellence in both teaching and research is essential, and a Ph.D. is required. Preference will be given to broadly trained individuals who have post-doctoral experience and ability and interest in teaching a wide range of courses within and across disciplines. To submit an application, please visit our website at: **http://csucifacultyjobs.com**

CASE WESTERN UNIVERSITY — DEPARTMENT OF MATHEMATICS, Cleveland, Ohio. One or more tenure-track appointments. Open rank, however appointment at the rank of assistant professor is strongly preferred. We especially emphasize coordination with Department, College and University goals, including undergraduate teaching in the University's SAGES Program. Areas of preference have been identified to meet Department priorities. For more information and instructions, see **http://www.case.edu/artsci/dean/searches/math06.html**. Indicate in which area you wish to be considered. The successful candidate will hold the Ph.D. or equivalent and have, relative to career stage, a distinguished record of publication, research, service, and teaching. Compensation commensurate with qualifications. Electronic applications only, to: James Alexander, **math-faculty-position@cwru.edu**, consisting of a letter of application, which indicates in which area of preference you wish to be considered, AMS cover sheet, a c.v., and

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the names and contact information for four referees to whom we may write. Visiting positions/instructorships/lectureships may also be open. Evaluation of applications will begin **December 15, 2005**. Case is a recipient of an NSF ADVANCE institutional transformation grant to increase the participation of women in science and engineering. Case Western Reserve University is committed to diversity and is an affirmative action, equal opportunity employer. Applications from women or minorities are especially encouraged.

CLEVELAND STATE UNIVERSITY — The Department of Mathematics invites applications for two tenure-track positions at the Assistant Professor level. (One of the positions could be at the Associate Professor level in the area of applied statistics or biostatistics). MINIMUM QUALIFICATIONS: Ph.D. in a Mathematical Science or Statistics by August 21, 2006 and research in one of the following areas: (1) applied statistics or biostatistics, (2) commutative algebra or computational algebraic geometry, (3) dynamical systems, (4) computational number theory, (5) mathematical programming. Strong interpersonal and communication skills are also required. PREFERRED QUALIFICATIONS: Strong research program in the relevant area; demonstrated commitment to excellence in teaching and mentoring students; research interests that match or connect well with members of the department; experience with innovative methods of instruction and assessment. For area (3), preference will be given to candidates with a demonstrated interest in mathematical biology. For area (1), preference will be given to candidates with consulting experience and a research agenda open to across-campus and off-campus collaborations. For area (1), the appointment could be at the Associate Professor level, depending on the candidate's level of experience and relevant credentials. Applicants should have a vita, statements on teaching and research and three letters of recommendation—one of which should address teaching effectiveness—sent to: Chair, Appointments Committee, Department of Mathematics, Cleveland State University, 2121 Euclid Avenue, Cleveland, OH 44115. Applications received by **November 21, 2005** will receive full consideration; the positions will remain open until filled. Applications sent by email will not be considered. Cleveland State University is a comprehensive urban university located in downtown Cleveland. The usual teaching load for faculty engaged in research is two (2) courses per semester. Cleveland State University is an AA/EOE committed to nondiscrimination. M/F/D/V encouraged. Visit our Web site at **www.csuohio.edu**.

COLBY COLLEGE — The Department of Mathematics invites applications for a tenure-track position in mathematics at the assistant professor level. Preference will be given to candidates with active research programs in subfields of combinatorics, algebra, or number theory. Exceptional candidates in other fields will also be considered. Candidates should have a Ph.D. in mathematics and should show promise in both teaching and research. The appointee will be expected to maintain a vigorous research program while also being an exceptional teacher and advisor at the undergraduate level. Teaching load is five courses a year. Salary is competitive. Send curriculum vitae, statements on teaching and research, and three letters of recommendation to Tenure Track Search Chair, Department of Mathematics, Colby College, 5830 Mayflower Hill, Waterville, ME 04901. We cannot accept applications in electronic form. Review of applications will begin on **November 15, 2005** and will continue until the position is filled. Colby is a highly selective liberal arts college located in central Maine. The college is a three-hour drive north of Boston and has easy access to lakes, skiing, the ocean, and other recreational and cultural activities. For more information about the position and the department, visit our web site at **www.colby.edu/math**. Colby is an Equal Opportunity/Affirmative Action employer, committed to excellence through diversity, and strongly encourages applications and nominations of persons of color, women, and members of other under-represented groups. For more information about the College, please visit the Colby Web site at **www.colby.edu**.

CORNELL UNIVERSITY — SCHOOL OF OPERATIONS RESEARCH & INDUSTRIAL ENGINEERING — Tenure-track or tenured position. Rank open. PhD required in Mathematics, OR, Statistics, or related field. Expertise and/or interest in Financial Engineering research and teaching is required. Involvement in the School's new Research and Teaching Center on Broad Street in Manhattan is likely. Salary appropriate to qualifications and Engineering norms. ORIE at Cornell is a diverse group of statisticians, probabilists, math programmers, and those working in simulation and manufacturing systems. An ideal candidate will have broad training and interests. CV, 1-page statement of research and teaching interests, doctoral transcript for junior applicants, and four letters should be sent to Financial Engineering Search, ORIE, Rhodes Hall, Cornell University, Ithaca, NY 14853-3801. Applications completed by **January 15, 2006** given preference. Women and minority candidates especially encouraged to apply. Cornell University is an AA/EOE.

FAIRFIELD UNIVERSITY — The Department of Mathematics and Computer Science at Fairfield University invites applications for a tenure track assistant professorship, to begin in September 2006. A doctorate in mathematics is required. Strong evidence of research potential, demonstrated success in classroom instruction and a solid commitment to teaching are essential. Preference will be given to those candidates with the ability and willingness to conduct or lead undergraduate student research. Fairfield University, the Jesuit, Catholic university of Southern New England, is a comprehensive university with about 3,000 undergraduates and a strong emphasis on liberal arts education. The Department of Mathematics and Computer Science consists of 15 full-time faculty members. The department offers a BS and an MS in mathematics. The teaching load is 3 courses/9 credit hours per semester. Fairfield offers competitive salaries and compensation benefits. The picturesque campus is located on Long Island Sound in southwestern Connecticut, about 50 miles from New York City. For further details see h**ttp://cs.fairfield.edu/mathhire**. Applicants should send a letter of application, a curriculum vitae, and three letters of recommendation commenting on the applicant's experience and promise as a teacher and scholar, to Matt Coleman, Chair of the Department of Mathematics and Computer Science, Fairfield University, Fairfield CT 06824-5195. Full consideration will be given to complete applications received by **January 20, 2006**. Fairfield is an Affirmative Action/Equal Opportunity Employer. Women, minorities, and persons with disabilities are strongly encouraged to apply.

GEORGIA COLLEGE & STATE UNIVERSITY — The Department of Mathematics invites applications for a tenure-track position with open rank in mathematics and a tenure-track position in statistics at the rank of Assistant Professor. A Ph.D. is required for each. Excellence in teaching, scholarly activity, and university/community service are requirements for promotion and tenure. Employment will begin August 1, 2006. GC&SU is Georgia's Public Liberal Arts University, with a strong commitment to student-centered education in a residential setting. For more information about these positions and application instructions, see **http://www.gcsu.edu/facultyjobs**. Review of applications will begin **November 18, 2005**, and continue until the position is filled. GC&SU is an Equal Opportunity/Affirmative Action institution.

GETTYSBURG COLLEGE — The Department of Mathematics invites applications for a tenure-track Assistant Professor position in applied mathematics or statistics beginning August 2006. We are searching for candidates who work in the general area of applied mathematics or statistics, including modeling, probability, biomathematics, financial mathematics, operations research, etc. Applicants must have a Ph.D. in one of the applied areas of the mathematical sciences, including statistics, or expect to complete all requirements for the degree by September 2006. A record of excellence in effective and innovative teaching, a clear promise of outstanding achievements in research, and a desire to assume a career in a liberal arts environment are essential. A successful candidate will have the opportunity to shape the mathematics program of an energetic department, to teach a broad range of topics in undergraduate mathematics, and to involve students in a variety of mathematical activities outside the classroom. The College is prepared to assist in establishing a research program; this assistance may include a paid pre-tenure leave. Gettysburg College is a highly selective liberal arts college located within 90 minutes of the Baltimore/Washington metropolitan area. It is consistently ranked in the top 50 liberal arts colleges in the nation. Established in 1832, the College has a rich history and is situated on a 220-acre campus with an enrollment of 2,500 students. Gettysburg College celebrates diversity and invites applications from members of any group that has

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been historically underrepresented in the American academy. The College assures equal employment opportunity and prohibits discrimination on the basis of race, color, national origin, gender, religion, sexual orientation, age, and disability. You may learn more about the College and the Department through the website: **http://www.gettysburg.edu/academics/math/applicant_information.html**. Please send a letter of application explaining your interest in our department, a curriculum vitae, a brief description of your teaching methods and objectives, and a summary of your research goals to: Mathematics Search Committee, Department of Mathematics, Gettysburg College, Gettysburg, PA 17325. No electronic submissions will be accepted. Also arrange for the committee to receive three letters of recommendation addressing teaching effectiveness and r esearch potential. Completed applications received by **December 1, 2005**, will receive full consideration.

GRAND VALLEY STATE UNIVERSITY — Grand Valley State University, in Allendale, Michigan, is accepting applications for the position of Assistant Professor in Mathematics, with employment to begin in August 2006. Required qualifications include a Ph.D. in Mathematics by August 2006; demonstrated excellence in teaching undergraduate mathematics; a commitment to continued scholarly and professional growth; strong teaching recommendations; a willingness to have students use technological tools to promote understanding of mathematics; interest in teaching courses throughout the curriculum, including service courses such as precalculus mathematics or mathematics courses for pre-service elementary teachers; and evidence of critical, reflective thinking about the teaching and learning of mathematics at the undergraduate level. For more information, including responsibilities of the position, and important details on how to apply, see our position description at **www.gvsu.edu/math/jobs.html**. Review of applications will begin by **December 10, 2005** and continue until the position is filled, or the search is closed. Recruitment for this position is subject to the availability of funding.

HARVEY MUDD COLLEGE — The Department of Mathematics invites applications for a tenure-track position in mathematics at the assistant or associate professor level; all areas of pure and applied mathematics will be considered. Candidates with strengths in mathematical biology (including biostatistics and bioinformatics) and/or industrial applications of mathematics are particularly encouraged to apply. Excellence in teaching is essential, as is evidence of a strong and ongoing research program. Candidates must be willing to supervise undergraduate research and to work with others in departmental and interdisciplinary programs such as the industrial projects-based Clinic program. Harvey Mudd College is a highly selective undergraduate institution of science, engineering and mathematics. A quarter of our students are National Merit Scholars, a fifth are high school valedictorians and one year of high school calculus is required for admission. Each year there are about 40 graduates in mathematics, mathematical biology and mathematics/computer science with roughly half going to graduate school. The College enrolls about 700 students and is a member of the Claremont College consortium, which consists of four other undergraduate colleges, the Claremont Graduate University, and the Keck Graduate Institute of Applied Life Sciences, forming together an academic community of about 5000 students. There is an active research community of over 40 mathematicians and statisticians in the consortium. Claremont is situated approximately 35 miles east of downtown Los Angeles, at the foot of the San Gabriel mountains. The community is known for its tree-lined streets and village charm. It is an easy drive from Claremont to cultural attractions of the greater Los Angeles area, as well as the ocean, mountains and deserts of Southern California. Applicants should send a curriculum vitae, a synopsis of their current research program, a teaching portfolio including a description of their teaching philosophy and experience, and a graduate transcript, and arrange to have three letters of recommendation sent to: Professor Andrew J. Bernoff, Search Committee Chair, Department of Mathematics, Harvey Mudd College, Claremont, CA 91711-5990. Further information about the college and department may be found at **http://www.math.hmc.edu/**. Preference will be given to applications completed by **December 2, 2005**. Harvey Mudd College is an equal opportunity employer and is committed to the development of a diverse faculty and workplace.

INDIANA UNIVERSITY BLOOMINGTON — DEPARTMENT OF MATHEMATICS — 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 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 a tenure-track position 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. Kansas State University is an equal opportunity employer. Paid for by Kansas StateUniversity.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY — DEPARTMENT OF MATHEMATICS — The Department of Mathematics may make appointments at the level of lecturer and assistant professor or higher, in pure mathematics for the year 2006-2007. These positions are open to mathematicians with doctorates who have demonstrated outstanding qualifications. Applications and other materials, including (a) curriculum vitae, (b) three letters of reference, (c) a description of your most recent research, and (d) a research plan for the immediate future, must be submitted online at **www.mathjobs.org** by **January 1, 2006** (please do not mail duplicates). We request that your letters of reference be submitted online. Alternatively, they may be sent to: Pure Mathematics Committee, Massachusetts Institute of Technology, Room 2-263, 77 Massachusetts Ave., Cambridge, MA 02139-4307. To ensure full consideration of your application, all references must arrive by **January 16**. MIT is an Equal Opportunity, Affirmative Action Employer. For more information about the MIT Mathematics Department: **www-math.mit.edu.**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY — DEPARTMENT OF MATHEMATICS — C..L.E. Moore Instructorships In Mathematics. These positions are open to mathematicians with doctorates who show definite promise in research. Applications and other materials, including (a) curriculum vitae, (b) three letters of reference, (c) a description of the research in your thesis, and (d) a research plan for the next year, must be submitted online at **www.mathjobs.org** by **January 1, 2006** (please do not mail duplicates). We request that your letters of reference be submitted online. Alternatively, they may be sent to: Pure Mathematics Committee, Massachusetts Institute of Technology, Room 2-263, Cambridge, MA 02139-4307. To ensure full consideration of your application, all references must arrive by **January 16**. MIT is an Equal Opportunity, Affirmative Action Employer. For more information about the MIT Mathematics Department, go to: **www-math.mit.edu.**

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY — DEPARTMENT OF MATHEMATICS, APPLIED MATHEMATICS — The applied mathematics group at MIT is seeking to fill possible positions at the level of Instructor, Assistant Professor or higher, beginning September 2006. Appointments will be made based on demonstrated outstanding research qualifications. Candidates in all areas of applied mathematics, including physical applied mathematics, computational molecular biology, numerical analysis, scientific computation, and theoretical computer science will be considered. Current activities of the group include: combinatorics, operations research, theory of algorithms, numerical analysis, astrophysics, condensed matter physics, computational physics, fluid dynamics, geophysics, nonlinear waves, theoretical and computational molecular biology, material sciences, quantum computing and quantum field theory, but new hiring may involve other areas. Applications and other materials, including (a) curriculum vitae, (b) research description, and (c) three letters of recommendation, must be submitted online at **www.mathjobs.org** by **January 1, 2006** (please do not mail duplicates). We request that your letters of reference be submitted online. Alternatively, they may be sent to: Committee on Applied Mathematics, Room 2-345, Department of Mathematics, MIT, 77 Massachusetts Ave., Cambridge, MA 02139-4307. To ensure full consideration of your application, all references must arrive by **January 16**. MIT is an Equal Opportunity, Affirmative Action Employer. For more information about the MIT Mathematics Department: **www-math.mit.edu.**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY — DEPARTMENT OF MATHEMATICS, STATISTICS — The Department of Mathematics may make appointments at the level of instructor, assistant professor or higher in STATISTICS or APPLIED PROBABILITY starting September 2006. Open to doctorates with strong research and teaching qualifications. Applications and other materials, including (a) curriculum vitae, (b) three letters of reference, (c) description of your most recent research and future plans, must be submitted online at **www.mathjobs.org** by **January 1, 2006** (please do not mail duplicates). We request that your letters of reference be submitted online. Alternatively, they may be sent to: Statistics Committee, Massachusetts Institute of Technology, Room 2-263, 77 Massachusetts Ave., Cambridge, MA 02139-4307. To ensure full consideration of your application, all references must arrive by **January 16**. MIT is an Equal Opportunity, Affirmative Action Employer. For more information about the MIT Mathematics Department: **www-math.mit.edu.**

MICHIGAN STATE UNIVERSITY — Chairperson, Statistics and Probability — The Department has nineteen tenure stream faculty (including joint appointments), many distinguished visiting faculty, and fifty graduate students. See **www.stt.msu.edu**. The Chairperson must be strongly committed to improvement in department's research and grant standing, teaching, service, interdisciplinary research initiatives, and leadership in filling expected faculty openings. Candidates should possess a Ph.D. in an appropriate field, outstanding research credentials, an established record of university and professional service, and effective leadership, communication and administrative skills. The position carries tenure at the rank of professor and is available starting August 16, 2006. Compensation is competitive and will be commensurate with qualifications. Send vitae and the names of four persons who may be contacted for letters of recommendation to Chairperson Search Committee, Department of Statistics and Probability, Michigan State University, East Lansing, MI 48824. Michigan State University is an AA/EOE.

MICHIGAN STATE UNIVERSITY — Michigan State University invites applications and nominations for the position of Chairperson, Department of Statistics and Probability, College of Natural Science. The Department has nineteen tenure stream faculty (including joint appointments in the Department of Mathematics, the Department of Epidemiology and the Lyman Briggs School), many distinguished visiting faculty and fifty graduate students. The applicant may wish to visit **www.msu.edu** and **www.stt.msu.edu** to learn more about the university and the department. The Department expects to grow and add faculty positions with strong interdisciplinary components. The Chairperson will lead the faculty in shaping and developing the department's research, teaching and service, including recruitment into expected faculty openings. Candidates should possess a Ph.D. in an appropriate field, outstanding research credentials, an established record of university and professional service, and effective leadership, communication and administrative skills. The Chairperson must be strongly committed to the continued improvement in the department's research and grant standing, promoting interdisciplinary research initiatives, and furthering excellence in teaching and service to the greater university community. The position carries tenure at the rank of professor and is available starting August 16, 2006. Compensation is competitive and will be commensurate with qualifications. Applications and nominations should be sent to: Professor Dennis Gilliland, Chairperson, Search Committee, Department of Statistics and Probability, Michigan State University, East Lansing, MI 48824. An application should include a letter of interest, curriculum vitae and the names of four persons who may be contacted for letters of recommendation. Applications will be considered until the position is filled. We expect to begin interviews in early 2006. Applications are strongly encouraged from members of groups that are traditionally underrepresented in statistics and probability.

MICHIGAN TECHNOLOGICAL UNIVERSITY — 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.

MILLERSVILLE UNIVERSITY — DEPARTMENT OF MATHEMATICS — Full-time, tenure-track assistant professorship to begin August 2006. Area of expertise in MATHEMATICS EDUCATION. The Department includes 20 full-time and several part-time faculty with a broad spectrum of mathematical specialties, and approximately 200 mathematics majors (of whom approximately 2/3 are secondary mathematics education majors). B.A. and B.S. degrees are offered in mathematics, as well as B.S.Ed. and M.Ed. degrees in mathematics education. Duties include an annual 24-hour teaching load, including mathematics courses for pre-service elementary and secondary teachers and a variety of undergraduate mathematics service courses, scholarly activity, student advisement, curriculum development in mathematics education at both undergraduate and graduate levels, and committee work. Research support is available through release-time grants, on a competitive basis. Faculty may be required to teach evenings, weekends or online. Summer teaching opportunities are usually available. Salary and benefits are competitive. Required: Doctorate (or completion by second year of reappointment) in mathematics education or in mathematics with a specialization in mathematics education. Must be broadly trained in mathematics with at least 24 semester hours of graduate level courses in pure or applied mathematics. Must be familiar with current directions in mathematics education, including the use of technology. Must exhibit evidence of strong commitment to excellence in teaching and continued scholarly activity. Must complete a successful interview and teaching demonstration. Evidence of teaching effectiveness is a primary consideration. Candidates must be able to work effectively with professional groups and community groups. Preferred: Experience teaching both K-12 and college-level mathematics. Full consideration will be given to applications received by January 20, 2006. E-mail applications will not be accepted. Send letter of application that addresses

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the position requirements, curriculum vita, copies of all undergraduate and graduate transcripts, and three letters of reference addressing position requirements (at least two of which attest to recent teaching effectiveness) to: Dr. Dorothee J. Blum, Search Committee Chair, Department of Mathematics/WIM1005, Millersville University, P.O. Box 1002, Millersville, PA 17551-0302. An EO/AA Institution.

MONMOUTH UNIVERSITY — Two tenure-track mathematics/statistics positions: The Mathematics Department of Monmouth University is seeking two full-time faculty members for tenure track appointments, which start August 25, 2006. Both positions require a Ph.D. in mathematics, applied mathematics, or statistics. For one of the positions, a Ph.D. in mathematics education with at least a master's degree in mathematics is equally acceptable. Dedicated, effective teaching is the primary responsibility; the 9-credit per semester teaching load includes both upper and lower level courses. There are expectations of continued scholarly activity consistent with the teaching load, as well as university service. One position requires a Ph.D. in statistics (or equivalent recent statistical experience and a Ph.D. in mathematics or applied mathematics); some consulting experience is strongly preferred. This person will be expected to lead the department's discussion of our offerings in statistics, and assist in developing pre-actuarial offerings. As most of our statistics offerings meet needs of students in "client" disciplines, it is essential that the candidate possess good communication skills, not only with mathematicians, but also with students and faculty in other disciplines. Teaching responsibilities include both statistics and mathematics courses. Mathematicians working in any field of research within the mathematical sciences are invited to apply for the second position. We are particularly interested in hiring faculty members with active scholarly interests in statistics, research in undergraduate mathematics education, developmental mathematics, or the mathematical education of teachers. The Mathematics Department has 13 full-time faculty members and approximately 14 part-time instructors. The Department offers baccalaureate programs in mathematics and mathematics education. The Department has a dedicated computer teaching laboratory, and administers the Mathematics Skills Center, which provides peer tutoring. More information about the department can be found at: **http://www.monmouth.edu/academics/deptlinks/mathematics.asp**. Monmouth University, located in Monmouth County along the Central Jersey shore approximately one hour south of New York City and 1.5 hours northeast of Philadelphia, designated a teaching university by the State of New Jersey, has 4500 undergraduates and 1800 graduate students. Our location puts us near a wide variety of industries, including telecommunications, financial, educational testing, and computer software. The University is committed to creating a more diverse environment. If you have questions about the positions or the department, contact the chair of the search committee, Bonnie Gold, **bgold@monmouth.edu**. Applicants should send cover letter, resume, teaching and research statements, departmental application form (available at: **http://mathematics.monmouth.edu/app/GenAppl/form.htm** or request by telephone from the department secretary, 732-571-4461), copies of graduate transcripts, and 3 letters of reference, at least one of which should discuss the applicant's teaching, and, for the statistics position, one of which should discuss the applicant's consulting experience, to: Frank Lutz, Dean School of Science, Technology and Engineering Monmouth University West Long Branch, NJ 07764-1898. Applications and supporting materials must be postmarked on or before **December 1, 2005** to assure full consideration. The University is committed to creating a more diverse environment.

MUHLENBERG COLLEGE — The Mathematical Sciences Department of Muhlenberg College seeks to fill two tenure-track positions at the assistant professor level to beginning Fall 2006. One requires a Ph.D. in mathematics; the other requires a Ph.D. in statistics, or a Ph.D. in mathematics with an M.S./M.A. in statistics. Apply by mail to Dr. William Dunham, Department of Mathematical Sciences, Muhlenberg College, Allentown, PA 18104. Include resume, statements of teaching philosophy and scholarly interests, undergraduate and graduate transcripts, and three letters of recommendation, at least one of which addresses teaching. Electronic submissions will not be accepted. See **www.muhlenberg.edu/mgt/humanres/jobs.html** for details. EOE

NORTHEASTERN UNIVERSITY — Boston, Massachusetts — We invite applications for a tenure-track position at the Assistant Professor level, pending budgetary approval, to begin in September of 2006. Outstanding candidates from any area of pure or applied mathematics are urged to apply. Special consideration will be given to applicants with an interest in interdisciplinary work connected to one of the existing research groups in the Department (**www.math.neu.edu/research/research.html**) and who show promise of being an excellent teacher. Women and minority candidates are strongly encouraged to apply. Applications, including a curriculum vitae, a statement of current research plans and teaching interests, and a completed AMS standard cover sheet, as well as three letters of recommendation, should be sent to the following address: Chair of the Hiring Committee, Department of Mathematics, Northeastern University, 567 Lake Hall, Boston, MA 02115, USA. Preference is given to candidates with some postdoctoral experience. The selection process will begin **December 1, 2005**. Northeastern University is an Equal Opportunity/Affirmative Action, Title IX, educational institution and employer.

NORTHEASTERN UNIVERSITY — Boston, Massachusetts — We invite applications for a position at the Associate or Full Professor level, pending budgetary approval, to begin in September of 2006. Candidates should be leading figures in their area of mathematical expertise. All areas of pure or applied mathematics will be considered, but preference will be given to those close to one of the existing research groups in the Department (**www.math.neu.edu/research/research.html**) and to those who have a demonstrated record of excellent teaching. Special consideration will be given to women and minority candidates. Applications, including a curriculum vitae, a brief statement of current research plans and teaching interests, and a completed AMS standard cover sheet, should be sent to the following address: Chair, Department of Mathematics, Northeastern University, 567 Lake Hall, Boston, MA 02115, USA. Applicants should also submit the names of three or more individuals who would agree to evaluate their research accomplishments, upon request by the Department. The selection process will begin **December 1, 2005**. Northeastern University is an Equal Opportunity/Affirmative Action, Title IX, educational institution and employer.

OBERLIN COLLEGE — DEPARTMENT OF MATHEMATICS — Full-time, continuing position beginning the 2006-07 academic year. Responsibilities include teaching undergraduate courses in mathematics and statistics (5/year), supervising honors students, and sustained scholarly production. Ph.D. degree (in hand or expected by first semester of academic year 2006-07) required. Preference given to candidates who have experience in applied mathematics broadly defined and whose interests complement those of current faculty members. Candidates must demonstrate potential excellence in teaching. Send letter of application, curriculum vitae, academic transcripts (graduate and undergraduate, unofficial accepted initially), and 3 letters of reference, to James A. Walsh, Department of Mathematics, Oberlin College, Oberlin, Ohio, 44074 by **December 1, 2005**. Oberlin College admitted women since its founding in 1833 and has been historically a leader in the education of blacks. AA/EOE

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 PhD 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

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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.

OREGON STATE UNIVERSITY — The Department of Mathematics invites applications for a full-time, 9-month, fixed-term Postdoctoral/Research Associate position in Applied Mathematics beginning in Winter 2006 or later depending on arrangements. This position will involve some teaching responsibilities and mainly research activities in the direction of the project "Multiscale modeling, analysis, and simulation of preferential flow in porous media." For more information on the project see **www.math.oregonstate.edu/~multiscale** or write to **multiscale@math.oregonstate.edu**. The successful applicant will have a PhD in Mathematics or closely related field, significant active research engagement in modeling and/or analytical, and/or computational aspects of multiscale phenomena and teaching experience. Strong background and/or experience in at least two of the three areas: i) modeling and analysis of flow and transport phenomena, ii) computational methods appropriate for such models, and iii) experience with multiscale methods is required. Reappointment is at the discretion of the department Chair. Salary will depend on qualifications and on the extent of duties. For application instruction see full position announcement at **oregonstate.edu/jobs**. For full consideration, apply by **11/30/05**. OSU is an AA/EOE.

POMONA COLLEGE — Tenure-track position in any area of Analysis. Submit applications online at **MathJobs.org** or to Shahriar Shahriari, Chair, Mathematics Department, Pomona College, 610 North College Avenue, Claremont, CA 91711-6348. Application includes a curriculum vitae, graduate transcripts, at least three letters of recommendation (at least one should evaluate teaching), a description, for the non-specialist, of research accomplishments and plans, and a statement of teaching philosophy. Will fully consider applications completed by **December 1, 2005**. Pomona College is an equal opportunity employer and especially invites applications from women and members of underrepresented groups.

RICE UNIVERSITY — DEPARTMENT OF MATHEMATICS — Position for E. C. Evans/VIGRE Lovett Instructorships, 2006-2007. Position Description: We expect to have positions for two Griffith Conrad Evans Instructorship and one VIGRE Lovett Instructorships beginning in the Fall of 2006. These positions are two to three year appointments and are open to promising research mathematicians with research interests in common with the active research areas at Rice; particularly, geometric topology, geometric analysis, differential geometry, combinatorics, analysis, algebraic geometry, and ergodic theory. Duties will include research and classroom teaching. Applications received by **December 15, 2005** will receive full consideration. To apply, please have (1) three letters of recommendation (one of these letters must address your teaching skills), (2) a curriculum vitae, (3) a research description and if possible (4) the AMS Cover Sheet for Academic Employment sent to Chair, Evans Committee, Department of Mathematics, Rice University, PO Box 1892, Houston, TX 77251-1892. Inquiries should also be sent to the above address. Rice University is an Equal Opportunity Affirmative Action Employer and strongly encourages applications from women and minority group members. For more information about the positions and the VIGRE program, please visit **http://math.rice.edu/About/job** and **http://www.vigre.rice.edu**.

SKIDMORE COLLEGE — The Department of Mathematics and Computer Science at Skidmore College invites applications for a tenure-track position in Mathematics beginning September 2006. Qualifications include a Ph.D. in the Mathematical Sciences. Candidates with expertise in statistics and/or applied mathematics are particularly encouraged to apply. The appointment will be at the rank of Assistant or Associate Professor. A commitment to quality instruction of undergraduates and continuing scholarly activity is essential. Responsibilities will include teaching a wide range of courses across the undergraduate mathematics curriculum (normally five courses per year), advising students, and engaging in research. For detailed information, see **http://www.skidmore.edu/academics/mcs/mcs-home/index.htm**. Candidates for the position should submit a letter of application and resume, and have three letters of recommendation sent separately. Electronic submittals are preferred and should be sent to **anita@skidmore.edu**. Mailed applications and recommendations should be sent to: Pierre A. von Kaenel, Chair, Department of Mathematics and Computer Science, Skidmore College, 815 North Broadway, Saratoga Springs, NY 12866. Review of applications will begin **January 2006**, and continue until the position is filled. Applications from members of underrepresented groups are especially encouraged.

SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE — DEPARTMENT OF MATHEMATICS — Applications are invited for a tenure-track position in mathematical biology at the rank of assistant professor to begin on August 16, 2006. The department seeks applicants whose mathematical research interests and expertise involve the mathematical modeling and/or analysis of biological phenomena and data. The successful candidate for this position will be expected to contribute to a newly formed cluster in Mathematical Biology at SIUC linking the Departments of Mathematics and Plant Biology and the Center for Ecology. Applicants must demonstrate evidence of, or potential for, excellence in research and in teaching at both undergraduate and graduate levels. Ph.D. in a field of pure or applied mathematics required by **August 15, 2006**. Post doctoral experience preferred. The application hired into this position will be expected research funding, and to develop a satisfactory record of service. To apply, please send letter of application, curriculum vitae and statements of research and teaching interests, and have three letter of recommendation sent to: Mathematical Biology Position, Department of Mathematics, Mailcode 4408, Southern Illinois University Carbondale, 1245 Lincoln Drive, Carbondale, Illinois 62901. Review of applications will begin **December 5, 2005**, and continue until position is filled. SIUC is an affirmative action/equal employer that strives to enhance it ability to develop a diverse faculty and staff and to increase its potential to serve a diverse student population. All applications are welcomed and encouraged and will receive consideration.

SUNY FREDONIA — Department of Mathematical Sciences: Tenure-track Assistant Professor. Ph.D. (earned or expected) in the mathematical sciences is required. The department offers undergraduate majors in mathematics, applied mathematics, and mathematics education, and an MSEd in Mathematics Education. A successful candidate will show evidence of excellence in teaching and potential for scholarly growth. Review of applications will begin **November 21** and continue until the position is filled. For further information and application instructions, visit the department website at **www.fredonia.edu/department/math**. SUNY Fredonia is an Equal Opportunity/Affirmative Action employer. We actively seek and encourage applications from minorities, women, and people with disabilities.

SUNY FREDONIA — Tenure-track position in mathematics education at the Assistant or Associate Professor level. Requires a doctorate (earned or expected) in mathematics education or mathematics. A successful candidate will have expertise, interest, and experience educating mathematics teachers at the middle school or high school level, will show evidence of excellence in teaching and potential for scholarly growth. Review of applications will begin November 21 and continue until the position is filled. For further information and application instructions, visit the department website at **www.fredonia.edu/department/math**. SUNY Fredonia is an Equal opportunity/Affirmative Action employer. We actively seek and encourage applications from minorities, women, and people with disabilities.

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TEXAS A&M UNIVERSITY — DEPARTMENT OF MATHEMATICS — The Department of Mathematics is in the third year of an aggressive four-year hiring plan to increase its tenured and tenure-track faculty by 25%. As part of this effort, we anticipate several openings for tenured, tenure-eligible, and visiting faculty positions beginning fall 2006. The field is open, but we particularly seek applications from individuals whose mathematical interests would augment and build upon existing strengths both within the Mathematics Department as well as other departments in the University. Salary, teaching loads and start-up funds are competitive. For a Tenured Position the applicant should have an outstanding research reputation and would be expected to fill a leadership role in the department. An established research program, including success in attracting external funding and supervision of graduate students, and a demonstrated ability and interest in teaching are required. Informal inquiries are welcome. For an Assistant Professorship, we seek strong research potential and evidence of excellence in teaching. Research productivity beyond the doctoral dissertation will normally be expected. We also have several visiting positions available. Our Visiting Assistant Professor positions are for a three year period and carry a three course per year teaching load. They are intended for those who have recently received their Ph.D. and preference will be given to mathematicians whose research interests are close to those of our regular faculty members. Senior Visiting Positions may be for a semester or one year period. The complete dossier should be received by **December 15, 2005**. Early applications are encouraged since the department will start the review process in October. Applicants should send the completed "AMS Application Cover Sheet," a vita, and arrange to have letters of recommendation sent to: Faculty Hiring, Department of Mathematics, Texas A&M University, College Station, Texas 77843-3368. Further information can be obtained from **http://www.math.tamu.edu/hiring**. Texas A&M University is an equal opportunity employer. The University is dedicated to the goal of building a culturally diverse and pluralistic faculty and staff committed to teaching and working in a multicultural environment and strongly encourages applications from women, minorities, individuals with disabilities, veterans. The University is responsive to the needs of dual career couples.

THE OHIO STATE UNIVERSITY — The Mathematical Biosciences Institute (MBI) at The Ohio State University is accepting applications for postdoctoral positions to start September 2006, which are renewable for up to 3 years. Some positions are co-sponsored by industry or academic bioscience labs. The deadline for applications is **January 18, 2006**. Short- and long-term visitors may apply at any time. To access the application form or for more information, visit the MBI website at **http://mbi.osu.edu** or call **(614) 292-3648**. The Mathematical Biosciences Institute adheres to the AA/EOE hiring guidelines.

THE OHIO STATE UNIVERSITY, COLLEGE OF MATHEMATICAL AND PHYSICAL SCIENCES — The Department of Mathematics in the College of Mathematical and Physical Sciences at The Ohio State University expects to have tenure-track/tenured positions and several visiting positions available, effective Autumn Quarter 2006. Candidates in all areas of pure and applied mathematics are invited to apply. A Ph.D. in mathematics, significant mathematical research accomplishment, and evidence of excellent teaching ability are required. Candidates should apply online at **https://www.math.ohio-state.edu/applications/**. Senior candidates should arrange for at least five letters of recommendation and junior candidates should arrange for at least three letters of recommendation to be sent to: Advisory Committee, Department of Mathematics, The Ohio State University, 231 W. 18th Avenue, Columbus, OH 43210. If you cannot apply online, please send vitae, research statement, and teaching statement to the above address. Applications are considered on a continuing basis but the review process begins **November 15, 2005**. Please direct inquiries to **facultysearch@math.ohio-state.edu**. To build a diverse workforce, Ohio State encourages applications from minorities, veterans, women, and individuals with disabilities. Flexible work options available. EEO/AA employer.

THE OHIO STATE UNIVERSITY, COLLEGE OF MATHEMATICAL AND PHYSICAL SCIENCES — The Department of Mathematics in the College of Mathematical and Physical Sciences at The Ohio State University expects to have several Hans J. Zassenhaus Assistant Professorships and VIGRE Arnold Ross Assistant Professorships available effective Autumn Quarter 2006. These term positions are renewable annually for up to a total of three years. Candidates are expected to have a Ph.D. in mathematics and to present evidence of excellence in research and teaching. Further information on the department can be found at **http://www.math.ohio-state.edu** and **http://mbi.osu.edu.** All candidates should apply online at **https://www.math.ohio-state.edu/applications/** and have at least three letters of recommendation sent to: Advisory Committee, Department of Mathematics, The Ohio State University, 231 W. 18th Avenue, Columbus, OH 43210. If you cannot apply online, please send vitae, research statement, and teaching statement to the above address. Applications are considered on a continuing basis but the annual review process begins **November 15, 2005**. Please direct inquiries to **facultysearch@math.ohio-state.edu**. To build a diverse workforce, Ohio State encourages applications from minorities, veterans, women, and individuals with disabilities. Flexible work options available. EEO/AA Employer.

THE OHIO STATE UNIVERSITY, COLLEGE OF MATHEMATICAL AND PHYSICAL SCIENCES — The Department of Mathematics in the College of Mathematical and Physical Sciences at The Ohio State University expects to have openings at both the junior and senior level in the area of mathematical and computational biology. Applicants should have a PhD in mathematics or a related area, such as mathematical sciences, biomathematics, biology, chemistry, computer science, physics, and engineering and should show outstanding promise and/or accomplishments in both research and teaching. The successful candidate will be expected to teach courses in the Mathematics Department and actively participate in the Mathematical Biosciences Institute. All candidates should apply online at **https://www.math.ohio-state.edu/applications/**. Further information on the Department and the MBI can be found at **http://www.math.ohio-state.edu** and **http://mbi.osu.edu**. Senior candidates should arrange for at least five letters of recommendation and junior candidates should arrange for at least three letters of recommendation to be sent to: Mathematical Biosciences Search, Department of Mathematics, The Ohio State University, 231 W. 18th Avenue, Columbus, OH 43210. If you cannot apply online, please send vitae, research statement, and teaching statement to the above address. Applications are considered on a continuing basis but the review process begins **November 15, 2005**. Please direct inquiries to **facultysearch@math.ohio-state.edu**. To build a diverse workforce, Ohio State encourages applications from minorities, veterans, women, and individuals with disabilities. Flexible work options available. EEO/AA Employer.

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM — Proposed Position Advertisement, Applications are invited for tenure-track positions at the level of assistant professor or higher to begin August 15, 2006. Applicants should have demonstrated strong potential in research and a commitment to excellent teaching. Post-doc experience is desirable. Candidates whose research is compatible with the department's research expertise—which lies in differential equations, differential geometry, dynamical systems, mathematical physics and topology and includes the computational aspects of these research areas—are encouraged to apply. We are especially interested in applicants with expertise in geometric or harmonic analysis or inverse problems. Applications should include a curriculum vita with publication list, a statement of future research plans, a teaching statement, and at least three letters of recommendation. Applicants are encouraged to submit all their materials electronically at **http://www.mathjobs.org**. In any case the AMS Standard Cover Sheet should be completed online at **http://www.mathjobs.org**. For more information about the department please visit **http://www.math.uab.edu**. UAB is an AA/EO employer.

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THE UNIVERSITY OF TORONTO — Tenure Stream Assistant Professorships. The department anticipates having a number of tenure-stream Assistant Professorships over the next several years. Applicants must demonstrate excellent accomplishments and outstanding promise in research and strong commitment to graduate and undergraduate teaching. Preference will be given to researchers in the areas of Analysis (Code: ANA), Algebra (Code: ALG), Geometric Analysis (Code: GAN), and Applied Mathematics (Code: AM). However, exceptional candidates in all fields of pure or applied mathematics are encouraged to apply (Code: OTHER). Application material must include the candidate's Curriculum Vitae and list of publications. Applicants must arrange to have four letters of reference, of which at least one letter primarily addresses the candidate's teaching, sent directly to the appointments committee. Candidates are encouraged to send a cover letter specifying the code of the most relevant of the above areas and specifying whether the candidate is a Canadian citizen/permanent resident. Candidates are also encouraged to send a research statement, a teaching statement, and the AMS cover sheet. Application material should be sent to the Appointments Committee, Department of Mathematics, University of Toronto, 40 St.George Street Room 6290, Toronto Ontario M5S 2E4, Canada. Preference will be given to applications received by **November 15, 2005**. The University of Toronto offers the opportunity to teach, conduct research, and live in one of the most diverse cities in the world. The University of Toronto is strongly committed to diversity within its community and especially welcomes applicants from visible minority group members, women, Aboriginal persons, persons with disabilities, members of sexual minority groups, and others who may contribute to the further diversification of ideas. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.

THE UNIVERSITY OF TORONTO — Ted Mossman Chair in Mathematics. Thanks to a generous gift from James Mossman, the Department of Mathematics, University of Toronto, is proud to announce a search for the Ted Mossman Chair in Mathematics. The appointment is at the level of Professor with tenure, and the Chair holder is expected to be an outstanding mathematician, whose research and teaching will make a major contribution to the quality and stature of the department. The appointment is effective July 1, 2006. Applicants should send a complete Curriculum Vitae and a short statement about their research program and arrange to have four letters of reference sent to the Ted Mossman Search Committee, Department of Mathematics, University of Toronto, 40 St. George Street Room 6290, Toronto, Ontario M5S 2E4, Canada. Preference will be given to applications received by **January 1, 2006**. The University of Toronto offers the opportunity to teach, conduct research, and live in one of the most diverse cities in the world, and is strongly committed to diversity within its community. The University especially welcomes applications from minority candidates and others who may add to the further diversification of ideas. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.

THE UNIVERSITY OF TORONTO — The department invites applications for Limited Term Assistant Professorships (non tenure stream) at the St.George and Mississauga campuses. Applicants must demonstrate strength in teaching and significant research promise. Application material must include the candidate's Curriculum Vitae and list of publications. Applicants must arrange to have four letters of reference, of which at least one letter primarily addresses the candidate's teaching, sent directly to the appointments committee. Candidates are encouraged to send a cover letter specifying that they are applying for a CLTA position and specifying whether the candidate is a Canadian citizen/permanent resident. Candidates are also encouraged to send a research statement, a teaching statement, and the AMS cover sheet. Application material should be sent to the Appointments Committee, Department of Mathematics, University of Toronto, 40 St.George Street Room 6290, Toronto Ontario M5S 2E4, Canada. Preference will be given to applications received by **December 15, 2005**. The University of Toronto offers the opportunity to teach, conduct research, and live in one of the most diverse cities in the world. The University of Toronto is strongly committed to diversity within its community and especially welcomes applicants from visible minority group members, women, Aboriginal persons, persons with disabilities, members of sexual minority groups, and others who may contribute to the further diversification of ideas. The appointments are effective July 1, 2006 and are contractually-limited term appointments for a term of three years. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.

UNIVERSITY OF CALIFORNIA AT BERKELEY — DEPARTMENT OF MATHEMATICS — CHARLES B. MORREY JR. ASSISTANT PROFESSORSHIPS. We invite applications for these special (nontenure-track) positions effective July 1, 2006. The terms of these appointments may range from two to three years. Applicants should have a recent Ph.D., or the equivalent, in an area of pure or applied mathematics. Applicants should send a resume, reprints, preprints and/or dissertation abstract, and ask three people to send letters of evaluation to The Vice Chair for Faculty Affairs at the above address. All letters of evaluation are subject to Berkeley campus policies on confidentiality of letters of evaluation, a summary of which can be found on our home page (http://math.berkeley.edu by clicking on People, then Employment, and then Academic Openings). We request that applicants use the AMS standardized application form and indicate their subject area using the AMS subject classification numbers. The form is the Academic Employment in Mathematics, Application Cover Sheet. It is available courtesy of the American Mathematical Society. Applications must be postmarked by **December 15, 2005**. Applications postmarked after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

UNIVERSITY OF CALIFORNIA AT BERKELEY — DEPARTMENT OF MATHEMATICS — TEMPORARY POSTDOCTORAL POSITIONS. Several temporary positions beginning in Fall 2006 are anticipated for new and recent Ph.D.'s of any age, in any area of pure or applied mathematics. The terms of these appointments may range from one to three years. Applicants for NSF or other postdoctoral fellowships are encouraged to apply for these positions. Mathematicians, whose research interests are close to those of regular department members, will be given some preference. Applicants should send a resume and reprints, preprints, and/or dissertation abstract, and ask three people to send letters of evaluation to The Vice Chair for Faculty Affairs at the above address. All letters of evaluation are subject to Berkeley campus policies on confidentiality of letters of evaluation, a summary of which can be found on our home page (**http://math.berkeley.edu** by clicking on People, then Employment, and then Academic Openings). We request that applicants use the AMS standardized application form and indicate their subject area using the AMS subject classification numbers. The form is the Academic Employment in Mathematics, Application Cover Sheet. It is available courtesy of the American Mathematical Society. Applications must be postmarked by **December 15, 2005**. Applications postmarked after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

UNIVERSITY OF CALIFORNIA AT BERKELEY — DEPARTMENT OF MATHEMATICS — TENURED OR TENURED TRACK POSITION. Pending budget approval, we invite applications for three positions effective July 1, 2006 at either the tenure-track (Assistant Professor) or tenured (Associate or Full Professor) level, in pure or applied mathematics. We are seeking candidates with no more than 10 years experience after their Ph.D. Tenure track applicants are expected to have demonstrated outstanding research potential, normally including major contributions beyond the doctoral dissertation. Such applicants should send a resume, and reprint or preprints, and/or dissertation abstract, and ask three people to send letters of evaluation to The Vice Chair for Faculty Affairs at the above address. It is the responsibility of the tenure track applicants to make sure that letters of evaluation are sent. All letters of evaluation are subject to Berkeley campus policies on confidentiality of letters of evaluation, a summary of which can be found on our home page (**http://math.berkeley.edu** by clicking on People, then Employment, and then Academic Openings). Tenure applicants are expected to demonstrate leadership in research and should send curriculum vitae, list of publications, a few selected reprints or preprints, and the names and addresses of three references to The Vice Chair for Faculty Affairs at the above address. Applicants should indicate whether they are applying for an Associate Professor or a Full Professor position. The department will assume responsibility

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to solicit letters of evaluation and will provide evaluators with a copy of the summary of policies on confidentiality of letters of evaluation. All applicants are requested to use the AMS standardized application form and to indicate their subject area using the AMS subject classification numbers. The form is the Academic Employment in Mathematics, Application Cover Sheet. It is available courtesy of the American Mathematical Society. Applications for both Tenure track and Tenure applications must be postmarked by **December 15, 2005**. Applications postmarked after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

UNIVERSITY OF CALIFORNIA, DAVIS — The Department of Mathematics is soliciting applications for three tenure-track faculty positions starting July 1, 2006, subject to budgetary and administrative approval. Priority areas of the tenure-track positions are Algebraic Geometry/Computational Geometry, Mathematical Biology, and Mathematical Physics. Exceptional candidates in other research areas will be considered. Minimum qualifications for the position include a Ph.D. degree or its equivalent in the Mathematical Sciences and great promise in research and teaching. Duties include mathematical research, undergraduate and graduate teaching, and departmental and university service. Appointments will normally be made at the level of Assistant Professor. Outstanding candidates with demonstrated attainment in research and teaching in Algebraic Geometry, Computational Geometry, and Mathematical Physics may be considered for a tenured appointment. Additional information on the Department may be found at **http://math.ucdavis.edu/**. Our postal address is Department of Mathematics, University of California, One Shields Avenue, Davis, CA 95616-8633. Applications will be accepted until the positions are filled. To receive full consideration, the application should be submitted by **December 1, 2005**. To apply, submit the AMS Cover Sheet and supporting documentation electronically through **http://www.mathjobs.org/**. The University of California, Davis, is an affirmative action/equal opportunity employer.

UNIVERSITY OF CALIFORNIA, LOS ANGELES — The Department of Statistics is seeking applications for a tenure-track, assistant professor position. Preference will be given to candidates with a background in computational statistics and with an interest in applications. There is also the possibility of more senior appointments. Women and underrepresented minorities are encouraged to apply. Appointment begins July 1, 2006. Applicants should send a letter of application, current vita, samples of published and unpublished work (samples will not be returned), and three letters of recommendation to: University of California, Los Angeles, Department of Statistics, c/o Professor Jan de Leeuw, 8125 Math Sciences Building, Box 951554, Los Angeles, CA 90095-1554. For additional information contact Prof. Jan de Leeuw, Chair, Department of Statistics, (310) 825-8430 or fax (310) 206-5658, e-mail **deleeuw@stat.ucla.edu**. Full consideration is guaranteed to those who apply by **March 1, 2006**; however, the search will remain open until all positions are filled. The University of California Los Angeles is an Equal Opportunity/Affirmative Action Employer.

UNIVERSITY OF DAYTON — Applications are invited for a tenure track position in the Department of Mathematics at the assistant professor level starting in August 2006. The position focuses on applied discrete mathematics. Candidates must have a Ph.D. in mathematics. Candidates must have a commitment to teaching, advisement, curriculum development, and research supervision at both the undergraduate and graduate levels. The successful candidate will be expected to develop an ongoing research agenda, and complement the department's core group of discrete mathematicians. Preference is given to candidates who develop research and curricular collaborations with faculty members from other disciplines. The selection process begins **December 12, 2005**. To receive full consideration, all materials must be received by **January 19, 2006**. A complete application consists of a resume, three letters of recommendation, a statement of research and professional plans, a statement of teaching philosophy, and a graduate transcript. Both teaching abilities and research abilities should be addressed in the letters of recommendation. Please include an e-mail address in your correspondence. Send applications to: Dr. Robert Gorton, Chair of the Mathematics Search Committee, Department of Mathematics, University of Dayton, Dayton, OH 45469-2316. Contact the search committee at **Robert.Gorton@notes.udayton.edu**. For further information, see **http://www.udayton.edu/~mathdept**. The University of Dayton is a private comprehensive Catholic university founded by the Society of Mary in 1850. It has more than 6000 undergraduate and 3000 graduate students. The Department of Mathematics offers baccalaureate degrees in mathematics and applied mathematical economics, and master's degrees in applied mathematics, financial mathematics, and mathematics education. The University of Dayton is an Equal Opportunity/Affirmative Action employer. Women, minorities, individuals with disabilities, and veterans are encouraged to apply. The University of Dayton is firmly committed to the principle of diversity.

UNIVERSITY OF LOUISVILLE — The Department of Mathematics invites applications for a tenure-track position at the Assistant Professor level beginning Fall 2006. Minimum qualifications for this position include a Ph.D. degree, or its equivalent, in the Mathematical Sciences and evidence or promise of excellence in research and teaching. Preference will be given to applicants who strengthen the department's new Ph.D. program in applied mathematics and who complement the existing strengths in the department (**www.math.louisville.edu**). Applicants with interest or experience in teaching mathematics for elementary and middle schoolteachers will be given priority. Interested applicants should submit (1) the AMS Standard Coversheet; (2) curriculum vitae; (3) summary of research interest; (4) statement of teaching qualifications; and (5) at least four letters of recommendation, including letters, which discuss at length research, and teaching qualifications. For full consideration, all materials must be received by **December 9, 2005**. Applications should be sent to: Search Committee, Department of Mathematics, University of Louisville, Louisville, KY 40292. The Department of Mathematics is committed to building a culturally diverse faculty and strongly encourages women, African Americans, and other minorities to apply. AA/EOE.

UNIVERSITY OF MARYLAND AT COLLEGE PARK — DEPARTMENT OF MATHEMATICS — Applications are invited for tenured and tenure-track positions in the Department of Mathematics. There is a particular interest in candidates specializing in (1) Applied Harmonic Analysis, (2) Applied Partial Differential Equations and (3) Statistics. Applications are also invited for a three-year VIGRE Postdoctoral Fellowship. Priority will be given to applications received by **December 15, 2005**. Appointments will commence in Fall 2006. The University of Maryland is an Equal Opportunity and Affirmative Action employer that strongly encourages applications from female and minority candidates. Applicants must provide a curriculum vitae, an AMS Standard Cover Sheet, and four letters of recommendation, three regarding research and one regarding teaching. Application material should be sent directly to: The Hiring Committee, Department of Mathematics, University of Maryland, College Park, Maryland 20742. We recommend that Postdoctoral and Assistant Professor Candidates also register with the AMS application service **mathjobs.org**.

UNIVERSITY OF MICHIGAN — T. H. Hildebrandt, RTG and other term Assistant Professorships. 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**.

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UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL — The UNC-CH Mathematics Department invites applications for a junior level tenure track position, specializing in mathematical biology, effective July 1, 2006. Applicants must have completed or expect to complete the Ph.D. or equivalent degree in mathematics or a closely related field by July 2006. In addition, applicants must have a strong research program and a commitment to excellence in teaching. This position will provide an opportunity and expectations for collaborations with UNC-CH Medical School and Biology Department faculty. Duties of this position will include teaching at the undergraduate and graduate levels and continued research. Applicants should send the (1) The AMS Standard Cover Sheet, (2) curriculum vita, (3) description of current research and a plan for future research, (4) a statement of teaching goals, and (5) four letters of recommendation. The AMS Standard Cover Sheet should be completed online at **www.mathjobs.org**. Applicants are encouraged to submit their entire application at this site. Applications can also be mailed to: Tenure Track Search – Math Biology, Department of Mathematics, University of North Carolina at Chapel Hill, CB #3250 Phillips Hall, Chapel Hill, NC 27599-3250. Review of applications will begin December 15, 2005. For further information on the Department or this position, please visit our website at **http://www.math.unc.edu** or contact Professor Patrick Eberlein at **pbe@email.unc.edu**. UNC-CH is an Equal Opportunity Employer.

UNIVERSITY OF PENNSYLVANNIA — Junior Positions in Mathematics. Several positions (including possible tenure-track positions) will be available beginning July 1, 2006. Candidates should have strong research credentials and be recognized as potentially successful teachers of undergraduate and graduate students. Send resume and three letters of reference to the Personnel Committee, Department of Mathematics, University of Pennsylvania, Philadelphia, PA 19104-6395. These will be reviewed beginning January 4, 2006. Candidates are encouraged to apply early. The University of Pennsylvania is an equal opportunity, affirmative action employer. Women and minority candidates are encouraged to apply.

UNIVERSITY OF PENNSYLVANNIA — Tenure Positions in Mathematics. Commencing July 1, 2006, there may be one or more tenure positions available in the following areas (in alphabetical order): algebra, analysis, applied mathematics, discrete mathematics and geometry/topology. These positions are for candidates with outstanding, internationally recognized research achievements who are successful teachers of undergraduate and graduate students. Rank and salary will depend upon experience. Write to the Personnel Committee, Department of Mathematics, University of Pennsylvania, Philadelphia, PA 19104-6395. The University of Pennsylvania is an equal opportunity, affirmative action employer. Women and minority candidates are encouraged to apply.

UNIVERSITY OF PITTSBURGH — The Mathematics Department invites applications for a full-time tenure-track position in Number Theory or Algebraic Geometry / Representation Theory to begin in the Fall Term 2006, pending budgetary approval. The appointment is at the Assistant Professor level or above, depending on the credentials of the applicant. We seek excellence in teaching and research so applicants should demonstrate substantial research accomplishment and dedication to teaching. Send a vita, three letters of recommendation, a research statement and evidence of teaching accomplishments to: Search Committee in Algebra, Department of Mathematics, University of Pittsburgh, Pittsburgh, PA 15260. Review of completed files will begin on **November 30, 2005** and continue until the position is filled. The University of Pittsburgh is an Affirmative Action, Equal Opportunity Employer. Women and members of minority groups under-represented in academia are especially encouraged to apply.

VASSAR COLLEGE — DEPARTMENT OF MATHEMATICS — The Department of Mathematics invites applications for one tenure-track position at the level of Assistant Professor starting in Fall 2006. Applicants in all areas of mathematics will be considered. Candidates must have a PhD in mathematics by September, 2006, and a strong record or potential in both research and teaching. Teaching load is five courses per year. Information about the department and its faculty can be obtained from the department web site **http://math.vassar.edu**. Applicants should submit a curriculum vita, description of research accomplishments and plans, statement of teaching philosophy, and the American Mathematical Society cover sheet. Applicants should also arrange for at least three letters of recommendation to be sent, one of which primarily addresses teaching. Please submit applications on-line at MathJobs.org or send directly to: Hiring Committee, Department of Mathematics, Vassar College, 124 Raymond Avenue, Poughkeepsie, NY 12604-0257. Complete applications received by **December 1, 2005**, are assured of full consideration. Vassar College is a highly selective liberal arts college in Poughkeepsie, New York, with 2400 students. The college is an equal opportunity/affirmative action employer and especially invites applications from women and members of underrepresented groups.

VASSAR COLLEGE — DEPARTMENT OF MATHEMATICS — The Department of Mathematics invites applications for two non-tenure-track two-year visiting positions at the level of Assistant Professor starting in Fall 2006. Applicants in all areas of mathematics will be considered. Candidates must have a PhD in mathematics by September 2006, and a strong record or potential in both research and teaching. Teaching load is five courses per year. Information about the department and its faculty can be obtained from the department web site **http://math.vassar.edu**. Applicants should submit a curriculum vita, description of research accomplishments and plans, statement of teaching philosophy, and the American Mathematical Society cover sheet. Applicants should also arrange for at least three letters of recommendation to be sent, one of which primarily addresses teaching. Please submit applications on-line at MathJobs.org or send directly to: Hiring Committee, Department of Mathematics, Vassar College, 124 Raymond Avenue, Poughkeepsie, NY 12604-0257. Complete applications received by **December 1, 2005**, are assured of full consideration. Vassar College is a highly selective liberal arts college in Poughkeepsie, New York, with 2400 students. The college is an equal opportunity/affirmative action employer and especially invites applications from women and members of underrepresented groups.

WESLEYAN UNIVERSITY — The Department of Mathematics and Computer Science at Wesleyan University invites applications for a tenure track assistant professorship to begin in the academic year 2006-2007. Candidates must have in hand, or near completion, a Ph.D. or equivalent degree and strong records in both research and teaching. We seek candidates with a research specialization in topology, broadly construed, and are particularly interested in candidates whose research interests will enable interaction with our current faculty. Teaching duties will be two courses per semester, ranging from introductory to doctoral level courses. Wesleyan University is an Equal Opportunity, Affirmative Action Employer. Women and minorities are encouraged to apply. Applications should be submitted by **December 15, 2005** and include a cover letter, curriculum vitae, research statement and teaching statement, and at least four letters of recommendation, including one which evaluates teaching. Applications may be submitted online at mathjobs.org or mailed to the following address or e-address: Search Committee, Department of Mathematics and Computer Science, Wesleyan University, Middletown, CT 06459. Email: **mathsearch@math.wesleyan.edu**

WILLIAMS COLLEGE — The Department of Mathematics and Statistics invites applications for a newly authorized visiting position in mathematics for the 2006-2007 year, probably at the rank of assistant professor, however, in exceptional cases, a more advanced appointment might be considered. A Ph.D. is required. Send a vita and three letters of recommendation on teaching and research to: Visitor Hiring Committee, Department of Mathematics and Statistics, Williams College, Williamstown, MA 01267. Consideration of applications will begin on **November 15** and continue until the position is filled. Williams College is dedicated to providing a welcoming intellectual environment for all of its faculty, staff and students; as an AA/EOE employer, Williams especially welcomes applications from women and minority candidates.

AWM EVENTS

AWM would like to invite you to our events to be held in conjunction with the Joint Mathematics Meetings, Harry B. Gonzalez Convention Center, San Antonio, TX, January 12–15, 2006.

PRELIMINARY SCHEDULE OF EVENTS

THURSDAY, JANUARY 12

3:20 p.m. – 4:35 p.m.

Panel Discussion: ***"Lawrence H. Summers: One Year Later"***
Organizer: Barbara Lee Keyfitz, Fields Institute
Panelists: Richard M. Dudley, Massachusetts Institute of Technology; Mary W. Gray, American University; Ellen E. Kirkman, Wake Forest University; Mary Beth Ruskai, Tufts University; Alice Silverberg, University of California, Irvine; and Karen Uhlenbeck, University of Texas at Austin
Before the panel begins, AWM will recognize the 16th Annual Alice T. Schafer Prize Honorees [winner, runner(s)-up and honorable mention(s).]

4:40 p.m. – 5:10 p.m.

Business Meeting

9:30 p.m.

Reception
The entire mathematics community is invited; music, refreshments and cash bar available.

FRIDAY, JANUARY 13

9:00 a.m. – 9:50 a.m.

27th Emmy Noether Lecture: ***"Mathematical Results and Challenges in Learning Theory"***
presented by Ingrid Daubechies, Princeton University

12:00 p.m. – 1:30 p.m.

Noether Luncheon
AWM will have a get-together with the Noether Lecturer for a casual lunch. If you would like to join us, a sign-up sheet will be available at the AWM table in the exhibit area and at the AWM panel discussion and business meeting on Thursday.

4:25 p.m. – 7:00 p.m.

Joint Prize Session: Presentation to the winners of the **AWM 16th Annual Louise Hay Award for Contributions to Mathematics Education** and **16th Annual Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman**
A reception with cash bar follows.

SUNDAY, JANUARY 15

8:00 a.m. – 11:00 a.m.

AMS-AWM-MAA Special Session on Mathematical Results and Challenges in Learning Theory
This section has been organized in conjunction with the Noether Lecture of Ingrid Daubechies by Cynthia Rudin, Courant Institute, New York University.

8:00 a.m. – 8:30 a.m.	Cynthia Rudin, Courant Institute	*Ranking with a P-Norm Push*
9:00 a.m. – 9:30 a.m.	Martin A. Zinkevich, University of Alberta	*Online Convex Programming: A Survey*
	John Lafferty, Carnegie Mellon University	*Sparse Function Estimation in High Dimensions*
9:30 a.m. – 10:00 a.m.	Kristin P. Bennett, Rensselaer Polytechnic Institute	*Optimization Challenges in Capacity Control*
10:00 a.m. – 10:30 a.m.	Phil Long, Google	*Theoretical Challenges Arising from Empirical Observations about Boosting Algorithms*

SUNDAY, JANUARY 15 *continued*

8:20 a.m. – 4:20 a.m. **AWM Workshop: Presentations by Women Graduate Students and Recent Ph.D.'s**

The entire mathematics community is invited to attend all workshop presentations. The AWM Workshop is supported by the National Security Agency and the Office of Naval Research.
Organizers: Claudia Polini (Chair), University of Notre Dame; Marie A. Vitulli, University of Oregon; and Judy Walker, University of Nebraska–Lincoln

8:30 a.m. – 10:20 a.m. **AWM Sponsored Research Talks by Recent Women Ph.D.'s**

8:30 a.m. – 8:50 a.m.	Kirsten Eisentraeger, University of Michigan	*Hilbert's Tenth Problem for Function Fields of Characteristic Zero*
9:00 a.m. – 9:20 a.m.	Megumi Harada, University of Toronto	*The Topology of Symplectic and Hyperkahler Quotients*
9:30 a.m. – 9:50 a.m.	Gizem Karaali, University of California, Santa Barbara	*The Road to Super Quantum Groups*
10:00 a.m. – 10:20 a.m.	Rachel Levy, Duke University	*The Motion of a Thin Liquid Film Driven by Surfactant and Gravity*

10:30 a.m. – 11:45 a.m. **AWM Sponsored Poster Session Featuring Graduate Students**

Light refreshments will be available.

Tsvetanka Sendova, Texas A&M University	*Constitutive Restrictions for Isotropic Hyperelastic Material Modeled Using Invariants of Logarithmic Strain*
Stephanie Treneer, University of Illinois at Urbana-Champaign	*Arithmetic Properties of the Coefficients of Modular Forms*
Milena Hering, University of Michigan	*Syzygies of Toric Varieties*
Louiza Fouli, Purdue University	*The Core of Ideals*
Joni Burnette Pirnot, University of South Florida	*Dimensional Languages and Their Automata*
Sarah E. Bailey, University of North Carolina at Chapel Hill	*Non-Simple Non-Stationary Bratteli-Vershik Systems*
Suzanne S. Sindi, University of Maryland	*A Stochastic Dynamical System for the Evolution of Repeat Strings*
Tunde Jakab, University of Missouri–Columbia	*Layer Potential Techniques for Parabolic PDEs in Nonsmooth Cylinders*
Cornelia Oichi Yuen, University of Michigan	*Jet Schemes of Monomial Schemes*

	Sarah A. Williams, University of California, Davis	*A Fast Multipole Method-based Poisson Solver for Use in Fluid Simulation*
	Beth M. Campbell-Hetrick, Bryn Mawr College	*Continuous Dependence Results for Inhomogeneous Ill-Posed Problems*
	Terry Jo Leiterman, University of North Carolina at Chapel Hill	*Spinning Rods: Experiments and Theory*
1:00 p.m. – 2:15 p.m.	**AWM Workshop Panel Discussion: *"Shaping a Career in Mathematics"*** **Moderator:** Marie Vitulli, University of Oregon **Panelists:** Janet Anderson, Hope College; Dusa McDuff, SUNY Stony Brook; Mara Neusel, Texas Tech University; and Michelle Wagner, National Security Agency	
2:30 p.m. – 4:20 p.m.	**AWM Sponsored Research Talks by Recent Women Ph.D.'s**	
2:30 p.m. – 2:50 p.m.	Carla D. Moravitz Martin, Cornell University	*Tensor Decompositions and Compression*
3:00 p.m. – 3:20 p.m.	Sherry E. Scott, University of North Carolina at Chapel Hill	*Measuring Ergodicity and Mixing at Different Scales*
3:30 p.m. – 3:50 p.m.	Jean Steiner, Courant Institute, New York University	*Hide-and-Seek and a Geometric Spectral Invariant on Surfaces*
4:00 p.m. – 4:20 p.m.	Anna Talitskaya, Northwestern University	*The Existence of a Volume-Preserving Ergodic Hyperbolic Flow on any Manifold of Dimension at Least 3*

AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

AWM Ballot

You will receive an e-mail inviting you to vote electronically (or see www.awm-math.org/ballot.htm); those who prefer may mail this ballot or a copy thereof to:

AWM
11240 Waples Mill Road
Suite 200
Fairfax, VA 22030

Ballots must be received by **December 15, 2005**. You must validate your ballot by signing your name on the envelopes, or your votes will not be counted.

President-Elect (vote for one)

Cathy Kessel

_____

Clerk (vote for one)

Maura Mast

_____

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

Magnhild Lien	Dawn A. Lott
Alice Silverberg	Margaret Symington
Abigail Thompson	Elizabeth Yanik
_____	_____
_____	_____

AWM

Volume 35, Number 6, November–December 2005

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