AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 28, Number 5 NEWSLETTER September–October 1998

PRESIDENT'S REPORT

Dear Friends,

We hope you've had an enjoyable and restful summer. If it wasn't long enough or relaxing enough for you, we sympathize! Have a pleasant fall.

Membership

Please, everyone, renew your AWM membership now! We count on your membership dues to keep functioning and to pay some of our basic expenses, including the newsletter and our small office staff. To help defer these costs, we've raised dues for the first time in five years. Our membership year begins October 1. Please help us expand our membership in the coming year. We welcome male members (who make up seven percent of our membership), as well as anyone with an interest in or relation to the mathematical sciences and/or women. We'd love to have more corporate and student memberships. Please make an extra contribution if you can, and talk to others about joining and contributing.

Why be a member of AWM? Many members say they feel renewed and exhilarated by AWM contacts and the newsletter; they obtain inspiration and personal support. Others belong in order to support women in the mathematical sciences, particularly younger, newer mathematicians. Still others get ideas from the materials and activities of AWM on how to mentor and assist women students, friends and colleagues and how to help underrepresented groups in general. The consensus: we're a worthwhile group to belong to!

International Math Olympiad Results

This year with 76 countries and 419 students competing, the 39th International Mathematical Olympiad (IMO) competition was held in Taipei, Taiwan July 15 and 16. Among all the competitors, there were 38 women. Iran won with a score of 211 out of a possible 252 points; the other top ten teams and their scores are: Bulgaria (195), Hungary

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AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

The Association was founded in 1971 at the Joint Meetings in Atlantic City. The purpose of the association is to encourage women to study and to have active careers in the mathematical sciences. Equal opportunity and the equal treatment of women in the mathematical sciences are promoted.
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The Editor welcomes articles, letters, and announcements.
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(186), USA (186), Taiwan (184), Russia (175), India (174), Ukraine (166), Vietnam (158), and Yugoslavia (156).

In the July–August *Newsletter*, we reported on the U.S. IMO team, which included a young woman (Melanie Wood of Indianapolis, Indiana) for the first time in the 24 year history of U.S. participation; we also interviewed her. In June when I visited the All Girls, All Math Camp for high school students at the University of Nebraska, I met members of the U.S. IMO team who were attending the U.S. IMO Summer Program there at the same time. The campers and Olympians enjoyed getting together; it was particularly inspiring for the other high school girls to talk to Melanie, who encouraged them to continue in math and who shared some of their non-mathematical interests too, for example in acting. She repeated to them stories from Zvezdelina Stankova, an Olympiad program counselor from Bulgaria and an Olympiad competitor in the 80's (and also an AWM Schafer Prize winner in 1992), about her problems then being accepted because of her gender.

At the Canadian Math Society meeting I learned that the Canadian team of six included (for the first time) two females, Mihaela Enachescu of Westmount, Quebec and Yin (Jessie) Lei of Windsor, Ontario. Mihaela earned a Silver Medal. Jessie initially was unable to obtain an entry visa to Taiwan, because she had emigrated from there to Canada; the Canadian team went on record as saying they would not send another person in her place, but would sacrifice their place in the competition. Just in the nick of time the visa was granted, and she won an honorable mention award. In addition Canada earned a Gold and two Bronzes.

The U.S. team received three Gold and three Silver Medals. Melanie won a Silver Medal — she missed the gold by only one point! We're proud of you, Melanie! And congratulations to all of the talented young Olympiad competitors this year!

Toronto SIAM Workshop

Once again the NSF/ONR/SIAM/AWM workshop was ably organized by Suzanne Lenhart of the University of Tennessee. The sessions, held at the University of Toronto July 12–14, were interesting, informative and practical. The logistics and coordination were perfect; there was good attendance and easy access to other SIAM events. The panelists, speakers and participants presented impressive talks and posters. It's always invigorating to see so much enthusiasm and promise exhibited among the younger mathematicians; on the other hand the established mathematicians' personal perspectives and career paths are fascinating and instructive for all of us. Many thanks to Suzanne, to co-organizer K. Renee Fister of Murray State University, and to AWM Director of Membership, Meetings and Marketing Dawn Wheeler for their excellent work coordinating the Workshop. Many other AWM members were in attendance as well, and all were helpful to the workshop participants. In addition we thank the U.S. Office of Naval Research, the National Science Foundation, and the Society of Industrial and Applied Mathematics for their generous financial

and logistical support. More details on the Workshop can be found on pages 20–22.

The next SIAM/AWM workshop will be held in Atlanta, May 12–15, 1999 with the joint 1999 SIAM Annual Meeting and 6th SIAM Conference on Optimization. In addition the AWM will participate in the International Congress of Industrial and Applied Mathematicians (ICIAM) July 5–9, 1999 in Edinburgh, Scotland.

Ladyzhenskaya Wins SIAM John von Neumann Prize

This year, for the first time since it was established in 1959, the John von Neumann Prize was awarded to a woman, Ol'ga Ladyzhenskaya of the Steklov Mathematics Institute, Russia. This prize is given every year at the annual meeting of SIAM, where the recipient delivers the John von Neumann Lecture. The description of the prize on the SIAM webpage reads:

> The lecturer will survey and evaluate a significant and useful contribution to mathematics and its applications. It may be awarded to a mathematician or to a scientist in another field, but in either case, the recipient should be one who has made distinguished contributions to pure and/or applied mathematics.... The award is $2,500 plus travel expenses. A manuscript representing the lecture is required for publication in SIAM *Review*.

Ladyzhenskaya gave a special Emmy Noether lecture at the International Congress in Zurich in 1994 (see November–December 1994 *Newsletter*), and her biography is included in *Profiles of Women in Mathematics: The Emmy Noether Lecturers*. Congratulations, Ol'ga, for your fine achievements!

The Wonderful Women of SIAM

Many women mathematicians are active in SIAM, both in governance positions and as organizers and speakers at SIAM meetings. In 1995 Margaret Wright of Bell Labs became the first woman president of SIAM; in addition to giving the AWM/MAA address at the Toronto Mathfest described below, she gave an invited minisymposium talk at the SIAM meeting. Barbara Keyfitz (University of Houston) is Vice President for Programs and served as Chair of the Program Committee for the meeting; Linda R. Petzold (University of Minnesota) is Vice President for Publications. Joyce McLaughlin (Rensselaer Polytechnic

MEMBERSHIP AND NEWSLETTER INFORMATION

Membership dues

Individual: $50
Family (no newsletter): $30
Retired, part-time: $25
Student, unemployed, developing nations: $15
Contributing: $100
All foreign memberships: $8 additional for postage
Dues in excess of $15 and all contributions are deductible from federal taxable income.

Institutional:
Level 1 (one free basic job ad and up to ten student memberships): $150 ($230 foreign)
additional student memberships: $15 ($23 foreign) for next 15; $11 ($19 foreign) for remainder
Level 2 (one free basic job ad and up to three student memberships): $95 ($120 foreign)
Corporate: $150 Affiliate: $250
Friend: $1000 Benefactor: $2500

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 $50/year ($58 foreign). Back orders are $6/issue plus shipping/handling ($5 minimum).

Payment

Payment is by check (drawn on a check with a U.S. branch), U.S. money order, or international postal order. Cash payment will be accepted if necessary, but only in U.S. currency.

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 Director of Marketing, 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.* A basic ad is four lines of type. Institutional members receive one free basic job ad as a privilege of membership. For non-members, the rate is $60 for a basic ad. Additional lines are $6 each.

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, Department of Mathematical and Computer Sciences, Loyola University, 6525 N. Sheridan Road, Chicago, IL 60626; email: leggett@math.luc.edu; phone: (773) 508-3554; fax: (773) 508-2123. Send all **book review** material to Marge Murray, Department of Mathematics, 460 McBryde Hall, Virginia Tech, Blacksburg, VA 24061-0123; email: murray@calvin.math.vt.edu and all **education column** material to Ginger Warfield, Department of Mathematics, University of Washington, Seattle, WA 98195; email: warfield@math.washington.edu. Send everything else, **including ads and address changes**, to Dawn V. Wheeler, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461; phone: (301) 405-7892; email: awm@math.umd.edu.

AWM ONLINE

Web Editor
Tamara G. Kolda; kolda@msr.epm.ornl.gov

Web Page
http://www.awm-math.org

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

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

AWM DEADLINES

Alice T. Schafer Prize: September 15, 1998

Louise Hay Award: October 1, 1998

Noether Lecture: October 15, 1998

AWM Workshop (SIAM Meeting, Atlanta, 5/99): January 4, 1999

Sonia Kovalevsky Days: January 20, 1999

Travel Grants: February 1, 1999 (tentative)

Olga Taussky Todd Celebration: February 18, 1999 (tentative)

AWM CALENDAR

San Antonio Joint Meetings, January 13-16, 1999:
panel, business meeting, Noether dinner, party: Wednesday, January 13
Noether Lecture, Krystyna Kuperberg, Auburn University, "Aperiodic Dynamical Systems," Thursday, January 14, 9 A.M.
AWM Workshop, Saturday, January 16
Workshop dinner, Thursday, January 14
Schafer Prize presentation: business meeting, Wednesday, and Joint Prize Session, Thursday
Hay Award presentation: Joint Prize Session, Thursday

AWM Workshop, SIAM meetings, Atlanta, May 14-15, 1999

Olga Taussky Todd Celebration July 16-18, 1999, Mathematical Sciences Research Institute, Berkeley

TAKE NOTE!
NEW SIDEBAR!

Institute) is the Chair of SIAM's Board of Trustees; Rosemary Chang (Silicon Graphics), Margaret Cheney (Rensselaer), and Mary F. Wheeler (Rice University) are all members of the Board. Marsha Berger (Courant Institute), Pamela Cook (University of Delaware) and Suzanne Lenhart are members of the SIAM Council. Vera Sos (Mathematical Institute of the Hungarian Academy of Sciences, Budapest, Hungary) and Sue Whitesides (McGill University, Canada) each gave invited presentations at the SIAM discrete mathematics meeting held in conjunction with the SIAM annual meeting. Ladyzhenskaya and Irene Fonseca (Carnegie Mellon University) gave invited presentations at the annual meeting. There were many, many women in attendance at each of the meetings, giving both invited minisymposium and contributed talks.

Toronto Mathfest

A few days after the workshop, at Ryerson University in Toronto, AWM participated in the Mathematical Association of America (MAA) Mathfest. AWM President-elect Jean Taylor of Rutgers University gave three dazzling Hedrick lectures on soap films, crystals and ice cubes. The lectures included beautiful pictures, theorems and problems inspired by these substances over the past 25 years; an example is how to determine the figure of a given volume with the least surface energy. Thursday afternoon the superb AWM/MAA lecture was delivered by Margaret Wright of Bell Labs (introduced by Suzanne Lenhart); the audience was enchanted by her tale of the quest for a computationally sound algorithm for linear and nonlinear programming. She described her early work on the barrier function method and how the simplex method had fallen in and out of favor, but was vindicated.

At our well-attended party, many commented on how having an AWM party improves the overall climate and tone of meetings. Among the happy people present were the MAA Project NeXt participants, whose enthusiasm for mathematics, teaching and life invigorate and energize all who are around them. (Still we weren't up to joining them for dancing at 11:30 P.M. after the party.) Asia Ivic Weiss of York University was the local organizer for AWM Mathfest activities.

For more notes on the Mathfest, see my travel section following this report.

CBMS

At the May 3 1998 meeting of the Conference Board of the Mathematical Sciences, the Council unanimously approved a request from Mary Gray of American University to co-sponsor a workshop to encourage and help prepare women faculty to assume department chair roles at major research universities. We thank John Dossey, who has been Chair of the Council, for his wise leadership and hospitality towards AWM; we welcome Lynne Billard, who will be the new Chair.

Research Support

Research support for mathematics and science appears to be more promising now than mentioned in the last newsletter, but not as rosy as predicted earlier. Even though the tobacco tax failed and the highway bill passed, there's a good chance for a seven percent increase for NSF, which would be better than last year. Some late-breaking news on this situation appears on page 19.

AWM Web Site Honored

Our AWM web site was chosen as "Pick of the Month" for June, 1998 by the Association for Women in Computing (AWC). Further, the webmaster of that site enjoyed our site so much that she joined AWM! (She has an undergraduate degree in mathematics.) Check out our web site at http:\\www.awm-math.org. Also see http://www.awc-hq.org/ for more information on the AWC and http://www.awc-hq.org/links/reciprocal.html for a list of recent "Pick of the Month" websites.

Our successful web site is the product of Web Editor Tamara G. Kolda, Householder Postdoctoral Fellow in Scientific Computing at Oak Ridge National Laboratory, and Webmaster Barbara Ling, president of Lingstar, a company dedicated towards demystifying the Internet for the business community. Barbara was Founder and President of the 1986 Rutgers University Math Club, is the author of *The Internet Recruiting Edge*, writes for http://www.hrlists.com and is a national columnist for *The Boston Herald*. Tamara, a 1997 Ph.D. in applied mathematics at the University of Maryland, also co-organized a graduate student women in mathematics group there.

AWM-Net

The AWM has an on-line list, AWM-Net, for discussions and items related to women in the mathematical sciences. To join, send mail to awm-net-request@cs.umd.edu and include your email address. This net is open only to AWM members and is a forum for discussing issues related to the AWM mission. The AWM regularly posts our programs there, as do many other organizations and institutions. We would like to start a discussion there on better communication and cooperation between women mathematicians in industry and those in academia. Please join and send your items for discussion too.

AWM Office

If you call the AWM office and a man answers, it's Douglas L. Farquhar, the new AWM Financial and Grants Administrator. An undergraduate mechanical engineering major from the University of Maryland who has also done graduate work in business administration at Pepperdine University, Doug has worked in the private sector in financial management and cost engineering for nine years and volunteers as treasurer for a non-profit dental clinic. At his interview for the position, Doug impressed us with his talent and knowledge of accounting software, his fine writing skills, his

CALL FOR NOMINATIONS: LOUISE HAY AWARD

The Executive Committee of the Association for Women in Mathematics has established the Louise Hay Award for Contributions to Mathematics Education, to be awarded annually to a woman at the Joint Prize Session at the Joint Mathematics Meetings every January. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense.

While Louise Hay was widely recognized for her contributions to mathematical logic and for her strong leadership as Head of the Department of Mathematics, Statistics, and Computer Science at the University of Illinois at Chicago, her devotion to students and her lifelong commitment to nurturing the talent of young women and men secure her reputation as a consummate educator. The annual presentation of this award is intended to highlight the importance of mathematics education and to evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being.

The nomination documents should include: a one to three page letter of nomination highlighting the exceptional contributions of the candidate to be recognized, a curriculum vitae of the candidate not to exceed three pages, and three letters supporting the nomination. It is strongly recommended that the letters represent a range of constituents affected by the nominee's work. *Five* complete copies of nomination materials for this award should be sent to The Hay Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461 and should be received by **October 1, 1998**. For more information, phone 301-405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.

interest in AWM and his personable, agreeable nature. Welcome Doug! His comment: "Happy to join AWM!"

We also want to recognize the continuing members of our team in College Park. Dawn Wheeler, our Director of Membership, Meetings and Marketing who has been with us for five and a half years, handles the current membership and new membership solicitations, supervises the maintenance of the membership database, manages the logistics of the meetings the association participates in or attends, coordinates and executes the production of the AWM *Newsletter*, and engages in other publicity and public relations activities. Our part-time office assistants Roya Jaseb and Cynthia Wong help out with our many programs and activities. We thank them all for their dedicated work.

San Antonio

Another big AWM program is planned for San Antonio, January 13–16, 1999. In case you're making your reservations early, note that the AWM panel, business meeting and Noether dinner and party are all on Wednesday, the first day. The AWM Noether lecture Thursday morning at 9 A.M. will be given by Krystyna Kuperberg of Auburn University on "Aperiodic Dynamical Systems." In conjunction with her lecture, Krystyna is organizing a joint special AMS/AWM session on dynamical systems. The AWM workshop for graduate students and postdocs will be Saturday, with the mentoring dinner for participants being Thursday night. Also, especially for graduate students: the AMS and MAA sponsor Mathchats on Tuesday evening January 12 for grad students to become acquainted with each other and other math people. To be included, check the appropriate box on the meeting registration form which you send in October 1.

Best wishes to all,

Sylvia

Sylvia Wiegand
July 25, 1998
Lincoln, Nebraska

CALL FOR NOMINATIONS: ALICE T. SCHAFER MATHEMATICS PRIZE

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schafer Mathematics Prize to be awarded to an undergraduate woman for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize. The nominee may be at any level in her undergraduate career. She must either be a U.S. citizen or have a school address in the U.S.

The Schafer Prize was established in 1990 by the Executive Committee of the AWM and is named for AWM former president and founding member, Alice T. Schafer, who has contributed a great deal to women in mathematics throughout her career. The ninth annual Schafer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in San Antonio, TX, January 1999.

The letter of nomination should include, but not be limited to, an evaluation of the nominee on the following criteria: quality of performance in mathematics courses and special programs, demonstration of real interest in mathematics, ability for independent work in mathematics, and performance in mathematical competitions at the local or national level, if any. Supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, transcripts) should be enclosed with the nomination. *Five* complete copies of nomination materials for this award should be sent to The Alice T. Schafer Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461 and should be received by **September 15, 1998**. Early submissions are encouraged.

For more information, contact AWM by phone (301-405-7892) or email (awm@math.umd.edu). Applications via email or fax will not be accepted.

PRESIDENT'S TRAVEL AND REFLECTIONS

Although AWM has no funds for travel by officers, I've been fortunate that my hosts and the University of Nebraska have made it possible for me to visit several places recently.

Purdue

My sabbatical officially ended June 30; I still have pleasant thoughts of the wonderful mathematics and the good friends. The students and young women at Purdue are lucky to have Jean Rubin and Patti Bauman (Math) and Mary Ellen Bock (Chair, Statistics) as inspiring role models (Jean is at the right top, Mary Ellen at the middle top in the photo, July–August *Newsletter*). In particular, here are some borrowed words about Jean added to my own:

Jean Rubin

Although she is modest and quiet (usually), Jean is an outstanding woman who has made a real difference and improvement in the opportunities and quality of life for others. She has been a faculty member of the Purdue Department of Mathematics since 1967; during that time she raised two children, established a respectable reputation in logic and set theory, revamped and originated many courses, and inspired her students, who consistently rate her highly. In addition she has been a civic and social conscience for the department, getting people interested in supporting both the arts and the creation of hiking/biking/running trails, while she has organized picnics and other social events for the department. She volunteers at the public library and organizes a lunch for women in science at Purdue every month. When she studied mathematics the discouragements and hindrances must have been much more prevalent. But she is a rare individual, who is not easily discouraged and who has a way of getting to the root of a matter, stripping it of emotion when necessary.

After receiving her Ph.D. at Stanford, Jean held positions at the University of Oregon and Michigan State before coming to Purdue, where her husband is a statistics professor. Rubin has published 43 research papers and five books in her research area, logic and set theory. Subsequent to her dissertation research on closure algebras and modal logic, her research has been primarily concerned with equivalent forms of the axiom of choice. Through her research and teaching in mathematics, a field in which women are historically underrepresented, Rubin has served as a role model and mentor to many younger women. Her sponsorship of new female faculty members in the Mathematics Department, her interactions with women mathematics graduate students, and her participation for many years in the organization Women in Science and Engineering (WISE) at Purdue are all indicative of her involvement and concern for women.

Through her academic and professional activities, Jean Rubin has both enhanced the research and instructional programs of Purdue University and contributed to the visibility of women in mathematics and science.

Canadian Math Society (CMS) in St. John, New Brunswick

In June, I attended the CMS meeting of the Board of Directors and some of the mathematics program at St. John, a pleasant place near the ocean (wonderful seafood). As usual, Katherine Heinrich of Simon Fraser University, President of the CMS, presided ably over the Board meeting and the other events. Her term has ended with the summer meeting; Richard Kane of Western University is the new president.

At the Board meeting a short report was given on the Celebration of Women in Mathematics held last May, which highlighted the work of women mathematicians in Canada. There were over 150 participants, not all women, but including a lot of students, and the workshops went well. The women who attended agreed it was "very rewarding"; a suggestion was made that such a program should be held every four years so that every Ph.D. student could attend once.

The Canadian Math Society has surveyed the mathematics profession in Canada (see CMS *Notes*, May 98). Some statistics: during 95–96, there were 617 females and 945 males graduating from an undergraduate program in the mathematical sciences; for master's degree programs the comparable figures were 83 and 165; for Ph.D.'s the numbers were 21 females and 83 males. The report also contains employment information for the last two categories.

Catherine Sulem Selected as Krieger-Nelson Lecturer

The CMS Prize Lecture for Distinguished Research by Women in Mathematics, the Krieger-Nelson lecture, was dynamically delivered at St. John by Catherine Sulem of the University of Toronto on "Nonlinear Schrödinger equations and wave collapse." These equations arise in nonlinear optics, fluid mechanics, and plasma physics. From the flyer about the talk:

> Sulem's recent research has led to important breakthroughs in understanding of many nonlinear phenomena associated with the focusing nonlinear Schrödinger equation and the water wave problem. Her work is of great interest because of the importance of the results and also of the techniques involved which include a mix of functional analytic methods, asymptotic expansions and numerical simulations.... [She] is also an accomplished musician, received a Premier Prix de Violon du Conservatoire de Paris in 1975 and was principal violinist with the Israel Sinfonietta from 1982 to 1987.

This prize lectureship was "instituted in 1995 in recognition of outstanding research by a female mathematician ... and is presented in conjunction with the Canadian Mathematical Society's Summer Meeting." Past recipients have been Nancy Reid in 1995, Olga Kharlampovich in 1996 and Cathleen Synge Morawetz in 1997.

More on the Toronto Mathfest

The Mathfest opening "Mystic Festival" banquet included a lively magic show by Brent Morris of NSA and a polished display of fast mental calculations by "mathemagician" Arthur Benjamin. Doris Schattschneider of Moravian College, the mistress of ceremonies at the concluding MAA banquet, led a special tribute to 91-year-old Donald Coxeter, which included showing some beautiful slides of his geometric figures. Peter Rosenthal of the University of Toronto (who is also a lawyer) gave an amusing talk on "Why I'd Rather be a Mathematician than a Lawyer," one reason being that more jokes are told at lawyers' expense than at mathematicians'. Rosenthal admitted, though, that there are times when he prefers to be a lawyer. When he meets a new person, he decides whether or not he feels like talking before saying what his profession is: if not, he says he's a mathematician; otherwise he says he's a lawyer.

The book *She Does Math*, written by Marla Parker of Sun Microsystems, describes women in various careers which use mathematics. It has sold over 6000 copies and has generated over $100,000, which has been donated to the Women in Mathematics network. At the Mathfest a panel discussion, "She Does Math: Exemplary Women in Mathematics-Related Careers," was organized on the theme of the book. With Carole Lacampagne (U.S. Department of Education) moderating, Parker, Renate McLaughlin (Provost of the University of Michigan at Flint), and Carol Molloy (National Security Agency) discussed their jobs and how to mentor students. Carolyn Connell (Westminster College of Salt Lake City), Kathleen Sullivan (Seattle University) and Virginia Knight (Meredith College) arranged the program.

Some other highlights of the Mathfest were: the humorous and energetic talk by Joe Gallian of the University of Minnesota at Duluth on how driver's licence numbers are assigned; a well-researched and clear discussion of the zeroes of the Riemann zeta function by Andrew Odlyzko of AT&T Labs; Dorothy Buerk of Ithaca College speaking on better communication with students and Henry Pollack speaking about elementary real-life problems where small errors in measurement make a big difference in the solution. Helaman Ferguson, mathematician and sculptor, gave an interactive lecture about mathematical problems originating in the sculptural process. (He also made a beautiful sculpture of a three-point on the spot — out of napkins — at the party.) There were so many wonderful events we couldn't get to everything.

MAA past-president Ken Ross assesses the recent Mathfests at Atlanta and Toronto as "big successes — they didn't lose too much [money], attendance was good, and especially the students and NExT fellows really benefitted from them."

Next year the Mathfest will be held Saturday, July 31 through Monday, August 2 in Providence RI; the time and place for the Mathfest in 2000 have not yet been decided. Ross says, "it seems likely that Mathfests will continue into the next century."

Laurence Young and Minneapolis in June

Many mathematicians have been encouraged to go into mathematics by their fathers; few of us had mathematician mothers. My father, the mathematician Laurence Young, did have a mathematical mother, Grace Chisholm Young, who received her

Ph.D. in 1895 at Göttingen from Felix Klein, as well as a mathematical father, William Henry Young. His family background led him to develop into a well-known mathematician, to encourage all his children intellectually, and to institute a secondary school mathematics talent search throughout the state of Wisconsin (still going strong after 40 years).

My father was asked to speak at a conference in Minneapolis in early June in honor of John Ball, and I accompanied him there. He delivered an entertaining and stirring lecture on his measures using variegated curves. At the beginning of his talk, addressing "Ladies and Gentleman," he looked up and said "Are there any ladies?" There were two. He mentioned that his own mother had been a mathematician and that he supported women in mathematics. Then he described how he had been led to generalized (e.g. zigzag) curves by his youthful experiences bicycling uphill, where you make zigzags to avoid the steep inclines, by sailing against the wind, where you are continually tacking the boat along a zigzag pattern, and by cross-country skiing up hill — you can't point the skis straight up or else they'd slide down, so you put them perpendicular to the slope and go back and forth. These zigzag curves were remembered and later led to his development of Young measure theory, which Jean Taylor mentioned in her Hedrick lectures as appropriate for studying crystals.

Laurence manages pretty well on his own at the age of 93. As he quoted Lebesgue in his talk: "We are all of us young, but some of us have been young longer than others!"

LETTER TO THE EDITOR

I am writing to ask the readership of the *Newsletter* to vote for LINDA KEEN as American Mathematical Society (AMS) TRUSTEE in the November election of the Society.

Since it is unusual to endorse a candidate from these pages, an explanation is necessary. My reason for doing this goes beyond my friendship for Linda and my appreciation for her excellent record both as AWM President and AMS Vice President.

There is general agreement that our profession is going through a critical time re jobs, job security, research funding, and overall prospects for young people. To confront and redress this situation calls for a professional association committed to defend the rights of all mathematicians. Without entering into the discussion on the extent to which AMS has filled such need in the past, the Society is there and (sometimes) speaks on our behalf.

The AMS Board of Trustees (BT) — which holds most meetings jointly with the AMS Executive Committee (EC) — is responsible for the Society's finances. By holding the purse strings, it often determines de facto the implementation of its policies. Actually, it is more and more common that what comes to a vote before the Council has already been approved by the EC/BT! (See e.g. the Minutes of the last Council meeting, on the AMS web page.)

Therefore, it matters what the members of the BT are willing to stand for — beyond the usual electoral statements of support for research and teaching, women and minorities, motherhood and apple pie.

Furthermore, there are no women in the current EC/BT, and there are no women candidates for AMS President or Vice President. (Not that having women in these offices ensures having an advocate for women's right to mathematics. It does not; but their absence is in itself remarkable.)

Certainly the question is not the gender of the candidates: there are a few — unfortunately still very few — men who would be as good advocates for our cause as the women equally committed.

But in this case the choice is simple: In the incoming AMS election there is one candidate for a strategic office in the Society who has proved she stands for women — which at AWM means standing equally for all groups of people still discriminated against. Furthermore her previous record shows she would continue to support research (not only at elite institutions), education (not only at conferences), and the opportunities for the next generation of mathematicians (not only as electoral lip service).

Many AMS members simply do not vote on elections. The reasons are many, and some are sensible enough. Still, there are times when it is more sensible to participate, and the votes of all AWM members can make a difference. I ask you to vote in the AMS November elections, and to give Linda Keen your vote for AMS Trustee.

Cora Sadosky
Howard University, 26 July 1998

AMS ELECTIONS

As usual, all persons standing for election for contested office in the American Mathematical Society (AMS) have been asked to submit statements. The letter sent to them read in part:

> You may choose to address any of the topics listed below:
>
> 1) the current academic job crisis (what can be done to help new Ph.D.'s obtain satisfactory employment? what can the AMS do? will the drop in graduate enrollment seen at some schools create a shortage a few years down the road?),
>
> 2) the underrepresentation of women and minorities in our field (what can be done to encourage their participation? what can the AMS do? what societal changes are necessary?) or
>
> 3) other (affirmative action, the funding crisis, the role of the AMS, the role of your office in the AMS, etc.).

Statements were limited in length to a maximum of one newsletter page.

The Council nominated James G. Arthur and James Serrin for Vice-President, one to be elected for a term of three years. The Council nominated Hyman Bass and Linda Keen for Trustee, one to be elected for a term of five years. The Council nominated the following candidates for Member-at-Large of the Council: Jonathan Borwein, Haim Brezis, Robert Fefferman, Robert Hardt, Gloria Hewitt, Roger Howe, Anatole Katok, Donald Saari, Tatiana Toro, and Nolan Wallach. Five will be elected to serve terms of three years. The President has nominated the following candidates for the Nominating Committee: William Browder, Philip Hanlon, Lisa Claire Jeffrey, Douglas Lind, Henri Moscovici, and Marc Riefel. Three will be elected. The President has also nominated the following candidates for the Editorial Boards Committee: George Andrews, William Helton, Krystyna Kuperberg, and Efim Zelmanov. Two will be elected. Unless otherwise stated, the respondents are professors in departments of mathematics.

All statements received by press time appear below; late arrivals will appear in the next issue. See the AMS *Notices* for biographical data and additional information.

Paulo Russo, AWM Member-at-Large, Trinity College

VICE PRESIDENT

James Serrin, Professor Emeritus, University of Minnesota

As we approach the end of this century of great mathematical achievements of enduring importance and beauty, we cannot afford to be overcome by the new challenges facing us. Even more, society cannot afford to see mathematics reduced to a point where it can no longer serve the needs of the country. The challenges are well-known — finding opportunities where young mathematicians can use their talents to the fullest, improving mathematics learning at *all* levels, making sure that young people can enter mathematics with optimism about their future, and developing public awareness of the vital importance of science and mathematics.

The AMS cannot meet these challenges singlehandedly, but it must remain a coherent center to formulate and coordinate sensible policies of action.

These can include reaching out to users and potential users, both within and outside the universities, making school positions more accessible and attractive to gifted individuals who are interested in teaching careers, providing increased travel and conference funding to maintain high levels of achievement throughout the country, and the formation of further academic institutes such as the IMA and MSRI.

Further policies which can be worth consideration might include press releases to local papers telling interesting stories about mathematicians at local schools, particularly stories of women and minority members. This would give a higher local visibility to mathematics and encourage more young people to consider mathematics as a career.

Also, schools and universities might consider the possibility of giving already tenured faculty the option of part-time contracts for strictly specified periods, a policy which might make additional opportunities available to women, in particular, as well as to faculty nearing retirement age.

We live in a media-entertainment-driven culture, which makes it difficult to get out the message of a strong mathematics and science community. Thus we must continue to find new ways to attract and hold gifted young people, both men and women, and finally we must not relinquish in any way the positive gains already attained in bringing women into mathematics.

Mathematics remains the Queen of the Sciences.

We should do all in our power to maintain this envied position.

TRUSTEE

Hyman Bass, Columbia University

The core mission of the AMS remains, as when the AMS was founded, the promotion and support of research in mathematics. At the same time, the AMS has expanded roles in response to fundamentally changing conditions: the vast expansion of mathematical knowledge and its uses; the influences of technology on both research and communication; the widening roles of mathematics in contemporary society; the expansion of our professional community and its attendant needs; the need to draw talented youth, especially from underrepresented groups, into our profession; the need for more effective outreach to the wider scientific community and to the public; and the increased responsibility and role of the mathematical community in mathematics education at all levels. These present the Society with a wide array of complex challenges, in which it must maintain a balanced set of priorities and reconcile responsibility to the community with managerial prudence. As a Trustee, I would hope to contribute to the oversight that assures that these conditions are met.

Linda Keen, Lehman College, CUNY

In the last twenty years the AMS has grown from an organization concerned only with mathematics research whose main activities involved sponsoring meetings and publishing journals to an organization that also focuses on the broader role of mathematics in society. It has turned its attention to the relation of mathematics to other disciplines and technology, to maintaining statistics on the academic job market and to ensuring the vitality of the discipline and the profession for the next century. In the context of the growing anti-intellectualism of American society, important current issues include increasing the visibility of mathematics as living discipline not only for the sake of increasing the support for mathematics from government agencies, industry and from within the university, but also for the sake of enticing the next generation into the field. Because mathematics has always flourished most when new groups have entered the field, these young people need to be recruited from non-traditional pools. This means reaching out to more women and to minority groups not only in colleges but in precollege settings so they can hone their skills early.

The Board of Trustees is the body responsible for the finances of the Society. It has to implement the policies set by the Council and oversee the full range of activities of the Society in a fiscally sound manner. As trustee, I will work to ensure that the priorities set by Boards decisions reflect its responsibility to the membership and to the community as a whole.

MEMBER-AT-LARGE

Jonathan Borwein, Simon Fraser University

I believe that our discipline and the university system are in a period of profound change and that many of our colleagues are either unwilling or unable to acknowledge the depth of the changes underway.

In answer to the three questions posed, I think actions speak at least as loud as words and that the activities of the Centre I direct represent my best answer to questions 1) and 3). I would invite interested persons to visit www.cecm.sfu.ca and my own web pages ~jborwein/cecm.sfu.ca.

In brief, we must be much more outgoing, open to exchange with other disciplines and more aggressive about the successes of our subject — in the media and with the public.

As to question 2), within my Centre we try vigorously to bring in women and other minorities as early as possible. It has been truly rewarding to see the positive responses we have had from students as young as 12 or 13 who participate in our "job shadowing." As the CEO of one of our large Vancouver engineering companies has put it, mathematicians "have a great product but very poor marketing."

Finally, I suggest that my mix of expertise and my experiences within and outside the United States will allow me to play a modestly influential role within the AMS — an organization of unparalleled importance to our discipline but one viewed somewhat ambivalently at least outside the continental United States.

Robert A. Fefferman, Chairman and Professor, University of Chicago

I believe that one of the best things that can be done to help lessen the hardship caused by the

shortage of tenure track jobs in academic mathematics is the development, by the university community, of various programs leading to placement in challenging and rewarding jobs outside of the academic world. Each mathematics department must be aware of those aspects of its nature that permit it to be successful in developing such programs. At the University of Chicago, for example, we have developed a high level masters program in Financial Mathematics. Its graduates are able to find excellent jobs which make use of interesting mathematics, and this is a healthy development for our discipline. The AMS should continue to support such programs by making sure that the membership is informed, as they arise, so that the best programs will provide models for other departments, and so that students will understand the full range of educational opportunities that are available to them.

Another thing that the AMS should continue with renewed vigor, is the encouragement of the academic community to value and achieve excellence in mathematics education at all levels. If this is successful, there will be a lessening of the unfortunate tendency to cut the size of mathematics departments in response to budgetary pressures, by reassigning the teaching of elementary mathematics to science and engineering departments.

In response to the question of underrepresented groups, I would say that the most crucial ingredient leading to the improvement of the situation is the presence of role models at the highest level. Several decades ago, for example, it was not seen by most people in this country as socially acceptable for a women to be a mathematician. Today, there are many examples of outstanding female mathematicians, and nothing will bring women into mathematics more efficiently than the visibility of these brilliant people. For all underrepresented groups, we should seek to give maximum publicity to those members of that group that have achieved great success, and continue to work for the establishment of special programs and prizes to encourage additional success. It might be helpful to mail literature to school districts across the country discussing the extraordinary careers of various members of underrepresented groups. This could be disseminated widely in the schools, and may have a beneficial impact on the attitude of children towards our profession, and help them to realize that it is open to everyone.

There are very serious problems involving the very low representation of various underrepresented groups in mathematics, and I believe there are no quick, easy solutions. I do believe, however, that if we are persistent, and continue to encourage programs to train school children in inner cities in mathematics and follow up by special rewards to those among these children who achieve well, then eventually we will be rewarded with substantially higher participation by these groups.

A. Katok, Pennsylvania State University

Mathematical community in the United States faces an important double challenge. On the one hand, mathematics is not very popular as a career choice for undergraduates, in particular, among those with sufficient talent and aptitude. On the other hand, prevailing academic employment patterns make many Ph.D. students who are successful in their research uncertain and pessimistic about their further careers. I consider developing creative and effective responses to these challenges to be the central task for the profession as a whole and by implication for the AMS, its main professional organization. We should develop and implement effective mechanisms for exposing the most talented undergraduate students, in particular women and minorities, to the beauty, excitement, and power of mathematical thinking and bringing them into close and fruitful contact with various layers of the professional mathematical community from graduate students up to the most senior researchers. An effective response to the second challenge may include a creative and aggressive promotion of the value and effectiveness of mathematical thinking in a wide variety of contexts both in and outside academia.

Donald Saari, Northwestern University

As I wrote in my statement for the AMS ballot, we currently are enjoying a "Golden Age" of mathematics where a surprising number of major results have been found, new directions pioneered, and other disciplines are becoming mathematically more sophisticated. The dark side of this exciting time are the serious concerns which include the public perception of mathematics, challenges to tenure, employment for new Ph.D.'s, and the underrepresentation of women and minorities along with the need for equitable professional opportunities.

I have no magic wand, and I am skeptical of anyone suggesting one exists. On the other hand, I dismiss the "need for societal change" arguments as excuses to procrastinate. As we should know by now, society will change only with pressure and leadership. So, why wait for society? We have an immediate responsibility to address the issues which affect our profession and its members through continued leadership from organizations such as the AMS.

Finding answers is not easy. It involves hard work, careful listening, enlisting the help and advice of many (including other professional societies), innovation, experimentation, and willingness to take action. As a small sample of what can be considered, I have been impressed by how the summer research experience programs move the career interests of several undergraduate women back to mathematics. It seems clear that an effective way to recruit minorities, women, and other talented students is to find other novel, interesting ways to expose them to the intellectual beauty of this area.

As for employment opportunities, firm action must be taken about the very real erosion of tenure caused by those short-term "visiting" and adjunct positions which, in fact, are intended only to exploit our academic job crisis. (I don't need to expand on this issue; we all know the pain some new Ph.D.'s, with growing families, experience while moving from "temporary" position to "temporary" position. We all know how this can reduce the number of tenured positions.) As for possible proactive approaches, we should explore whether we can increase the "demand" for our services. For instance, can we expand what we teach by designing interesting upper level courses that will attract students from other mathematically sophisticated areas? As an example, I developed a senior level "Mathematics of Finance" course that even is starting to increase our enrollments in the prerequisite courses. Also, is it possible to place some of our new Ph.D.'s in related disciplines that are becoming more mathematical. (I know of departments in other disciplines that improved their stature after hiring mathematicians.) In these and other directions, the AMS can play a strong role in identifying opportunities and helping those who are interested to learn what to do.

While we should explore everything — even the "supply side" where job shortages are suggested because of dropping graduate enrollments — caution must be exercised. For instance, reduced enrollments are here; students learning about our job crisis are moving to other disciplines. The associated problem is to ensure that we don't lose those students who probably could help advance our profession into the next generation.

In order to achieve true progress, these problems must be viewed as parts of packages rather than separately. For instance, it is a cruel fraud to recruit to our graduate programs gifted women, minorities, and other intelligent people — people who could enjoy promising careers in other areas — without also addressing the companion issue of professional opportunities.

These very real needs facing our profession are among the issues I expect to address if elected.

N. R. Wallach, University of California, San Diego

It is my opinion that the current "job crisis" is to a relatively large extent a "self-inflicted wound." We hear (and believe) that our daily lives are becoming more and more dependent on sophisticated mathematics. What we don't hear is who is using this mathematics and how it is being taught. The unfortunate fact is that engineering, biology and social science departments are teaching a growing percentage of the mathematics that is basic to their work. The past century has been an astonishing time in the growth of mathematics and this dizzying progress is still in full swing. Unfortunately, the lines of communication between mathematicians and scientists working in fields permeated with mathematics are almost "down." Recently a physicist told me: "If not for our difference in notation there would be no need for two separate disciplines." This is an overstatement but it does carry the following content: communication between mathematicians and scientists who would (or should) like to use the fruits of the amazing expansion of mathematics is becoming increasingly rare. Obviously, the job market for young mathematicians in academia will become progressively weaker if the basic courses in mathematics move from mathematics departments to engineering and science departments. The American Mathematical Society should do a better job of communicating mathematical discoveries to the general scientific community. It should promote symposia to expand lines of communication between core mathematicians and scientists attempting to use mathematics. It should foster educational reform beyond calculus.

NOMINATING COMMITTEE

Lisa C. Jeffrey, University of Toronto

In the United States (as in most other western countries) young mathematicians are having increasing difficulty finding academic positions at the present time. I feel it is urgent that the mathematical community should make an effort to increase awareness in the private sector of the benefit that private companies can derive by hiring mathematically trained individuals. Often mathematical skill enables such individuals to spot the solution to problems entirely unrelated to their original field of expertise; the private sector should be encouraged to view mathematical training in an applicant not as overqualification but rather as an asset. Some groups outside academia have already discovered how effective the employment of mathematically trained people can be: organizations like the AMS have an obligation to further this trend by enhancing the public perception of our discipline.

Secondly, I feel that the point should be made to graduate students at the earliest possible opportunity that they may wish to consider employment outside academia and that they should view the skills they are acquiring in graduate school in a broader perspective. This would offset the sense of defeat that many students suffer when they find it difficult or impossible to find an academic job and would enable students to maintain a base of skills that would allow them to be successful outside academia. Organizations like the AMS can play a role in encouraging university mathematics departments to take responsibility for the employment prospects of their graduate students, for example by designating individual faculty members who would act as contacts between academic and nonacademic sectors.

Marc A. Rieffel, University of California, Berkeley

I have recently completed a four-year term on the Executive Committee of the AMS Council, following earlier service as a Council member. This experience leads me to the following views.

The leadership of the AMS is constantly hit with unexpected questions, problems, and opportunities. Thus the AMS needs as leaders individuals who are broadly knowledgeable, level-headed, and conscientious, so that they can respond appropriately, while taking initiatives to keep the AMS robust, and while giving general direction to keep the AMS on a relatively steady course. In particular, they need to be willing to devote a substantial amount of their energy to AMS business during their term of office.

Increasingly the issues before the Society are thrashed out in the Policy Committees before being brought before the whole Council. Overall I feel that this is a healthy development which leads to more thoughtful actions. But it does mean that the Members-at-Large and the Vice Presidents must be willing to contribute strongly to the activities of the Policy Committees on which they serve. It is no longer sufficient to simply attend Council meetings.

If I am elected to the Nominating Committee I will seek out candidates for AMS elective offices with the above views in mind. I also feel that the Nominating Committee should not choose

CALL FOR NOMINATIONS: THE NOETHER LECTURE

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

The mathematicians who have given the Noether lectures in the past are: Jessie MacWilliams, Olga Taussky Todd, Julia Robinson, Cathleen Morawetz, Mary Ellen Rudin, Jane Cronin Scanlon, Yvonne Choquet-Bruhat, Joan Birman, Karen Uhlenbeck, Mary Wheeler, Bhama Srinivasan, Alexandra Bellow, Nancy Kopell, Linda Keen, Lesley Sibner, Ol'ga Ladyzhenskaya, Judith Sally, Olga Oleinik, Linda Rothschild and Dusa McDuff.

The letter of nomination should include a one page outline of the nominee's contribution to mathematics, giving four of her most important papers and other relevant information. *Five* copies of nominations should be sent by **October 15, 1998** to: The Noether Lecture Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461; phone: 301-405-7892; email: awm@math.umd.edu.

candidates with a particular agenda in mind. (I am not at all suggesting that this has happened in the past.) Rather it is important to have in the leadership individuals who reflect the diversity of the membership of the AMS.

On an entirely different subject, let me make a comment about the current job situation, since this was a topic suggested to me by the AWM for comment. My comment is not at all novel, but is based on what I have seen happen to some of the young mathematicians I know. I believe that the opportunities for mathematicians in industry are quite favorable at present, and that we should encourage our doctoral students to keep in mind in a favorable way the possibility of working in industry. And my experience is that it is not necessary for them to study any particular topics for this purpose. Their general knowledge, ability to think precisely, and to carry out a complicated research project will be valued.

One difficulty is that the industrial job market is so amorphous that it is very hard to get a good understanding of it. Also, most of the best jobs are probably obtained by talking to lots of people — networking — rather than by formal application. It is very unfortunate that industry offers few of the summer jobs which I profited so much from while in college, which provided an attractive way for many budding mathematicians to get a taste of what working in industry was like.

EDITORIAL BOARDS COMMITTEE

George E. Andrews, Pennsylvania State University

Obviously there are countless tactical matters that face the AMS concerning journal publication. Electronic publication and maintaining reasonable prices for paper journals are two large issues. It is my belief that the central issue before the Editorial Board is the maintenance of high editorial standards primarily through the careful selection of editors with high standards. If this fundamental duty is fulfilled responsibly, it should be possible to respond adequately to the tactical problems.

Krystyna M. Kuperberg, Auburn University

The drop in graduate enrollment seen at many institutions will become even more severe as the principal supply for graduate programs, the undergraduate math majors, constantly decreases. Some see it as a remedy to improve the job situation, but in reality, a shortage of qualified mathematicians and the diminishing status of math departments will have a profound negative impact on the entire education in mathematics.

Our main efforts should be directed towards improving undergraduate education in mathematics. The math curricula should be attractive to gifted students — they should contain courses geared primarily towards math majors who can and want to excel. These courses should be offered even when the enrollment is small, and they should be taught by the most dedicated professors in the department who still remember what attracted them to mathematics. In the endeavor to bring students into mathematics it would be foolish to ignore women, minorities, and the wealth of talent that these groups hold.

The underrepresentation of women and minorities in science and mathematics parallels a more general problem: these fields are underrepresented universally. The AMS can assume a leading role in attracting talented young people to mathematics, women in particular.

Many new Ph.D.'s seeking academic employment encounter a long and discouraging process full of bitter disappointments. The paradox is that while it is hard to find an academic position, the math departments have difficulties in providing quality college level instruction of which only mathematicians holding a Ph.D. degree are capable. The state of employment outside academia conveys a sense of contradiction as well. Mathematicians worry about finding a job, while companies will hire anyone who can quickly learn the ever changing technology, provide rigorous solutions to problems, adapt to new situations, and enjoy the challenge of unexplored areas. These qualities almost define a mathematician. If mathematics is able to attract talented hard-working people, then the society will see mathematicians as a very valuable, highly employable group.

The American Mathematical Society serves the whole mathematical community and this should be reflected in the publications of the AMS. Standing for election to the Editorial Boards Committee, I believe that the members of the Editorial Boards should represent the broadest possible spectrum of mathematical areas. The standards for papers' acceptance should be uniform across the fields, based on mathematical merit, and nondiscriminatory.

EDUCATION COLUMN

Science Splash! is an NSF Young Scholars Program at Seattle University designed to interest middle school girls in science and mathematics and to strengthen the attitudes and skills they will need to be successful in these fields. The students doing well in school may participate in a hands-on program that incorporates group projects, extensive use of technology, mentoring, and making friends with other girls who have similar interests. Splash! gives them this opportunity at a time that is often crucial for girls in terms of deciding whether to take advanced math and science courses in high school.

The orientation to the summer science camp component for the 30 girls takes place on the *Atalanta*, a 72-ft. wooden ocean racer. (The use of the boat and the services of its crew are donated by its owner, a Seattle University graduate.) The students' questions about sailing lead naturally into the camp's unifying theme of "wind, water and waves."

The first three weeks of summer camp are spent on the Seattle University campus. In a daily session in a physics lab the girls perform a variety of experiments under the direction of a Boeing engineer given release time to work with Splash! She introduces them to the scientific method as they investigate water and air pressure as well as light and sound waves. The students also spend time each day in a computer lab. There, with the guidance of the Seattle University mathematics professor who directs the program, they learn to use email, search for information on the internet, create their own Web pages and find out how to utilize spreadsheets and other computer programs. The day after they gather data in the physics lab using ripple tanks, they continue their studies of water waves by means of a computer simulation. They locate boats using triangularization and another computer simulation. This activity reinforces what they learned aboard the *Atalanta* and prepares them to extend the technique to space when they take part in the Challenger Mission at the Museum of Flight.

The Splash! program puts a great deal of emphasis on communication. The first week also features instruction in journalism from a professor in the Seattle University Communications Department. This prepares them to write the newsletter that keeps their parents up to date on what they are doing and learning. For many of the campers, art is a powerful way to share their experiences with others. An artist talks to them about silk screening design, and the girls submit sketches. One of these is chosen to be the logo for the year, which is used on the camp T-shirts and the cover of the yearbook. The drawing techniques they learn help them with the illustrations they create throughout the program.

The first week concludes with an afternoon session in a swimming pool in the sports center. The students take a canoe tippy-test in preparation for the lake monitoring they will do and perform a variety of water pressure experiments in the pool.

During the second week the students begin working in small groups on projects such us measuring lift and drag in a model wind tunnel, operating Microsoft's Flight Simulator, building robots and guiding them by means of an interface with a computer, and operating ultrasound equipment under the guidance of a faculty member in the University's diagnostic ultrasound department. Each team prepares a presentation for a mini science fair. The goal is to plan an activity in which the other students will participate under the direction of the team members. This experience of presenting to their peers will be repeated frequently. It is always gratifying to the staff to see how much progress the girls make during the year in terms of their ability to present material effectively. Friday features a trip to the Boeing wind tunnel and a session at the Museum of Flight planned jointly with the Museum and Splash! staffs.

The third week begins with learning about water quality issues in the Puget Sound region and becoming familiar with the equipment needed when they take to the streams for water quality monitoring under the direction of Snohomish Country Surface water management personnel. Wednesday is spent in biology labs looking at the benthic invertebrate samples they have gathered under the careful supervision of two faculty members and student mentors from Seattle University's environmental engineering program. Thursday the students break into small groups to analyze the data they have gathered. They enter the results into spreadsheets and prepare charts for presenting their findings.

By Kathleen Sullivan RSCJ, Director of Science Splash!, Seattle University. Column Editor: Ginger Warfield, Department of Mathematics, University of Washington, Seattle, WA 98195; warfield@math.washington.edu

Then they try to put the pieces of the puzzle together, to determine, for example, why the most scenic site, the golf course, also seems to have the most problems. Friday's field trip takes them to the marine biology center in Poulsbo where they get a sense of the connections between water quality issues in our streams and in Puget Sound.

The last week of the summer session is spent at a residential lakeside camp. Working with Dr. Brubaker, chair of Seattle University's Biology Department, and using Seattle University equipment, the young scientists push out from the shore to take samples from the lake to be analyzed. Along with lake monitoring and the usual camp activities, the girls continue to work on science projects, building hot air balloons, rockets, and contour models of the lake bottom and orienteering. One of the girls wrote in her journal, "Although the activities were fun it was still sort of weird being out in the wilderness for a week. At the end of camp everyone was a lot closer. We all went around with smiles and a friend to go along with that smile."

Additional skills in leadership and time-management are required to realize their academic year task. Teams are formed consisting of students, a professional mentor, a Seattle University student mentor, and, in some cases, a middle school teacher. The students are responsible for moving the project along, with the other team members serving as resources. Each team must write a proposal specifying goals of the project, a timeline and a budget. At the end of the year they write a report and present their work to their peers, parents and teachers at a Science Celebration.

The projects take a variety of forms related to their summer study: collecting data on avalanche conditions with a woman geophysicist from the Forestry Department and analyzing the results on the computer; doing a stream restoration with a woman engineer from an environmental engineering consulting firm; collecting noise data at Seatac airport; designing Styrofoam air foils by computer with Edie Lie, a Boeing engineer and testing the foils in a model wind tunnel Edie built for the program (Felicia Colon-Barnes took first place in a national science fair in Washington DC with this project). The staff of Splash! feel that establishing a working relationship with a professional woman in a scientific field is the most powerful experience we can give these young scholars. When Felicia received her award, she was asked if she planned to become an aeronautical engineer. She replied simply, "I know that I could do it." Edie and Pilar, her Seattle University mentor, gave Felicia that kind of self-confidence.

The Seattle University students, in turn, develop strong relationships with the professional women they assist. Several of them have made contacts that helped them secure a job at graduation; others have been encouraged by their mentor to go on to graduate school. The director has been able to introduce a Seattle University math major to some very interesting mathematics in the course of working with her on a project involving fractals with three Vietnamese students in the Splash! program. Laura will be presenting a paper on fractals at a math conference as a result of this mentoring experience.

One of our students just won a prestigious four-year Sullivan Scholarship to Seattle University, awarded for academic achievement, leadership potential and community service. Another student has been selected by NSF to represent the U.S. as a goodwill ambassador at the first APEC Youth Festival in Korea this summer. We are happy for the students who have been rewarded with this kind of recognition. But we are proud of all the students who have devoted so much energy, enthusiasm and creativity to the task of preparing themselves to pursue careers in mathematics and science.

BECOME A MENTOR!

FORWARD in SEM is a project which is primarily focused on encouraging women and other underrepresented populations to pursue advanced degrees in science, engineering and mathematics (SEM). Currently, we are seeking professionals in these areas to become mentors for undergraduate students who are thinking about entering a science, engineering or math field. Mentors and mentees would communicate either through email, phone, in person, or letters. Mentors and mentees would set up their own schedule to suit their needs.

For more information, contact Shannon Staples or Professor Charlene Sorensen: FORWARD in SEM, c/o Chemistry and Physics Department, Gallaudet University, 800 Florida Avenue, NE, Washington, DC 20002; phone: 202-651-5206; email: 4orward@gallux.gallaudet.edu or ccsorensen@gallua.gallaudet.edu.

WHAT I READ ON MY SUMMER VACATION

Claudia Henrion, **Women in Mathematics: The Addition of Difference**, Indiana University Press, Bloomington 1997. xxxi+293pp. ISBN 0-253-33279-6 (cloth), $39.95; ISBN 0-253-21119-0 (paper), $16.95. Sylvia Nasar, **A Beautiful Mind: A Life of John Forbes Nash, Jr.**, Simon and Schuster, New York 1998. 459pp. ISBN 0-684-81906-6 (cloth), $25.00.

Reviewed by: Marge Murray, Book Review Editor, Department of Mathematics, Virginia Tech, Blacksburg VA 24061-0123; murray@calvin.math.vt.edu

At first glance, the two books under review would seem to have little in common. Claudia Henrion is a mathematician and educator, and her *Women in Mathematics* is an exploration of "the ideology of the mathematics community" and an examination of "the impact of this ideology on women" by means of a close examination of the lives and careers of eleven contemporary women mathematicians (xvii). Sylvia Nasar is an economics reporter for *The New York Times*, and her *Beautiful Mind* is a biography of John Nash, the mathematician who won the 1994 Nobel memorial prize in economics for his work in game theory. But in fact, there are close affinities between the two books, as I hope to make clear in what follows.

Let me begin by saying that each book is deserving of a review in itself; I must apologize both to the authors and to the readers of this *Newsletter* for the fact that the two books are being reviewed together. Moreover, I can do little to improve upon Ann Hibner Koblitz' very thorough featured review of Henrion's book in the May 1998 AMS *Notices*, which I recommend to any reader seeking a thorough analysis of its strengths and shortcomings from an historian's perspective.

Among the chief aims of Henrion's book is to elucidate and critique some of the mathematical community's (often unspoken) assumptions about how mathematics is done. In particular, Henrion emphasizes the assumption that mathematics is done in isolation from other people; that mathematicians are normally white and male; that mathematics is an activity for the young; that mathematics exists in isolation from politics and political considerations; that mathematical knowledge is objective and absolute. Unfortunately, Henrion neither explains the historical origins of this ideology, nor does she make use of historical arguments to critique its apparently timeless validity. Yet many of her underlying assumptions about the conduct and values of scientific and mathematical inquiry in the United States date back to the 1930's and 1940's, and gathered momentum during World War II and the Cold War that followed. The historical context is indispensable to an understanding of the functioning of the mathematical community during that period — as well as to an understanding of how the community functions now.

Curiously, Sylvia Nasar's book provides a good deal of the historical context for the ideology that Henrion describes, as well as some basis for its critique. On the surface, *A Beautiful Mind* is the often tragic but ultimately redemptive story of John Nash who, after making substantial contributions to mathematics and economics at an early age, was diagnosed as a schizophrenic and disappeared from public view for nearly thirty years. During his sixties, however, Nash made a partial recovery and returned to intellectual activity, the Nobel prize providing him at last with the recognition he craved. But at another level, Nasar's book can be read not simply as a portrait of an individual mathematician, but also as a fine-grained account of the mathematical community and its ideology, particularly in the 1940's and 1950's.

Born in 1928, Nash spent the late 1940's and the entire decade of the 1950's in and around Princeton, MIT, NYU, and RAND. At this time and in these places, the mathematical ideology to which Henrion refers came to full flowering; Nash himself was among the prime exemplars of the mythology of youthful, competitive, male mathematical genius. Because Nasar is an outsider to the mathematical community, she presents the ideology as well as the mystique of Nash and his contemporaries uncritically, with a reporter's keen sensitivity to detail. What emerges from her account is a clear sense of the manner in which, in the prosperous postwar era, mathematics became a means by which socially awkward, intellectually gifted young men could attain power and prestige.

Nasar's book illuminates the ideology of the American mathematical elite in the 1950's. But, inasmuch as Nasar is describing the conduct of mathematics in various hothouse environments of the period, it does not accurately represent the

variety and diversity of mathematical life during that difficult decade. Henrion's portraits of Mary Ellen Rudin and Marian Boykan Pour-El, roughly contemporary with Nash, underscore the fact that the mathematical community, even during the most overtly sexist periods of its history, has made room for a variety of ways of being and doing mathematics. Indeed, I agree with Ann Hibner Koblitz that Henrion's profiles of women mathematicians are the greatest strength of her book.

Interestingly, Henrion's and Nasar's books share a common failing: neither gives a clear sense of the ways in which the ideology of the mathematical community continues to change over time. The general educated reader, to whom Nasar's book is directed, can easily come away with a sense that the mathematical ethos of the 1950's continues to this day. The target audiences for Henrion's book — scholars in mathematics, women's studies, and social studies of science — can just as easily come away with the sense that the ideology she describes is indeed timeless and, save for the efforts of a few renegade female (and perhaps male) mathematicians, essentially static.

Still, separately and together, these two books should give rise to provocative discussions about the nature of the mathematical and scientific communities; the value of diverse points of view; and the future of mathematics in the face of rapid technological, political, and demographic change. Moreover, inasmuch as both books examine how difficult it can be for both men and women to successfully integrate their mathematical and personal lives, these books should stimulate important conversations about how one might live a life that is both mathematically productive and personally fulfilling.

NSF FUNDING UPDATE

Both the House and the Senate have now passed an appropriations bill for NSF. The Senate appropriated $3.644 billion; the House, $3.697 billion. The FY98 appropriation for NSF was $3.429 billion, so the Senate number is a 6.3% increase while the House is 7.8%. For research and related activities the House appropriated $2.815 billion, a 10.6% increase over FY98 ($2.546 billion) while the Senate figure is $2.725 billion, a 7% increase. The final numbers will be worked out in conference between the Senate and the House, probably after the August Congressional recess. We can be happy with these numbers, given that budget balancing and budget caps are still the talk of Washington.

On another note, Senate bill 2217 sponsored by Senators Frist and Rockefeller has passed through the Senate Committee on Commerce, Science, and Transportation. Here are some items from the bill: 1) to encourage, as an overall goal, the doubling of the annual authorized amount of Federal funding for basic scientific, medical, and pre-competitive engineering research over the 12-year period following the date of enactment of this Act; 2) to set a minimum level of investment in order to maintain the high priority that science, engineering, and technology had previously been afforded in the Federal budget; 3) to invest in the future of the United States and the people of the United States by expanding the research activities referred to in 1); and 4) to enhance the quality of life for all people of the United States.

info from Samuel Rankin, AMS, Washington, DC

NSF: Healthy FY 99 Appropriation Passes House

The House version includes about $90M more for research than the Senate version. An amendment offered by Rep. Mark Sanford (R-SC) to cut $270M from research, meant to punish NSF for making frivolous grants, failed on voice vote. Sanford had circulated a letter taking NSF to task for funding studies of such things as "billiards," "cheap talk" and "ATMs." It seems that every few years someone in Congress decides, solely on the basis of titles, that the people at NSF are wasting the taxpayers money on silly research. "A little learning is a dangerous thing," Sherwood Boehlert (R-NY) warned, "it's a mistake to judge a grant by its title." It fell to Vern Ehlers (R-MI), to explain that "billiards" means the theory of rigid body collisions used in turbulent flow; "cheap talk" refers to the cost of electronic information transmittal; and "ATMs" doesn't refer to "automated teller machines" — it means "asynchronous transfer modes."

from *What's New* by Robert L. Park, Friday, 31 July, 1998, Washington, DC, The American Physical Society (Author's note: Opinions are the author's and are not necessarily shared by the APS, but they should be.)

AWM WORKSHOP

The Association for Women in Mathematics workshop at the SIAM meeting in Toronto on July 12–14, 1998, provided graduate students and postdocs with opportunities to present their creative work and to help them prepare for careers in the mathematical sciences. The workshop was organized by Suzanne Lenhart (University of Tennessee) with the help of Renee Fister (Murray State University). At the Sunday afternoon opening session, Marilyn Lightstone (University of Toronto/ McMaster University, Mechanical Engineering), Lenhart, Tammy Kolda (Oak Ridge National Laboratory), and Fister served on a panel concerning many issues. The discussion involved workshop participant's questions that incorporated tenure issues, grant proposal suggestions, summer teaching, networking, and Project NExT information. It was announced that AWM now has a web site at http://www.awm-math.org which was developed by Kolda. After the session participants proceeded to the SIAM welcoming reception and then to the AWM banquet in Hart House. Rosemary Chang, a member of the SIAM Board, from Silicon Graphics Computer Systems, presented the keynote address, "On the Career Road and Some Thoughts About Traffic" to the fifty plus audience. Her analogies of traffic strategies related to goal setting, risk taking, and fairness dilemmas in the workplace. She emphasized the importance of understanding the traffic and then being able to competently negotiate around or through it.

On Monday morning, AWM sponsored a minisymposium on career planning and career experiences. Joan Feigenbaum of AT&T Laboratories expressed the necessity of collaboration with peers, communication with non-specialists, and awareness of the publishing/professional venues of current researchers. Maria Klawe, Vice President at the University of British Columbia, empowered the audience with the concept that change can lead to many opportunities. She illustrated that her willingness to change and her perpetual search to combine her interests and current external demands jumpstarted her career and continues to drive it. Karen Remington of the National Institute of Standards and Technology gave a synopsis of a personnel job survey concerning job aspects for women in her area of government. She stated that one should be aware of the evaluation process, especially since mission statements change with the political climate. Lastly, Peter Castro of Eastman Kodak discussed how to enjoy a career in industrial mathematics. He explained that industrial goals lie in making something new, explaining the new concept to others, and helping them use it in the most cost effective way. In career satisfaction, he said that a positive attitude is a necessity because you are working with a diversity of people who have questions that may not stem initially from a mathematical setting. This minisymposium was very popular — there was a standing room only crowd.

Rosemary Chang, Silicon Graphics, at her talk

I. Edward Block

For the remainder of Monday and on Tuesday, the research of the postdoctoral participants and the graduate students was showcased through three research minisymposia and a poster session. Some of the topics were disease modeling, modeling of superconductive junctions, dynamics of clam populations off the Argentina coasts, and inverse problems of elastic media, to name a few. After the talks and the poster session, the women presenters received helpful suggestions and encouragement from other AWM members serving as workshop mentors. The mentors included Chang, Wendy Myrvold (University of Victoria), Joyce McLaughlin

Suzanne Lenhart, University of Tennessee, and Renee Fister, Murray State University

(Rensselaer Polytechnic Institute), Fister, Kolda, and Lenhart. All three of these minisymposia and the poster session were well-attended.

Positive and thoughtful comments from SIAM members at the SIAM picnic demonstrated that others viewed the AWM workshop as a model for future SIAM sessions for interested graduate students.

In conclusion, a special thank you is sent to Dawn Wheeler for all her expertise in organizing and maintaining the high standards of this workshop. AWM gratefully acknowledges SIAM's support in yet another successful workshop. We also thank the Office of Naval Research (ONR) and the National Science Foundation (NSF) for funding the workshop. In addition, all AWM members who volunteered their expertise and time are to be thanked and commended.

Next year's workshop

We invite applications to next year's workshop; see page 27 for further information.

Titles of presentations

The speakers at the AWM Workshop Minisymposium on Mathematical Biology were: Meghan A. Burke, Kennesaw State University, "A Mathematical Model of Malaria Transmission"; Zhilan Feng, Purdue University, "Mathematical Models for the Disease Dynamics of TB"; Ramit Mehr, Princeton University, "Modeling the Metadynamics of Lymphocyte Repertoires"; and Rebecca Tyson, University of Washington, "Modeling the Swimming Behavior of the Medicinal Leech."

The AWM Workshop Minisymposium on PDE's and Applications featured: Anna C. Gilbert, AT&T Laboratories-Research and Yale University, "Multiresolution Homogenization Schemes for Differential Equations and Applications"; Emei W. Li, Spelman College, "A Method to Detect a Surface Breaking Crack Motivated by the Classical Potential Drop Method: Mathematical Model and Computational Algorithm"; and Lizabeth Rachele, Purdue University, "Inverse Problems for Elastic Media." Natalia G. Berloff's talk was cancelled due to a family emergency.

Catherine Lebiedzek (University of Virginia) and Suzanne Lenhart (Workshop Organizer, University of Tennessee) at Catherine's poster

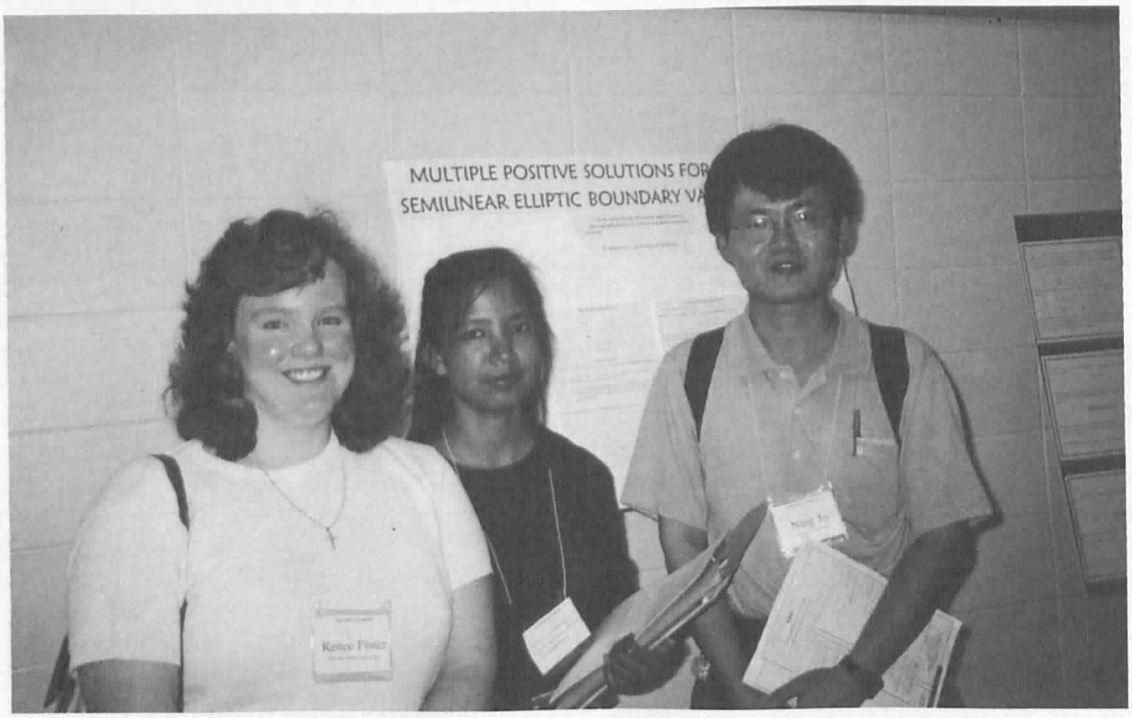
The speakers at the AWM Workshop Minisymposium on Discrete Mathematics/Modeling were: Katherine St. John, Santa Clara University, "Sparse Random Bit Strings"; Sharon Crook, Montana State University, "Modeling Cortical Oscillations with Networks of Coupled Phase Oscillators"; Joan Remski, University of Michigan, Dearborn, "Modeling a Superconductive Junction Device"; and Graciela M. Cerezo, Virginia Tech and University of Buenos Aires, "Modeling the Distributional Dynamics of a Clam Population along the Coasts of Argentina."

Graduate student poster presenters were: Jamylle L. Carter, University of California, Los Angeles, "A Dual Method for Total Variation-Based Image Restoration"; Maya Chhetri, Mississippi State University, "Multiple Positive Solutions for a Class of Semilinear Elliptic Boundary Value Problems"; Holly Gaff, University of Tennessee, Knoxville, "The Effect of Spatial Heterogeneity on a Tick-borne Disease"; Charlotte A. Knotts, University of Tennessee, Knoxville, "Extremal Properties of Eigenvalues"; Catherine Lebiedzik, University of Virginia, "Uniform Stability of a Coupled Structural Acoustic System with Thermoelastic Effects"; Jeehyun Lee, Iowa State University, "A Domain Decomposition Method for an Optimal Control Problem"; Tanya L. Leise, Texas A&M University, "Two Dynamically Accelerating Cracks in Elastic Material"; and Li Wu, University of Wyoming, "Mixed Finite-Element Solution of Reaction-Diffusion Equations Using a Two-Grid Method."

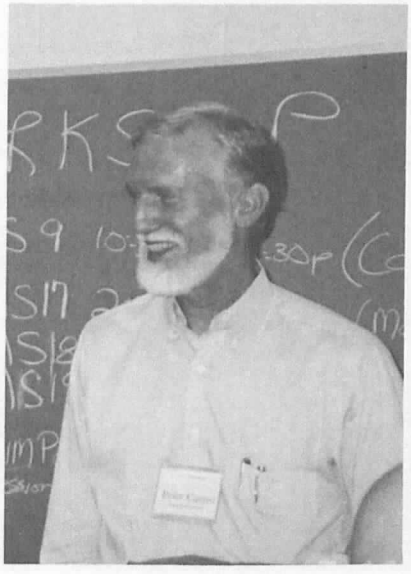
Abstract, Keynote Address, Rosemary E. Chang, Silicon Graphics Computer Systems

On the Career Road: Some Thoughts about Traffic

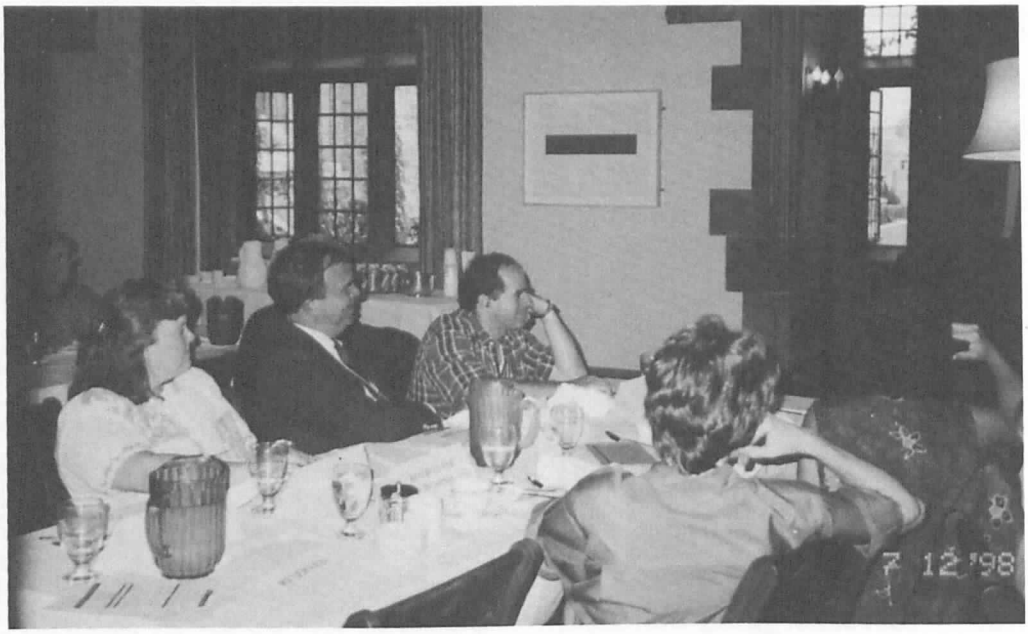
The customary talks on career development target the preparation and cultivation of skills that nurture the budding vocation. This talk is on this life journey as viewed through the windshield of commuter traffic. The speaker has spent many years ruminating about her career choices and situations while navigating the roads filled with other cars. She offers some observations made about traffic and relays lessons learned in traffic that apply to her own career journey.



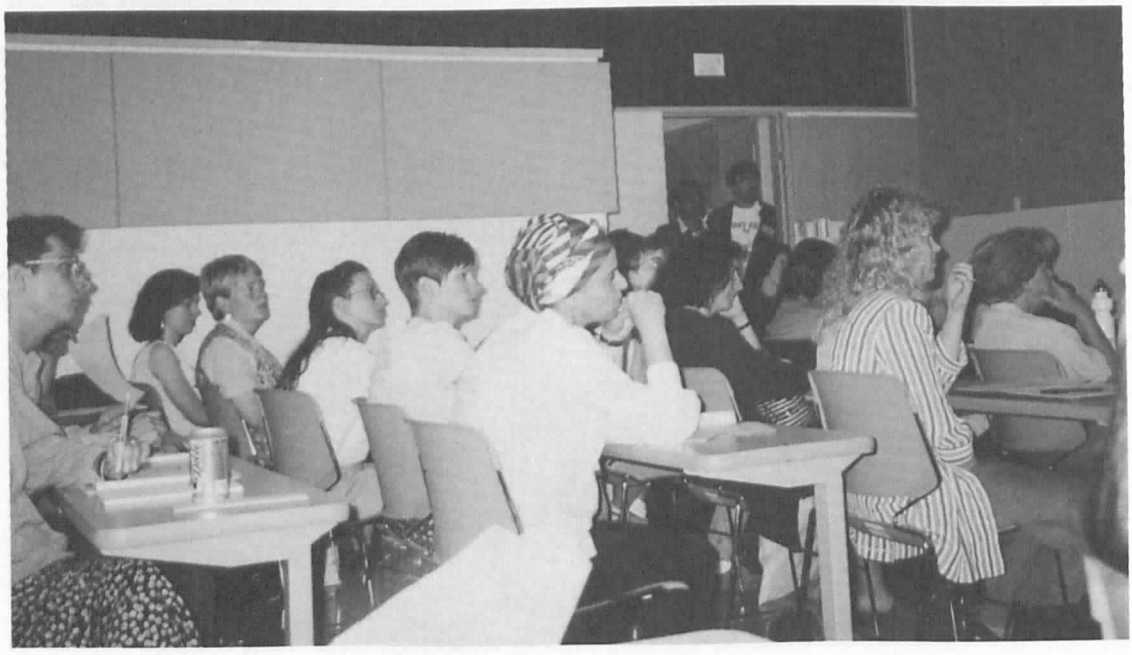
Renee Fister (Workshop Co-organizer, Murray State University), Maya Chhetri (Mississippi State University) and Ming Jie (Indiana University) at Maya's poster



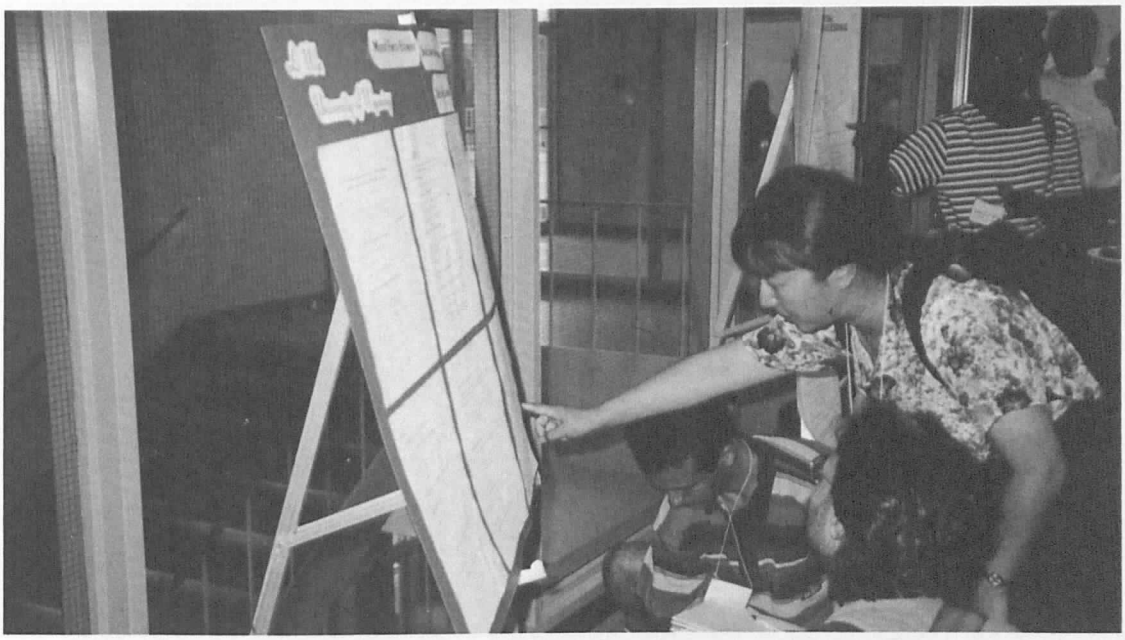
Minisymposium on Career Planning and Experiences Speakers: Peter E. Castro (Eastman Kodak Company), Joan Feigenbaum (AT&T Laboratories–Research), Maria Klawe (University of British Columbia), and Karin Remington (National Institute of Standards and Technology)



AWM Workshop Dinner: Renee Fister (Workshop Co-organizer, Murray State University), James Crowley (SIAM Executive Director), John Guckenheimer, SIAM President, Cornell University), and backs of Joyce McLaughlin (Chair, SIAM Board, Rensselaer) and Suzanne Lenhart (Workshop Organizer, University of Tennessee)

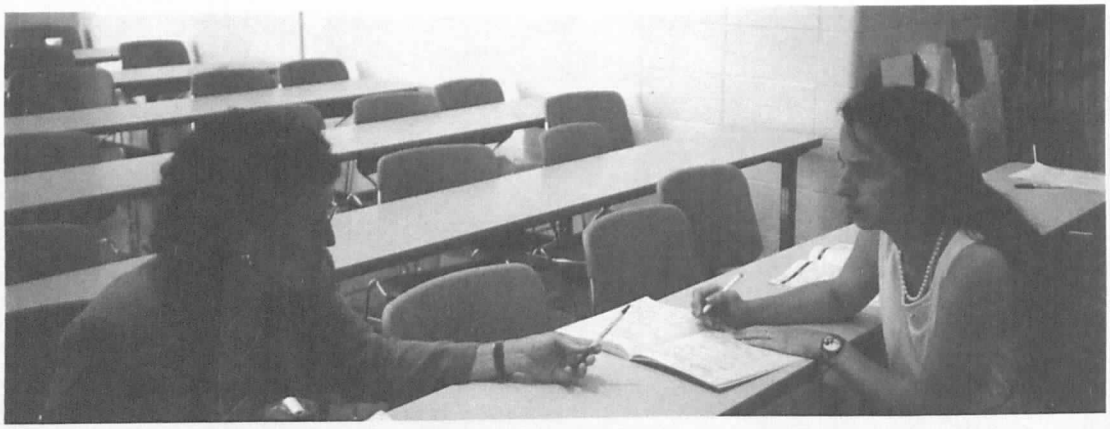


SIAM Workshop Participants



Li Wu (University of Wyoming) explaining her poster

Tanya Leise (Texas A&M University) explaining her poster to
Jean Taylor (AWM President-elect, Rutgers University)



AWM Workshop Mentoring: Workshop mentors Suzanne Lenhart (University of Tennessee), Renee Fister (Murray State University) and Joyce McLaughlin (Rensselaer Polytechnic Institute) mentoring postdoctoral speakers Meghan Burke (Kennesaw State University), Joan Remski (University of Michigan, Dearborn) and Graciela Cerezo (Virginia Technical University) after their talks

AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND POSTDOCTORAL MATHEMATICIANS

supported by the Office of Naval Research, the National Science Foundation, and the Association for Women in Mathematics

Over the past ten years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent Ph.D.'s (referred to as "postdocs" below) in conjunction with major mathematics meetings.

WHEN: An AWM Workshop will be held in conjunction with the 1999 SIAM Annual Meeting (May 12–15, 1999) and the sixth SIAM Conference on Optimization (May 10–12, 1999) at the Radisson Atlanta Hotel, Atlanta, Georgia. This Workshop is *tentatively* planned to be held on Friday, May 14 and Saturday, May 15 with an introductory group discussion and dinner on Thursday evening, May 13.

WORKSHOP: The workshop will consist of a poster session by graduate students, two to four minisymposia, and a dinner with a keynote speaker. The graduate student poster sessions include all areas of research in applied mathematics. Each minisymposium will have a definite focus. The first minisymposium will be informational, directed at starting a career. The remaining minisymposia will be selected from the research areas of mathematical biology, control, optimization, modeling, and PDE's and applications.

Selected graduate student participants will present their research in a poster session. Selected postdocs (those within five years of their Ph.D.) will speak in one of the three AWM research minisymposia. AWM will offer funding for travel and two days subsistence for up to twenty participants. Departments are urged to help graduate students and postdocs obtain some supplementary institutional support to attend the Workshop and the associated meeting. All mathematicians (female and male) are invited to attend the entire 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.

APPLICATIONS: To be eligible for funding, *graduate students* must have begun work on a thesis problem. Applications should include a cover letter, a summary of the work (one to two pages), a title for the proposed poster, a curriculum vitae, and a supporting letter of recommendation from a faculty member or research mathematician. Applications from *postdocs* should include a cover letter, a title and abstract (75 words or less) of the talk to be given if accepted, a summary of the work (one to two pages), a curriculum vitae, and (if desired) a letter of recommendation. The word "postdoc" refers to any mathematician who has received her Ph.D. within the last five years, whether or not she currently holds a postdoctoral or other academic position. All funded participants are invited and strongly encouraged to attend the full two-day AWM program. All non-U.S. citizen applicants must have a current U.S. address.

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

Workshop Selection Committee
Association for Women in Mathematics
4114 Computer & Space Sciences Building
University of Maryland
College Park, Maryland 20742-2461

Phone: 301-405-7892
Email: awm@math.umd.edu

(Applications via email or fax will not be accepted.)

APPLICATION DEADLINE: Applications must be received by **January 4, 1999**.

SONIA KOVALEVSKY HIGH SCHOOL MATHEMATICS DAYS

The Sonia Kovalevsky High School Mathematics Days below were funded by a grant awarded to AWM by the National Security Agency. Thanks, NSA!

Michigan Technological University

Girls Enjoying Mathematics (GEM), an overnight workshop for high school girls, was led by the Mathematical Sciences Department, Michigan Technological University, Houghton, MI. The residential workshop ran with 31 participants from throughout the Western Upper Peninsula of Michigan on June 19th and 20th, 1998. The program was supported by AWM (by NSA through the SKHS Mathematics Days program) and Michigan Technological University (through Max Seel, the MTU Dean of Sciences and Arts). Numerous interesting applications of mathematics in the real world, all with extensive hands-on experiments, explorations, and computations, were used to illustrate the utility and ubiquity of mathematics in the modern world. Many participants identified the residential format as particularly valuable since it allowed them to become closer to the other girls. We believe that the program convinced the young women (and their families) that there is nothing aberrant or unfeminine about mathematical or technical aptitude and that scientific or engineering degree programs provide extremely viable and interesting career paths for women. This was achieved through contact with like-minded high school girls, well-adjusted women (the undergraduate facilitators) pursuing technical careers, and female role models in technical careers (the faculty forum).

The unifying theme of the mathematical activities was the mathematics underpinning all technical fields. The projects chosen were fun, accessible, tractable, and interesting, with substantial active participation and extensive reliance on intuition and common sense rather than the rote mechanics of algebra and trigonometry. The projects were accessible to all grade levels in the program and involved extensive hands-on activities ranging from creative handouts to actual physical models and the use of modern computer technology to enhance conceptual understanding.

Kalpana Godbole, Tamara Olson, David Olson, and Allan Struthers, Michigan Technological University

The workshop began with an icebreaker session (coordinated by Allan Struthers) examining, discussing, and playing with a number of mathematical puzzles and games. These puzzles provided a natural and low-stress introduction to the workshop and a number of mathematical concepts: e.g., a puzzle called Spin-out is a natural introduction to binary counting, while the game Mastermind requires careful logical thought. A number of such puzzles and games were purchased for the program and distributed among the participants at the end of the workshop. We hope that in addition to having a memento of the workshop the participants will enjoy explaining the puzzles and underlying mathematics to parents, sibling, peers, and teachers.

Subsequent sessions focused on the mathematics behind the game Mastermind (coordinated by Allan Struthers); the geometry and applications of higher dimensional space (coordinated by Tamara Olson); the shape and geometry of space and surfaces (coordinated by David Olson); solving puzzles and matching patterns (coordinated by Kalpana Godbole); and a surprising (at least to the students) discussion of the uses of simulation in probability (coordinated by Anant Godbole).

There was a faculty forum on the 19th to discuss issues concerning women in technical fields. Five additional female faculty members — Chris Anderson (Director of Educational Opportunity), Beverly Baartmans (Mathematics), Donna Michalek (Mechanical Engineering), Noel Schultz (Electrical Engineering), and Linda Ott (Computer Science Chairperson) — along with the workshop organizers and undergraduate facilitators provided a wide range of experiences and generated a lively and informative conversation. After this forum the participants marched in the local Bridgefest parade distributing candy and mathematical puzzles. The final event was a pizza party and mathematical quiz GEMPARDY modeled on the TV show.

Our six undergraduate facilitators, Anna Celaya, Dorit Hammeriling, Sara Ratcliff, Mandy Schleiffer, Yolanda Singleton, and Camillia Smith were recruited from an NSF funded Research Experience for Undergraduate (REU) summer program at MTU, undergraduate students from MTU, and the MTU math graduate program. The undergraduate facilitators were invaluable. They motivated discussions, provided help in the computer labs, and spent

the night in the dorms with the participants. In addition to providing contact with role models (which we believe had a substantial role in some of the measured attitude changes), the facilitators helped the female faculty supervise the overnight dorm stay.

Our experience has shown that the faculty effort required to run such a program although intense is brief and not overly onerous when shared by a group of interested faculty. We anticipate MTU will continue to provide partial support for a similar program next year (largely due to the belief that it will prove to be an excellent and inexpensive recruiting tool for female students), and we are currently seeking supplemental funding from a variety of sources for next year.

The GEM program was assessed using pre- and post-participation surveys. Participants filled out the pre-survey before arriving at MTU, and they filled out the post-survey during the pizza party. On the post-survey, the overall evaluation was not quite as positive as last year, but it was still positive. The participants thought, "Overall, I had fun at GEM." In contrast with school mathematics, the participants thought that the math at GEM had little to do with memorization. The participants also thought it was somewhat more thought-provoking. The responses to the open-ended questions showed that participants particularly liked the fun learning sessions, learning new ideas, meeting people, the parade, and the friendly instructors. Like last year, the session with math toys and puzzles was quite popular. Other particularly popular activities included the exploration of four dimensions and learning to read the codes used by the post office. The major complaint was about the heat. One participant complained that she got a headache from learning too much, but we're confident that she has recovered.

The two surveys showed that the program changed some participant beliefs about mathematics. The post-survey showed that nearly all the participants were now convinced that "in mathematics, you can be creative and discover things by yourself." The participants also disagreed strongly with the following item: "Everything important is already known by mathematicians." So the participants came to see mathematics as a creative discipline where they could discover useful ideas.

While we are encouraged by the success of the program as documented by the results of these surveys, a similar program last year was more successful, and we know we can do better. Nonetheless, the survey results confirm what we learned last year about how to interest young women in mathematics: portray mathematics as a social activity, where people routinely work together on problems; include opportunities for students to do so; portray mathematics as an open field, where the answers to many important problems are unknown; check that students perceive that they understand the material (beyond doing well on tests); include activities where students have the opportunity to be creative and discover mathematics; emphasize the usefulness of mathematics in "helping disciplines" such as medicine; and include problems that have obvious applications to medical fields.

The program was publicized through extensive mailings to Upper Peninsula high schools, direct mailings to parents, and covered in a number of local papers.

Norfolk State University

A Sonia Kovalevsky High School Mathematics Day was held at Norfolk State University on May 7, 1998. On March 5 the local high schools were mailed pertinent information about the Day. Later in March the public high schools in Norfolk and Virginia Beach were informed that the Virginia Standard of Learning tests would be administered the first week in May rather than the last week in May. This conflict prevented many interested local teachers and students from participating. However, one Norfolk teacher James Long persuaded officials to arrange for the students at Norfolk Preparatory High School to participate in the Day and take the required state tests at a different time. This is the first year the state tests have been administered to all public high school students, and it has been announced that in future years more advance notice of the dates will be given.

Five high schools representing three cities participated in the High School Day on May 7. In addition to Norfolk Preparatory, participants came from the public high schools Western Branch in Chesapeake and Churchland in Portsmouth, Catholic in Virginia Beach, and Norfolk Collegiate.

One of the workshops was concerned with problem solving. According to the evaluation forms and the ebullient remarks of those who attended,

Eleanor G.D. Jones, Norfolk State University

Awards at the Problem Competition, Norfolk State University

this workshop was a rewarding and wonderful experience. Team Problem Solving was another highly favored event. A ninth and tenth grade team competition and an eleventh and twelfth grade team competition were separate events. Members of the winning teams had the opportunity to try for the grand prize, a CASIO 9850 G calculator obtained by Mary Copeland, one of the teacher workshop presenters. The calculator winner was the team member with the most accurate guess on the number of jelly beans in a jar (this was an adaptation of a procedure in an SK Day report in an earlier AWM *Newsletter*).

Each high school woman received a Certificate of Participation, with Outstanding Achievement Certificates also being presented to the women excelling in the competitions. First, second, and third place trophies were presented for the team competitions. At the conclusion of the program, a trinket-type puzzle was available for each woman who turned in her evaluation form.

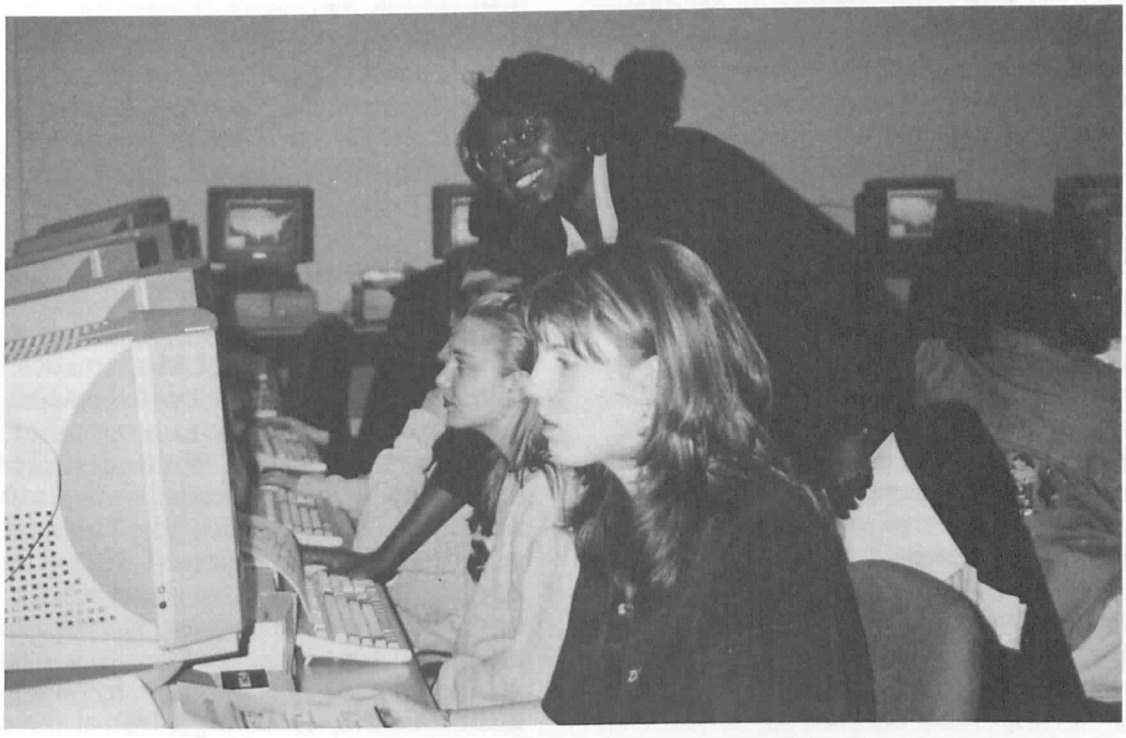
Although the NSA representative was unable to attend due to weather conditions, the luncheon panel was both very interesting and enjoyable. As expected, Mary Gray was very personable, informative, and exceedingly inspirational. Her presence made the luncheon a grand event.

St. John's University

On Monday, April 6, 1998, 174 high school students and 30 teachers from 27 schools in the Metropolitan New York area attended the Seventh Annual Sonia Kovalevsky High School Mathematics Day, hosted by the Department of Mathematics and Computer Science, St. John's University.

Dr. Jacqueline Joseph-Silverstein, Associate Provost, warmly welcomed the visitors and praised the teachers for their deep concern about their students' futures as evidenced by their presence. She said that as a biologist, she was aware that careers in math and science are open to everyone.

The program began with three panelists. Ms. Marlene Cintron, a financial consultant at Merrill Lynch who is also a lawyer, noted that she did not excel in math in high school but she persevered and "would not allow math to defeat her." This was fortunate since she found that many of the subjects



Angela Hurdle, a workshop leader, guides her students through a business program; St. John's

in law school, such as Corporations, Taxation and Securities Law, required being comfortable with math. Her final words were, "Math is everywhere. We cannot be intimidated by it."

Maxine Hutchinson, an insurance underwriter with Liberty Mutual, wasn't sure what she could do with a math major upon graduation, but because of her background, she was hired by a prestigious firm and now loves her job. She feels that "math majors have careers with infinite boundaries."

The third panelist, Ms. Peggy Oliveira, a consultant in telecommunications with Lucent Technologies, thought about teaching math, but Bell Labs hired her first. She emphasized that studying math can lead to a broad range of work opportunities, for example in the insurance (actuarial) field, the aerospace industry, engineering, computer related fields, the legal system or private businesses. No less important she noted that "my degree in mathematics ... also provided me with strong logic and reasoning skills that have served me well in all areas of my life."

After questions and answers, teachers and students attended two workshops of their choice. For the third time, a workshop led by three undergraduate math majors proved to be especially popular. Marie shared her experiences as a math major and student teacher; Lecia discussed the B.S. degree in math (versus a B.A.) and Rose, with a B.A. in math, spoke about Pi Mu Epsilon and other activities, both social and academic, enjoyed by math majors. All three emphasized the importance of budgeting time to allow for both studies and relaxation.

This year, to celebrate the centennial of the birth of M.C. Escher, an exhibition of his prints, together with partial explanations of the mathematics involved, was presented during lunch. Students found the (impossible) tribar and (impossible) cuboid especially intriguing. Escher's work bursts with cunningly planned visual surprises, and both teachers and students were drawn to look again and again in order to discover the hidden surprises contained in the works. They also enjoyed the film "Adventures In Perception" on the life and work of Escher obtained from the Consulate General of the Netherlands. A concurrent demonstration of computer programs created by math majors was equally attractive.

To give greater attention to the Summer Program Project bearing the title "Mathematics Is Multicultural," the booklets were hand distributed during lunch and found an appreciative audience. The students were surprised by the diversity of the cultures represented — African-American, Egyptian and Greek — and many started working on the problems in the booklet immediately.

A film-maker, Ann Michel, who majored in mathematics at Cornell University, was the guest speaker. The title of her talk was "Making Something out of Nothing: The Creative Process of Film-Making and Mathematics." She observed that "documentary film-making is like solving a mathematical problem. Your job is to extract the essence, the facts, the story.... All the problem-solving skills I gained from studying math help with this. Solving problems in the abstract makes solving problems that are based in reality easier." She then illustrated the effects of this with excerpts from three documentaries, one of which was made for the New York State Department of Social Services. Students found this application of mathematical reasoning engaging.

Two Math Bowls, one for freshmen and sophomores and one for juniors and seniors, have become ever more popular with teachers as well as students. They are a perfect way to end the day. We think it is the spirit of the questioning, with friendliness and encouragement, that is generating such enthusiasm. All participants received an Escher bookmark as a prize.

Typical comments from student evaluations included:

> I now see math as being more exciting and useful to me in the real world. I am used to seeing math in my textbooks, but this experience showed me something different.

> My feelings were changed by the talk about a lady who was not particularly good in math but managed to get herself through in her best abilities. If she could do it, so could I.

And from a teacher:

> I think that this entire day was a wonderful idea because so often girls are turned off to math and not encouraged enough in their studies.

This day would never have been possible without the generous support of NSA and AWM.

In retrospect, we see that students and teachers alike want more information and contact with women in professional careers and the mathematics they used in their work. Therefore, we are planning to increase the number of panelists from three to five or six and to follow the general panel discussion with small groups centering around each of the panelists. This may necessitate shorter workshops or a decrease in the number of workshops from two to one.

University of Mississippi

The University of Mississippi held its first Sonia Kovalevsky High School Mathematics Day on Friday, April 24, 1998. We invited teachers from rural high schools in the area to bring up to four female students to participate in the day. Teachers from four school districts attended with a total of 15 students. Of these 15, nine identified themselves as minorities. We were pleased with the turnout considering the distances to some of the more rural communities we are trying to reach and the time constraints for recruitment.

The event was sponsored by AWM through a grant from NSA. The organizer of the meeting was James Reid, an Associate Professor in the Department of Mathematics. He was assisted by Dale Bowman, an Assistant Professor in the department, and by a committee of faculty including Mary Baggett, Gerard Buskes, and Patricia Treloar. The staff of the Math Department also spent a great deal of time with mailings and arrangements. Graduate and undergraduate math majors volunteered time during the day to help with registration and set up.

Dale Bowman provided welcoming remarks and introductions to the speakers and activities throughout the day. During the morning's introductory period, Gerard Buskes gave a brief history lesson on Sonia Kovalevsky and her contribution to mathematics and to the women who followed her. Dr. Buskes, the editor of an international newsletter concerning the history and pedagogy of mathematics, gave an interesting and enlightening introduction to the day's events. Some of the participants' comments related specifically to his talk. One teacher said, "So often we overlook the fact that women were not allowed to be educated and so S.K.'s accomplishments are incredible."

Following the history lesson, we were pleased to have Mary Benson, a local high school mathematics teacher, discuss what it takes to be a high school math teacher. Ms. Benson is highly regarded in the local and state communities as an enthusiastic and

entertaining speaker and teacher. She discussed a wide variety of considerations in choosing a teaching career, including opportunities and training required, as well as emotional rewards.

Our next speaker was a new researcher in the Department of Mathematics, Shirin Handjani. Dr. Handjani gave an overview of what it is like to be a researcher in a university setting. She also discussed what motivated her to study mathematics, relating interest in the field of music to an eventual love of mathematics. She also provided numerous real-world examples where her research in probability is applicable.

Following the morning speakers, Dale Bowman involved the participants in a hands-on activity designed to simulate a biological field experiment. Students were shown a large tub filled with animal crackers, simulating a population (of unknown size) of animals in the wild. A sample was taken from the tub, "tagged," and "returned to the wild." Students were split into groups, and each group was then allowed to take a second sample and use this to estimate the size of the entire population. The group whose estimate was closest to the actual number (determined with the assistance of graduate students) was awarded prizes. The exercise was very successful in stimulating the groups to discover approaches to use in estimating the population size.

A break for lunch followed this activity. Participants were provided lunch on campus and were invited to tour the campus at their leisure. The afternoon session began with a discussion led by Mary Baggett, an Assistant Professor in the Math Department. Dr. Baggett spent many years working as a mathematician in industry before returning to school for her Ph.D. in Statistics. She was able to discuss many and various opportunities available to math majors in the private sector. In addition she discussed applications of statistics to many different fields, focusing attention on the use of statistical methods to determine authorship in the well-known historical dispute involving the Federalist Papers.

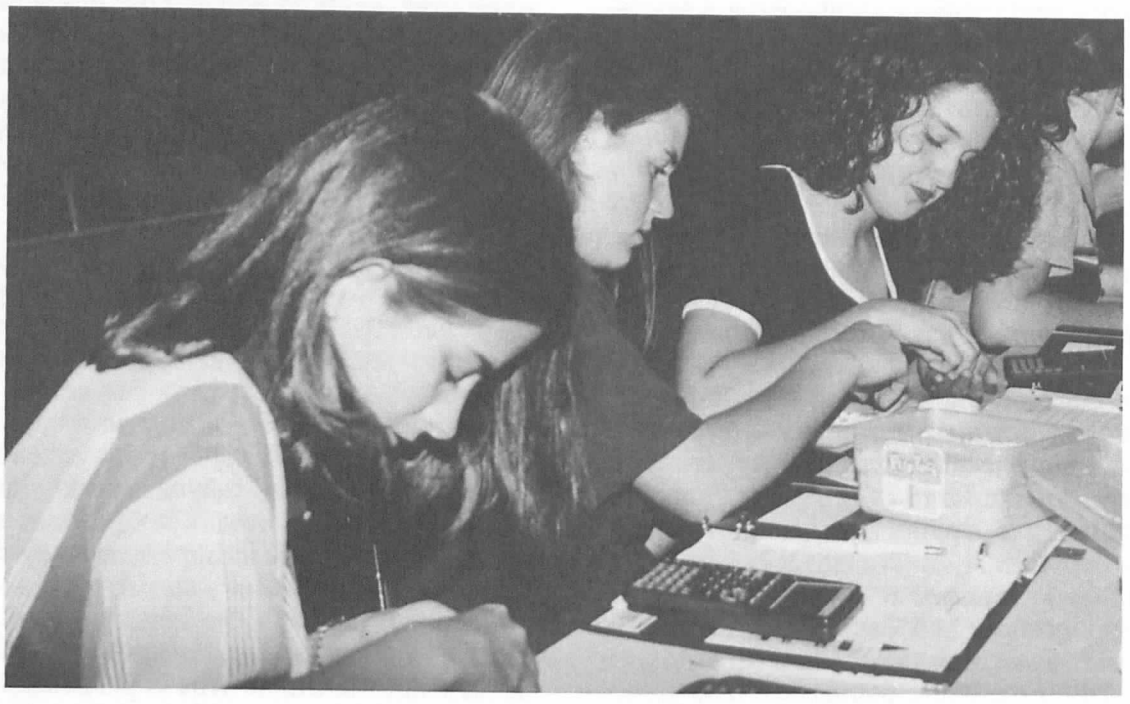
Following her talk, she led the students in another activity designed to simulate a system adjustment problem such as one might find in a manufacturing situation or on a thermostat. The participants again worked in groups and dropped beads through plastic funnels onto tablecloths. Each ending position of the bead was marked on the tablecloth and compared with the target. Each group had different pre-determined methods for adjusting the system in order to come closer to the target. After many drops, the participants were encouraged to observe, analyze, and discuss the pattern on their cloth and ultimately the success of their adjustment. Participants who made the best observations were awarded prizes.

The last speaker of the day was Patricia Greene from NSA. Ms. Greene gave information on career possibilities at NSA for math majors, as well as information about scholarships and competitions for high school students. The students seemed to really appreciate this speaker as she presented possibilities they had never considered. There were many questions and much interest in the nature of the work at NSA and the college preparation required.

Most of the participants had to return to their schools before the final activity scheduled for the day. Information on recreating the jumping frog activity and all the other activities was given to the teachers as they left in hopes that they would bring these ideas into their classrooms as well. We learned that it would be better to start earlier and plan on ending in time for students to return home at their normal times. This is particularly important for many of the students from rural communities.

We also did not have an opportunity for the participants to fill out evaluation forms before the day ended. We were forced to mail questionnaires to the participants and hope they would be returned. To date we have only had five forms returned. In the future, we will include evaluation during the day's activities. Based on the forms that we have received, all the participants seem to have enjoyed the hands-on activities and noted these as one of their favorite parts of the day. The main negative comment was that the day lasted too long on a Friday afternoon. Some of the comments from the participants include "I enjoyed the opening address (history) and the activities" and "Continue in the same format, the activities were great."

We plan to contact the students who participants in the program annually until they graduate to continue to encourage and foster their interest in mathematics. We believe that this is especially important for students from surrounding small rural areas where poverty levels are typically high and interest in mathematics may not be encouraged. All of the participants who responded, those we have spoken to, all the graduate students who volunteered their time, and every member of the organizing committee agree that we should continue and expand the Sonia Kovalevsky High School Mathematics Day at the University of Mississippi.



Population sampling workshop, Valdosta State University

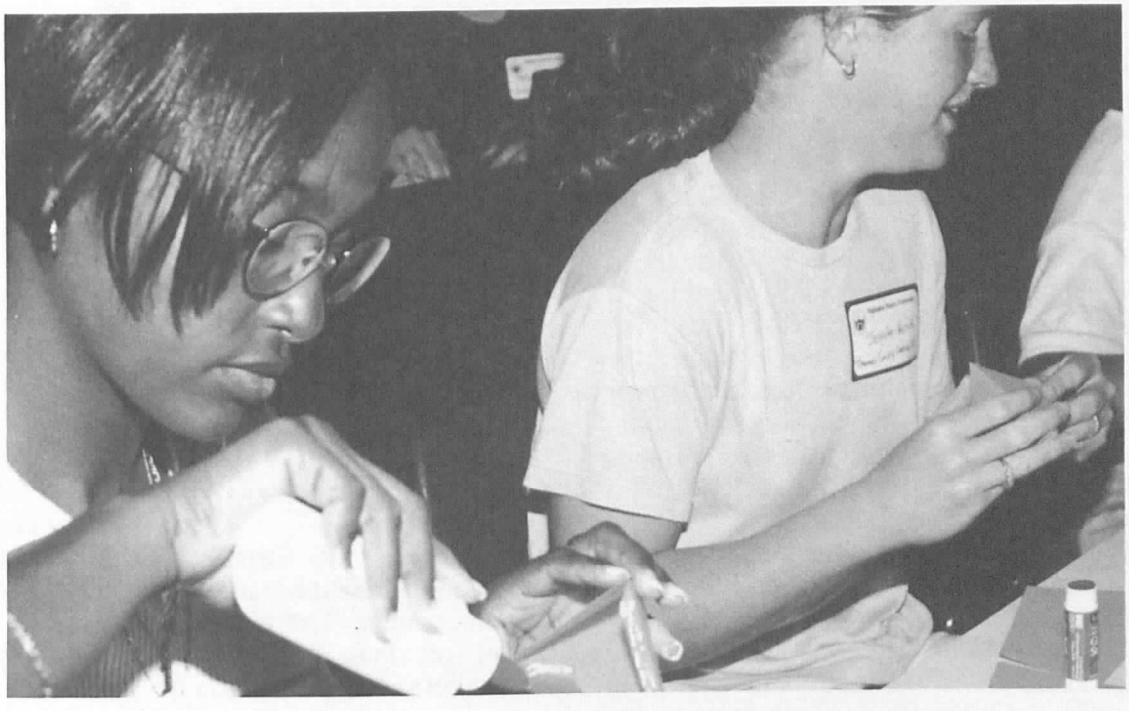
Valdosta State University

The third Sonia Kovalevsky High School Mathematics Day at Valdosta State University (VSU) in Valdosta, Georgia was held on Friday, May 15, 1998. It was supported by a grant from AWM and NSA. Fifty-nine students and fourteen teachers from eleven schools attended. Some participants came from across town, while others made at least a two-hour trip to VSU. The students were sophomores and juniors. Many had never previously attended a math day of any kind.

The participants had a full day of activities. There were three workshops, one on population sampling, one on linear and quadratic regression, and one on the Platonic solids. The population sampling workshop was led by Dr. Denise Taunton from VSU. During this activity, the students worked in groups taking samples from containers of beans in order to estimate the number of beans in each container. The linear and quadratic workshop was led by Dr. Kathy Simons from VSU. Students used the statistics features of the TI-83 calculator to model linear and quadratic growth. The workshop on Platonic solids was led by Dr. Hari Pulapaka, also from VSU. During this workshop, the students were given patterns for all five of the Platonic solids. The evaluations completed by the participants clearly indicated that the workshops were a success. The students enjoyed the hands-on activities and the interaction among the participants. The career speaker for the day was Ms. Susan Butler, a marine biologist for Florida Power. Ms. Butler talked with the students on applications of mathematics in her job as well as career opportunities. Her talk included a slide presentation and some hands-on work with live shrimp. Also included in the activities for the day was a mathematics competition consisting of twenty-five multiple choice questions.

Juice, donuts, and muffins were available when the participants arrived. During this time, the participants registered and mingled. They also had a chance to look at several displays. These displays included posters of the Platonic solids, brochures on mathematics and career opportunities, origami models and models of Escher Kaleidocycles from a previous SK Day, and a scrapbook of previous SK

Kathy Simons and Denise Taunton, Valdosta State University



Platonic solids workshop, Valdosta State University

Days at VSU. Later a buffet lunch was served. During lunch the participants got a chance to interact with each other as well as with Ms. Butler and VSU mathematics faculty.

Door prizes were given to both students and teachers at the opening and closing of the day's events. There were a total of ten student prizes and four teacher prizes. Texas Instruments donated six TI-36 calculators, and Houghton Mifflin donated a dictionary and a thesaurus for door prizes. At the closing, the winners of the mathematics competition were announced. The first prize was a TI-92 calculator. The second and third prizes were books on marine biology.

Also in attendance was Dr. Mary Kay Corbitt, Assistant Dean of the College of Arts and Sciences. Dr. Corbitt gave the opening remarks of the day, which included a biography of Sonia Kovalevsky. There were also several student volunteers present throughout the day; these were VSU students enrolled in upper-level mathematics classes.

The day was a success in many ways. Participants completed questionnaires at the end of the day. The responses were very positive. They appreciated the opportunity to be included in such an event. The favorite events of the day were the workshops and speaker. Both teachers and students expressed an interest in attending another SK day. We truly appreciate the opportunity to show these young girls how exciting and rewarding mathematics can be.

OTT CELEBRATION

The Olga Taussky Todd Celebration of Careers in Mathematics for Women is slated to be held at the Mathematical Sciences Research Institute (MSRI), Berkeley, CA, July 16–18, 1999, pending funding. AWM hopes to have funds available to defray travel expenses for some women graduate students and postdoctoral mathematicians to participate. More information about the conference and procedures for applications will appear in the November–December *Newsletter*. The anticipated deadline for applications is **February 18, 1999**.

TAFT FELLOWSHIPS

Applications are invited for the Charles Phelps Taft Fellowships to support graduate study in several departments of the University of Cincinnati, including the mathematical sciences. The Taft Fellowships include a cash stipend of $12,000 and a scholarship which defrays all instructional fees for full-time enrollment. In addition, the Taft Advanced Departmental Competitive Fellowships include a summer stipend of $3,000 beginning July 1st. Evaluation and selection is based upon the applicant's academic record, the recommendations of former teachers, and a statement of professional intentions by the applicant. Taft Fellowships recognize past academic excellence and potential for significant scholarly contributions.

Applications for a Taft Fellowship should be made at the time the application for admission to a graduate program is submitted. For more information, contact: Taft Faculty Executive Board, Mail Location 0037, University of Cincinnati, Cincinnati, OH 45221-0037; 513-556-0675. Taft Fellowships are commonly awarded in March; therefore, application for admission must be complete by **February 1, 1999** in order to insure consideration.

Applications are also invited for Charles Phelps Taft Postdoctoral Fellowships intended to afford scholars who have demonstrated unusual ability for creative research the opportunity to enhance their education through additional study and research. Each applicant must have been awarded the Ph.D. in the past five years or have completed all the requirements for the degree by September 1 of the fellowship year. The application must include a carefully developed plan of research at the postdoctoral level, a complete, up-to-date vita, three letters of reference, and the name of a faculty member, if known, at the University of Cincinnati with whom the applicant would like to study. Each application will be judged on the basis of ability as evidenced by demonstrated scholarship and letters of reference and on the compatibility of research interest with Graduate Faculty members on the University of Cincinnati campus.

Each Charles Phelps Taft Postdoctoral Fellow will be expected to devote full time to research during the tenure of the fellowship. The award carries an annual stipend of $30,000. Additional benefits include $500 to defer moving expenses, $1000 for research-related expenses, and health insurance coverage for the Fellow and dependent(s). Subject to Departmental instructional needs, the Fellow may be appointed to teach one course for one quarter only in his/her Department.

For more information, write Taft Postdoctoral Fellowships, University of Cincinnati, P.O. Box 210037, Cincinnati, OH 45221-0037. Applications must be complete before **January 15, 1999**.

CMS COMMITTEE FOR WOMEN IN MATHEMATICS

In 1992 the Canadian Mathematical Society (CMS) established a Committee for Women in Mathematics. The committee consists of a Chair, four regional representatives and two ex-officio members. Its mandate is to monitor the status of women within the Canadian Mathematical community and the CMS, recommend actions to the CMS Board which will assure equitable treatment of women, and encourage the participation of women at all levels of mathematics. The committee also maintains liaison with national and international organizations concerned with the participation of women in mathematics and other areas of science.

As part of its role in monitoring the state of women in Canadian mathematics, the committee has developed and maintained a database of information on women in mathematics in Canada. In 1997 we also received a grant from Nancy's Very Own Foundation to develop on the CMS web server a directory of Canadian women mathematicians. This project is now well under way, with about 50 women in the directory so far. Each entry contains a cover page, with name, contact address(es) and areas of interest; individuals may add links to their home pages and curriculum vitae if they wish. See http://camel.math.ca/Women/WMpages/ for details. An email discussion list has also been created for members of the directory.

Shelly Wismath, Chair of CMS Committee for Women in Mathematics, Department of Mathematics and Computer Science, University of Lethbridge, Lethbridge, AB, Canada T1K-3M4; email wismaths@cs.uleth.ca

SONIA KOVALEVSKY HIGH SCHOOL MATHEMATICS DAYS

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

We anticipate awarding approximately seven to nine grants of up to $3,500 each to universities and colleges; more grants may be awarded if additional funds become available. Historically Black institutions and women's colleges are particularly encouraged to apply. Programs targeted towards inner city or rural high schools are especially welcomed. If selected, institutions will receive an information packet consisting of model schedules of activities, a check list for the sorts of arrangements that need to be made, suggestions for securing additional funding and for obtaining prizes to be awarded to contest winners, recruitment and publicity material to be adapted for local use, lists of possible workshop topics for students and teachers, model problem-solving contest material, and guidelines for follow-up activities and evaluation.

Applications, not to exceed five pages, should include: a) tentative plans for activities, including specific speakers to the extent known; b) qualifications of the persons to be in charge; c) plans for recruitment, including the securing of diversity among participants; d) itemized budget; e) local resources in support of the project, if any; and f) tentative follow-up and evaluation plans.

Decisions on funding will be made in mid-February. The high school days are to be held in Spring 1999 and Fall 1999. Reports on the high school days are to be made to AWM within four to six weeks of completion. In addition, all receipts (originals or copies) for reimbursement must be submitted to AWM 30 days after the institution's event or no later than December 1, 1999, whichever comes first. Reimbursements will be made in one disbursement; no funds can be disbursed prior to the event date.

Send *five* complete copies of the application materials to: Sonia Kovalevsky Days Project Advisory Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461; email: awm@math.umd.edu; phone: 301-405-7892. Applications via email or fax will not be accepted. Applications must be received by **January 20, 1999**.

AWM MEMBERSHIP: 1998-1999 Renewal Notices and Gift Memberships

1998-99 RENEWAL NOTICES: Renewal Notices for the 1998-99 membership year were mailed out in August and should be received by September. If you have not received your membership renewal notice in the mail by September 30, 1998, please RENEW using the NEW membership form on PAGE **47.** Our new membership year officially begins October 1, 1998, but you can send your dues in NOW and they will be counted toward the 1998-99 membership year.

AWM GIFT MEMBERSHIPS: If you would like to give a gift membership to a friend or colleague, please fill out the membership form on PAGE **47** with the pertinent information and indicate that it is a gift membership. AWM will send a notice to the individual informing of their membership and that it is a gift from you.

SEND MEMBERSHIP DUES AND/OR CONTRIBUTIONS TO:

AWM Membership, 4114 CSS Bldg., University of Maryland, College Park, MD 20742-2461

Any questions, please contact us at: **301-405-7892 or awm@math.umd.edu**

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BOSTON COLLEGE - DEPARTMENT OF MATHEMATICS - Assistant Professor of Mathematics - Applications are invited for a tenure-track assistant professor position in Mathematics which will begin on September 1, 1999. Under exceptional circumstances we would consider hiring at a higher level. Necessary requirements include a doctoral degree, demonstrated success or strong potential in research, and a commitment to effective teaching at the undergraduate and graduate levels. At least two years teaching experience beyond the doctoral degree are preferred. Boston College is a Jesuit university enrolling approximately 8,500 full-time undergraduate students and 4,300 graduate students. The Department of Mathematics has twenty-one full-time faculty. It grants approximately fifty B.A. degrees in mathematics, and approximately ten M.A. degrees and five M.S.T. degrees (in the teaching of mathematics) annually. Current research interests include algebra, analysis, applied mathematics, dynamical systems, geometry, number theory, probability, statistics, and topology. Applicants should include with their cover letter and resume a description of their research plans and a statement of teaching philosophy, and should arrange to have at least four letters of reference sent to the Department. At least one of the letters should focus on teaching effectiveness and potential. Send all materials to: **Rennie Mirollo, Search Committee, Department of Mathematics, Boston College, Chestnut Hill, MA 02467-3806**. Email inquiries may be directed to: search.math@bc.edu or may be answered at our web page http://fmwww.bc.edu/MT/. Electronic applications will NOT be accepted. Review of applications will begin on December 1, 1998, and continue until the position is filled. Boston College is an Affirmative Action/Equal Opportunity Employer.

BRANDEIS UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for two tenure-track positions at the rank of assistant professor, beginning in the fall of 1999. More advanced appointments for candidates with exceptional qualifications may be considered. Ph.D., excellence in research and demonstrated teaching ability are required. Applicants should send a vita and three letters of recommendation by December 15, 1998 to: **Hiring Committee, Department of Mathematics, MS 050, Brandeis University, Waltham, MA 02254-9110**. Brandeis is an Affirmative Action/Equal Opportunity Employer; we especially encourage applications from women and minorities.

BROWN UNIVERSITY - DEPARTMENT OF MATHEMATICS - J.D. Tamarkin Assistant Professorship - One or more three-year non-tenured non-renewable appointments, beginning July 1, 1999. Teaching load: two courses per semester (6 hours per week). Candidates are required to have received a Ph.D. degree by the start of this appointment, and they may have up to two years of academic and/or postdoctoral research experience by then. Applicants should have strong research potential and a commitment to teaching. Field of research should be consonant with the current research interests of the department. For full consideration, a curriculum vitae, a completed application form, and three letters of recommendation must be received by December 1, 1998. Requests for application forms and all other inquiries should be addressed to: **Tamarkin Search Committee, Department of Mathematics, Brown University, Providence, RI 02912**. Application forms are also available from our website: http://www.math.brown.edu/tamarkin.shtml, and standard *AMS application forms* are accepted. Email inquiries can be addressed to tamsearch@math.brown.edu. Please do not request application forms by email. Brown University is an Equal Opportunity/Affirmative Action Employer and encourages applications from women and minorities.

Want to advertise a position? **ADVERTISING RATES & INFORMATION on PAGE 3**

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BROWN UNIVERSITY - DEPARTMENT OF MATHEMATICS - One professorship at the Associate Professor level, with tenure to begin July 1, 1999. Preference to be given to applicants with research interests consonant with those of the present members of the Department. We are especially looking for candidates in the general area of analysis, but exceptional candidates in all fields will be seriously considered. Candidates should have a distinguished research record and a strong commitment to undergraduate and graduate teaching. Qualified individuals are invited to send a vitae and arrange for at least five letters of recommendation to be forwarded to: **Senior Search Committee, Department of Mathematics, Box 1917, Brown University, Providence, Rhode Island 02912.** Applications must be received by November 9, 1998, in order to receive consideration. Email inquiries can be addressed to srsearch@math.brown.edu. Brown University is an Equal Opportunity/Affirmative Action employer and encourages applications from women and minorities.

CARNEGIE MELLON UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - The **Richard J. Duffin Visiting Assistant Professorship** was established to honor the memory of Professor Duffin, who had a long and distinguished career in the Department of Mathematical Sciences. This position is available for a period of three years, beginning in September 1999, and carries a reduced academic year teaching load of six hours a week during one semester and three hours a week during the other. Applicants are expected to show exceptional research promise, as well as clear evidence of achievement and should have research interests which intersect those of current faculty of the Department. The deadline for applications is February 1, 1999. Applicants should send a vita, list of publications, and a statement describing current and planned research. Candidates should also arrange to have at least three letters of recommendation sent to: **Duffin Appointments Committee, Department of Mathematical Sciences, Carnegie Mellon University, Pittsburgh, PA 15213**. Carnegie Mellon University is an Affirmative Action/ Equal Opportunity Employer.

CARNEGIE MELLON UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - Lecturer Track Positions - The Department of Mathematical Sciences at Carnegie Mellon University expects to make several lecturer track appointments for 1999-00. These are three-year appointments, with possible renewal, but are not eligible for indefinite tenure. Qualifications: doctorate, established success in education, familiarity with computer use in mathematics education. One of these positions will, in addition to having responsibility for undergraduate teaching, be to support the CMAP Program at Carnegie Mellon. Detailed descriptions of all of these positions may be found on our website: http://www.math.cmu.edu. The deadline for applications is February 1, 1999. To apply send a letter of application and vitae to: **Lecturer Track Appointments Committee, Department of Mathematical Sciences, Carnegie Mellon University, Pittsburgh, PA 15213**. Letters of reference may be requested. Carnegie Mellon University is an Affirmative Action/Equal Opportunity Employer.

CARNEGIE MELLON UNIVERSITY - DEPARTMENT OF MATHEMATICS - Center for Nonlinear Analysis - The Center for Nonlinear Analysis expects to make several Post-Doctoral appointments for 1999-00 in the area of applied analysis. These will be two-year joint appointment by the Center and Department of Mathematical Sciences. Recipients will teach at most two courses per year. Applicants should send a vita, list of publications, a statement describing current and planned research, and arrange to have at least three letters of recommendations sent to the committee. The deadline for applications is January 18, 1999. All communications should be addressed to: **Post-Doctoral Appointments Committee, Department of Mathematical Sciences, Carnegie Mellon University, Pittsburgh, PA 15213**. Carnegie Mellon University is an Affirmative Action/Equal Opportunity Employer.

DAVIDSON COLLEGE - DEPARTMENT OF MATHEMATICS - Applications are invited for a regular appointment in the Mathematics Department, with an initial two-year appointment at the Assistant Professor level to begin August 1, 1999. Completion or imminent completion of the Ph.D. is required. Candidates must be committed to outstanding teaching and continuing scholarly activity. The teaching load is 5 semester courses per year. Some computer science background is desirable. A completed application consists of a statement of professional aspirations and goals, resume, (unofficial) graduate and undergraduate transcripts, and 3 letters of reference, of which at least one must specifically address the applicant's teaching. These materials should be sent to: **Professor Stephen Davis, Chair, Department of Mathematics, P.O. Box 1719, Davidson College, Davidson, NC 28036-1719**. (Email: stdavis@davidson.edu; see also the "Information for Applicants for Faculty Position" link at http://www.davidson.edu/academic/math/math.html.) Applications received by November 23, 1998, will receive first consideration. Davidson is a highly selective, nationally ranked four-year liberal arts college with a Presbyterian heritage. Davidson College is an Equal Opportunity Employer; women and minorities are encouraged to apply.

GRAND VALLEY STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Grand Valley State University, an institution committed to teaching excellence, solicits applications for a tenure-track assistant professorship to begin August 1999. Responsibilities include teaching mathematics courses at all levels, maintaining an active program of professional development, advising students, and engaging in departmental service. The successful candidate will have a Ph.D. in Mathematics, or related field; demonstrated excellence in teaching undergraduate mathematics; strong teaching recommendations; commitment to continued scholarly and professional growth; demonstrated scholarly interest in an area of mathematics amenable to undergraduate research; and a demonstrated interest in teaching calculus, and one of precalculus mathematics or elementary mathematics education. A complete application must include: **(i)** a cover letter; **(ii)** a vita; **(iii)** a copy of graduate transcripts; **(iv)** at least three letters of ,recommendation, with at least two attesting to the applicant's teaching ability and potential; **(v)** a personal statement that addresses the applicant's qualifications for the position; and **(vi)** a personal statement that addresses the applicant's teaching philosophy and methodology. Send these materials to: **Mathematics Search Committee, Department of Mathematics & Statistics, Grand Valley State University, Allendale, MI 49401-9403**. Completed applications must be received by December 4, 1998. For more information, see our Department Web Site: www.gvsu.edu/mathstat.

INSTITUTE FOR ADVANCED STUDY - SCHOOL OF MATHEMATICS - The School of Mathematics will grant a limited number of memberships, some with financial support for research in mathematics at the Institute during the 1999-2000 academic year. Candidates must have given evidence of ability in research comparable at least with that expected for the Ph.D. degree. During the 1999-2000 year, Henryk Iwaniec will be the Distinguished Visiting Professor, and there will be a special program on analytic theory of automorphic forms and L-functions. The INSTITUTE and the DEPARTMENT OF MATHEMATICS at PRINCETON UNIVERSITY have recently established the Veblen Research Instructorship. Commencing with the 1998-99 academic year, three-year instructorships in pure and applied mathematics will be offered each year to candidates who have received their Ph.D. within the last three years. The first and third year of the instructorship will be spent at Princeton University and will carry regular teaching responsibilities. The second year will be spent at the Institute and dedicated to independent research of the instructor's choice. Application materials for both the IAS MEMBERSHIP and the VEBLEN RESEARCH INSTRUCTORSHIP may be requested from: **Applications, School of Mathematics, Institute for Advanced Study, Olden Lane, Princeton, NJ 08540,** (609) 734-8112, email address: applications@math.ias.edu. Forms may also be downloaded but not submitted via a web connection to: http://www/math.ias.edu. Both application deadlines are December 1, 1998.

ADVERTISING DEADLINE for the November/December 1998 issue is: OCTOBER 1, 1998

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INSTITUTE FOR MATHEMATICS AND ITS APPLICATIONS - UNIVERSITY OF MINNESOTA - IMA announces a program on **Reactive Flow and Transport Phenomena (1999-2000)** - ORGANIZING COMMITTEE: John Chadam, Ash Kapila (Chair), David Levermore, Christian Ringhofer. A ONE-YEAR PROGRAM WITH THREE PARTS: (1) **Fall:** September - December 1999, **Combustion.** (2) **Winter:** January - March 2000, **Natural Resources and Environment.** (3) **Spring:** April - June 2000, **Multiscale and Transition Regimes.** TWO-YEAR POSTDOCTORAL MEMBERSHIPS: The second year of the appointment will provide a variety of options to enhance career development, including participation in the ANNUAL PROGRAM: 2000-2001 **Mathematics in Multi-Media.** All requirements for a doctorate should be completed by September 1, 1999. Applicants must show evidence of mathematical excellence, but they do not need to be specialists in the field. The following materials must be submitted (all materials should arrive by January 15, 1999): **(1)** Personal statement of scientific interests, research plans, and reasons for wishing to participate in the **Reactive Flow and Transport Phenomena** program. **(2)** Curriculum vitae and a list of publications. **(3)** Three letters of recommendation to be sent directly to the IMA. SENIOR MEMBERSHIPS: Preference will be given to supplementary support for persons with sabbatical leaves, fellowships, or other stipends. POSTDOCTORATES IN INDUSTRIAL MATHEMATICS: IMA announces two-year positions in Industrial Mathematics, effective September 1, 1999. These appointments are in addition to the regular program and are funded jointly by the NSF and participating industries. They are designed to prepare mathematicians for research careers involving industrial interaction. Applicants should have fulfilled all requirements for a Ph.D. in Mathematics, applied Mathematics or Statistics by September 1, 1999. Postdoctorates will spend 50% effort working with industrial scientists and 50% effort in the regular IMA program. **Requirements and application procedures are the same as for the postdoctoral memberships listed above.** The University of Minnesota is an equal opportunity educator and employer. The application forms are available via staff@ima.umn.edu, gopher.ima.edu, http://www.ima.umn.edu or call (612) 624-6066. All correspondence should be sent to either POSTDOC/VISITING MEMBERSHIP COMMITTEE or INDUSTRIAL MATHEMATICS POSDOCTORATE MEMBERSHIP COMMITTEE, **Institute for Mathematics and its Applications, University of Minnesota, 514 Vincent Hall, 206 Church St. S.E., Minneapolis, MN 55455-0436.**

JOHNS HOPKINS UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for an Assistant Professor in the general areas of algebra, analysis, geometry, number theory and topology. Applications should be sent to: **Appointments Committee, Department of Mathematics, Johns Hopkins University, 404 Krieger Hall, Baltimore, MD 21218-2689** and should include a complete curriculum vitae, at least four letters of recommendation (including a letter concerning teaching) and a description of current and planned research. Applications received by December 1, 1998 will be given priority. (Applications in probability, statistics, operations research, and numerical methods will not be considered; applicants in these areas should contact the Department of Mathematical Sciences in the School of Engineering.) The Johns Hopkins University is an Affirmative Action/Equal Opportunity Employer. Minority and women candidates are encouraged to apply.

MICHIGAN STATE UNIVERSITY - DEPARTMENT OF STATISTICS AND PROBABILITY - The Department of Statistics and Probability at Michigan State University has a tenure track Assistant Professorship available beginning August 16, 1999. The candidates should have a Ph.D. in the field of statistics and/or probability and a strong research and teaching potential. Please have a curriculum vitae and three reference letters sent to: **Search Committee, Department of Statistics & Probability, A415 Wells Hall, Michigan State University, East Lansing, MI 48824-1027**. Selection process will begin December 15, 1998 and continue until the position is filled. MSU is an Affirmative Action/Equal Opportunity Institution. Minorities and women are strongly encouraged to apply. http://stt.msu.edu

MICHIGAN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Postdoctoral Positions - Pending funding, several two-year positions will be available beginning Fall 1999, for new or recent Ph.D.'s. Applicants specializing in all mathematical research areas that match the current research areas of the Department will be considered. The teaching load is four semester courses per year and participation in the research activities of the department is expected. An applicant should send a vita as well as a brief statement of research interests, and arrange for at least four letters of recommendation to be sent, one of which must specifically comment on the applicant's ability to teach. Application via email is strongly encouraged. To receive an electronic application and information, send an email to: jobs@math.msu.edu with the message "send application-info". Application materials can also be mailed to: **The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027**. Application should be made as soon as possible since candidate screening will begin in November. Completed applications received by November 30, 1998 are assured of consideration. Women and minorities are strongly encouraged to apply. MSU is an Affirmative Action/Equal Opportunity Institution.

MICHIGAN STATE UNIVERSITY- DEPARTMENT OF MATHEMATICS - Tenure-Track Positions - The Department is seeking applicants for tenure track positions to begin in Fall 1999, pending approval. The positions are expected to be at the Assistant Professor level, but exceptional applicants for a higher rank may be considered. Excellence in research and teaching is essential, and two or more years beyond the Ph.D. is expected. While applicants from all mathematical research areas will be considered, preference will be given to those areas that align best with the current research areas of the Department. An applicant must submit a vita as well as a brief statement of research interests, and arrange for at least four letters of recommendation to be sent, one of which must specifically address the applicant's ability to teach. Application via email is strongly encouraged. To receive an electronic application and information, send an email to: jobs@math.msu.edu with the message "send application-info". Application materials can also be addressed to: **The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027**. Application should be made as soon as possible since candidate screening will begin in early November. Completed applications received by November 23, 1998 are assured of consideration. Women and minorities are strongly encouraged to apply. MSU is an Affirmative Action/Equal Opportunity Institution.

MICHIGAN STATE UNIVERSITY- DEPARTMENT OF MATHEMATICS - Tenure-Track Positions in Mathematics Education - The Department is seeking applicants with primary research interests in Mathematics Education for tenure track positions to begin in Fall 1999, pending approval. These positions may be at any rank (Assistant Professor, Associate Professor, or Professor), depending on the qualifications of the successful applicants. Applicants are expected to document either substantial research accomplishment or, in the case of relatively new doctorates, compelling evidence of the potential for doing excellent research. Experience in a variety of Mathematics Education activities is strongly preferred. An excellent teaching record is essential. An applicant is expected to have a doctorate in Mathematics Education, with academic training in Mathematics that includes the equivalent of a strong Masters degree in Mathematics. An applicant must submit a vita as well as a brief statement of research interests, and arrange for at least four letters of recommendation to be sent, one of which must specifically address the applicant's ability to teach. Application via email is strongly encouraged. To receive an electronic application and information, send an email to: jobs@math.msu.edu with the message "send application-info". Application materials can also be addressed to: **The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027**. Application should be made as soon as possible since candidate screening will begin in early November. Completed applications received by November 23, 1998 are assured of consideration. Women and minorities are strongly encouraged to apply. MSU is an Affirmative Action/Equal Opportunity Institution.

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MICHIGAN STATE UNIVERSITY- DEPARTMENT OF MATHEMATICS - Tenure-Track Positions in Applied Mathematics - The Department is seeking applicants with research accomplishments in Applied Mathematics for a tenure track position to begin in Fall 1999, pending approval. This position may be at any academic rank (Assistant Professor, Associate Professor, or Professor) depending on the qualifications of a successful applicant. While the research areas of Scientific Computation, Applied Combinatorics, Coding Theory, Applied and Numerical PDE, Optimization Theory, Applied Dynamics, Algorithm Theory, and Materials Science are preferred, other areas within what is understood to be applied Mathematics will be considered. Applicants should have a history of excellence in research in Applied Mathematics, preferably including some work in collaboration with engineering, the physical sciences, the biological sciences, or the biomedical sciences. A history of excellent teaching is required. A joint appointment with another unit, such as Engineering, might be arranged for the applicant for whom such a situation would be desirable. An applicant must submit a vita as well as a brief statement of research interests, and arrange for at least four letters of recommendation to be sent, one of which must specifically address the applicant's ability to teach. Application via email is strongly encouraged. To receive an electronic application and information, send an email to: jobs@math.msu.edu with the message "send application-info". Application materials can also be addressed to: **The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027**. Application should be made as soon as possible since candidate screening will begin in early November. Completed applications received by November 23, 1998 are assured of consideration. Women and minorities are strongly encouraged to apply. MSU is an Affirmative Action/Equal Opportunity Institution.

NORTHWESTERN UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for anticipated tenure-track or tenured positions starting September 1999. Priority will be given to exceptionally promising research mathematicians. Fields of interest within the department include Algebra, Algebraic Geometry, Analysis, Dynamical Systems, Probability, Partial Differential Equations and Topology. Application material should be sent to: **Chairperson, Personnel Committee, Department of Mathematics, Northwestern University, 2033 Sheridan Road, Evanston, IL 60208-2730**, and include: (1) the *American Mathematical Society's Application Cover Sheet for Academic Employment*, (2) a curriculum vitae, and (3) at least four letters of recommendation including one which discusses in some detail the candidate's teaching qualifications. Inquires may be sent via email to hiring@math.nwu.edu. Applications are welcome at any time, but the review process starts in November 1998. Northwestern University is an affirmative action, equal opportunity employer committed to fostering a diverse faculty; women and minority candidates are especially encouraged to apply.

NORTHWESTERN UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are solicited from people whose research is related to Probability for two Ralph Boas assistant professorships of three years each starting in September 1999. These positions are part of the Emphasis Year in Probability which the department will be sponsoring in 1999-2000. Application material should be sent to: **Emphasis Year Committee, Department of Mathematics, Northwestern University, 2033 Sheridan Road, Evanston, IL 60208-2730**, and include: (1) the *American Mathematical Society's Application Cover Sheet for Academic Employment*, (2) a curriculum vitae, and (3) three letters of recommendation including one which discusses in some detail the candidate's teaching qualifications. Inquiries may be sent via email to hiring@math.nwu.edu. In order to ensure full consideration, applications should be received by December 1, 1998. Northwestern University is an affirmative action, equal opportunity employer committed to fostering a diverse faculty; women and minority candidates are especially encouraged to apply.

OBERLIN COLLEGE - DEPARTMENT OF MATHEMATICS - Full-time, tenure-track position beginning the 1999-2000 academic year. Responsibilities include teaching undergraduate courses in statistics and mathematics (5/year), supervising honors students, and sustained scholarly production. Ph.D. degree in Statistics or Mathematics (in hand or expected by August 31, 1999) required. All research specialties in statistics and related fields considered. Candidates must demonstrate potential excellence in teaching. Send letter of application, *curriculum vitae*, academic transcripts (graduate and undergraduate), and 3 letters of reference to: **Jeffrey Witmer, Department of Mathematics, Oberlin College, Oberlin OH 44074** by November 15, 1998. Oberlin College admitted women since its founding in 1833 and has been historically a leader in the education of blacks. AA/EOE.

OHIO STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics of The Ohio State University expects to have available at least one tenure-track/tenured position and several visiting positions, effective Autumn Quarter 1999. Candidates in all areas of pure and applied mathematics are invited to apply. The Department will also have available several Hans J. Zassenhaus Assistant Professorships and Arnold Ross Assistant Professorships. These term positions are renewable annually up to a total of three years. Significant mathematical research accomplishments or exceptional promise, and evidence of excellent teaching ability are required. Please send a CV and have at least three letters of recommendation sent to: **Professor Peter March, Chair, Department of Mathematics, The Ohio State University, 231 W. 18th Avenue, Columbus, Ohio 43210**. The Ohio State University is an Equal Opportunity/Affirmative Action employer. Women and minority candidates are encouraged to apply.

PURDUE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Several tenure-track or two-year research assistant professorships beginning August 1999. Ph.D. by August 1999, exceptional research promise, and excellence in teaching required. Possible positions at the Associate Professor/Professor level beginning August 1999. Ph.D. and excellent research and teaching credentials required. Applicants should have research interests in common with Purdue faculty. Preference will be given to completed applications received by December 15, 1998. Send curriculum vitae and arrange to have three letters of recommendations (at least one letter should discuss teaching) sent to: **Carl Cowen, Head, Department of Mathematics, Purdue University, West Lafayette, IN 47907-1395**. Affirmative Action/Equal Opportunity Employer.

RUTGERS UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Rutgers University Mathematics Department invites applications for the following positions which may be open beginning September, 1999. **(1) Tenure-Track and Tenure Positions.** The Department anticipates a few openings, mainly tenure-track assistant professorships. Current priority areas include analysis and geometry. However, strong candidates in all fields are encouraged to apply and will be given careful consideration. Candidates must have Ph.D., outstanding research ability in pure or applied mathematics, and concern for teaching. Semester course load now averages 6 hours. **(2) Hill Assistant Professorship (non-tenure track).** The Hill Assistant Professorships are three-year non-renewable positions. Candidates should have received the Ph.D., show outstanding promise of research ability in pure or applied mathematics, and have concern for teaching. Semester course load is approximately 6 or 7 hours. Applicants should send resume, with the *AMS Application Cover Sheet* attached, and have at least three letters of recommendation sent to: **Search Committee, Department of Mathematics-Hill Center, Rutgers University, 110 Frelinghuysen Road, Piscataway, NJ 08854-8019.** No electronic applications will be accepted. Applications should be received by January 5, 1999. Please indicate position(s) desired and give the AMS Subject Classification number of your area(s) of specialization. Applicants who applied in 1997-98 may, if you wish, request to have your previous application reactivated and submit only such new materials as you choose. Rutgers is an Affirmative Action/Equal Opportunity Employer and encourages applications from women and minority-group members.

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STATE UNIVERSITY OF NEW YORK AT BUFFALO - DEPARTMENT OF MATHEMATICS - The Department of Mathematics anticipates the appointment of a tenure-track assistant professor beginning September 1, 1999. The salary will be competitive. We seek applicants in Applied Mathematics who have excellent research accomplishments/potential and a strong commitment to teaching. Applicants should send supporting information, including a c.v. with a list of research interests, and have four letters of recommendation sent to: **Search Committee Chairman, Department of Mathematics, University at Buffalo, SUNY, Diefendorf Hall, Room 106, 3435 Main Street, Bldg. 20, Buffalo, New York 14214-3093**. No electronic applications will be accepted. The deadline for applications is **November 1, 1998.** Late applications will be considered until positions are filled. University at Buffalo, SUNY is an Equal Opportunity/Affirmative Action Employer. We are interested in identifying prospective minority and women candidates. No person, in whatever relationship with the University at Buffalo, State University of New York shall be subject to discrimination on the basis of age, creed, color, handicap, national origin, race, religion, sex, marital or veteran status.

UNIVERSITY OF ARIZONA - DEPARTMENT OF MATHEMATICS - The Mathematics Department at The University of Arizona may have tenure-track and postdoctoral positions, including the Richard Pierce Visiting Professorship, subject to availability of funding beginning fall 1999. ***Tenure track positions.*** Ph.D. and excellent research record or potential, and strong commitment to teaching required. Fields should complement but not duplicate existing department research strengths in algebraic and differential geometry, computational and computer science, dynamical systems, mathematical physics, mathematics education, probability and statistics, nonlinear science and number theory. ***Postdoctoral Fellowships*** (Research Associates). Applicants with strengths in all areas compatible with department interests are encouraged to respond. In addition, special Center of Excellence Awards in nonlinear optics and fluid mechanics may be available. The Mathematics Department may also have several ***visiting positions*** for next year. Ph.D. required. Application review begins **November 1, 1998,** with applications accepted until **December 15, 1998,** or as long as positions remain unfilled. Send *AMS coversheet,* a letter of interest (Please cite job # 12796 for tenure-track and visiting positions, job # 12798 for postdoctoral positions, or both), curriculum vitae with a list of publications, and a minimum of three (3) letters of recommendation (enclose or arrange to be sent), to: **Personnel Committee, Department of Mathematics, The University of Arizona, 617 N. Santa Rita, Tucson, Arizona 85721-0089**. The *AMS coversheet form* can be downloaded from http://www.ams.org/employment/coversheet-info.html. The University of Arizona is an EEO/AA Employer. M/W/D/V

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, 1999. 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, Department of Mathematics, University of California at Berkeley, Berkeley, CA 94720**. 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, and then Faculty Positions at Berkeley). 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. We should receive this material no later than December 1, 1998. 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 1999 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, Department of Mathematics, University of California at Berkeley, Berkeley, CA 94720**. 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, and then Faculty Positions at Berkeley). 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. We should receive this material no later than December 1, 1998. The University of California is an Equal Opportunity, Affirmative Action Employer.

UNIVERSITY OF CALIFORNIA AT BERKELEY - DEPARTMENT OF MATHEMATICS - Tenured Track and Tenured Positions - Pending budget approval, we invite applications for one or more positions effective July 1, 1999 at either the tenure-track (Assistant Professor) or tenured (Associate or Full Professor) level, in the general areas of pure or applied mathematics. **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, Department of Mathematics, University of California at Berkeley, Berkeley, CA 94720**. 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, and then Faculty Positions at Berkeley). **Tenure** applicants are expected to demonstrate leadership in research and should send a 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.** The applicant should indicate whether they are applying for an Associate Professor or a Full Professor position. The department will assume responsibility to solicit letters of evaluation and will provide evaluators with a copy of the summary of policies on confidentiality of letters of evaluation. 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. We should receive material for both Tenure track and Tenure applications no later than November 15, 1998. Applications postmarked after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

UNIVERSITY OF CALIFORNIA AT DAVIS - DEPARTMENT OF MATHEMATICS - Regular Faculty Position in Mathematics - The UC Davis Department of Mathematics invites applications for four positions at either the Assistant (tenure track) or Associate Professor (tenured) level in the following areas: (1) Analysis/Partial Differential Equations, (2) Geometry/Topology, and (3) Applied Mathematics, effective July 1, 1999. Appointment will be made commensurate with qualifications. Minimum qualifications include a Ph.D. degree in mathematical sciences and great promise in research and teaching. Duties include mathematical research, undergraduate and graduate teaching (4.0 quarter courses per year), and service. Candidates for the Associate Professor position must have demonstrated outstanding attainment in research and teaching. The application deadline is October 15, 1998 or until positions are filled. To initiate the application process, request an application package by writing an email message to forms@math.ucdavis.edu or by writing to: **Chair of Search Committee, Department of Mathematics, University of California, Davis, California, 95616-8633**. The University of California, Davis, is an affirmative action/equal opportunity employer with a strong institutional commitment to the achievement of diversity among its faculty and staff. For more information regarding the position or institution: http://math.ucdavis.edu.

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UNIVERSITY OF COLORADO AT BOULDER - DEPARTMENT OF MATHEMATICS - Applications are invited for a tenure track faculty position at the Assistant Professor level beginning in the fall of 1999 in Algebraic Geometry. Candidates should have earned a Ph.D. in Mathematics by August 1999, have demonstrated interest and ability in teaching, and have experience in and commitment to mathematical research. This position requires teaching at various levels, mathematical research, and service. The ideal candidate will have a strong research emphasis in Algebra. Applications, including a resume and four letters of reference, should be sent to: **Search Committee, Dept. of Mathematics, Campus Box 395, University of Colorado, Boulder, CO 80309-0395.** Reviewing of applications will begin December 15, 1998, and will continue until the position is filled. The University of Colorado is committed to diversity and equality in education and employment.

UNIVERSITY OF GEORGIA - DEPARTMENT OF MATHEMATICS - Assistant Professor Positions - Applications are invited for two tenure-track positions at the rank of assistant professor, to begin in August 1999. Candidates should have a Ph.D. in mathematics or applied mathematics and should exhibit outstanding research potential as well as a commitment to excellence in teaching. The area of priority for one of these positions is harmonic analysis. This area is broadly defined to include the following research areas: classical harmonic analysis, analysis on Lie groups, analysis of partial differential equations, and the theory of wavelets. Applications from all areas of pure and applied mathematics will be considered for the second position. Applicants should send a completed *AMS Standard Cover Sheet*, a curriculum vitae and a brief statement about their current and future research plans to: **Dr. Kevin Clancey, Head, Department of Mathematics, University of Georgia, Athens, GA 30602**. They should also arrange to have three letters of recommendation concerning research and one concerning teaching sent directly to the above address. Review of applications will begin December 1, 1998; applications received by this date are assured of consideration. The University of Georgia is an Affirmative Action/Equal Opportunity Employer which is committed to increasing the diversity of its faculty. We especially encourage applications from women, minorities and underrepresented groups.

UNIVERSITY OF GEORGIA - DEPARTMENT OF MATHEMATICS - Postdoctoral Position - Description: One 2 year postdoctoral position in Number Theory with the title part-time instructor postdoctoral associate, offered by the Department of Mathematics beginning in the 1999-2000 academic year. The department especially encourages applications from women and minorities. Duties consist of teaching 3 courses per year and conducting original research. Applicants are suggested to identify a member of the current faculty with whom they would like to work. Eligibility: Applicants must exhibit potential for significant research and the skills necessary to be an excellent teacher. Deadline: Review of applications will begin on December 1, 1998 and continue until the position is filled. Application information: To apply, send a vita with a list of publications and four letters of recommendation to: **Kevin Clancey, Head, Department of Mathematics, University of Georgia, Athens, GA 30602**. The University of Georgia is an Equal Opportunity/Affirmative Action Employer.

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN - DEPARTMENT OF MATHEMATICS - Postdoctoral Positions - J.L. Doob Research Assistant Professor - The Department of Mathematics of the University of Illinois at Urbana-Champaign is soliciting applications for postdoctoral positions. Two appointments will be made starting August 21, 1999; each appointment is for 3 years and is not renewable. These positions are for recent Ph.D. recipients (with a strong preference for those not more than one year past the Ph.D. degree). The Department of Mathematics will provide an excellent scientific environment to pursue research in pure and applied mathematics. The position carries a salary of $40,000 per year. Applicants should send a letter of application, a curriculum vitae and publication list, and arrange to have three letters of reference sent directly to the address below. It is the responsibility of the applicants to make sure that letters of recommendation are sent. Send to: **Postdoctoral Search Committee, Department of Mathematics, University of Illinois at Urbana-Champaign, 1409 West Green Street, Urbana, IL 61801-2975.** email: postdocs@math.uiuc.edu. To insure full consideration, all materials, including letters of reference, should be received by December 1, 1998. We will review later applications, until the search is closed. We encourage use of the application *cover sheet* provided by the American Mathematical Society and the indication of the subject area using the AMS subject classification numbers. Applications from women and minority candidates are especially encouraged. The University of Illinois is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN - DEPARTMENT OF MATHEMATICS - Tenured Position - Applications are invited for one or more full time tenured faculty positions to commence August 21, 1999. Those faculty will be expected to pursue an outstanding research program, and teach graduate students as well as undergraduate students. The department will consider applicants in all fields of mathematics, but we intend to show preference in applied mathematics, partial differential equations and global analysis, number theory, algebraic geometry, combinatorics, computational mathematics, and probability theory. Salary and teaching load are competitive. Applicants are expected to have a Ph.D. and a documented record of leadership in research as well as of excellence in teaching. Applicants should send a curriculum vitae, a list of publications, a few selected reprints or preprints, and the names and addresses of three references to the address below. The department will solicit letters for the finalists for the tenured positions. Send to: **Philippe Tondeur, Chair, Department of Mathematics, University of Illinois at Urbana-Champaign, 1409 West Green Street, Urbana, IL 61801.** Tel (217) 333-3352, email tenure@math.uiuc.edu. We anticipate an on-going search but will begin considering applications and conducting interviews on October 5, 1998. We encourage use of the application *cover sheet* provided by the American Mathematical Society and the indication of the subject area using the AMS subject classification numbers. Applications from women and minority candidates are especially encouraged. The University of Illinois is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN - DEPARTMENT OF MATHEMATICS - Tenure-Track Position - Applications are invited for one or more full time faculty positions to commence August 21, 1999, at the tenure-track (assistant Professor) level. Those faculty will be expected to pursue a vigorous research program, and teach graduate as well as undergraduate students. The department will consider applicants in all fields of mathematics, but we intend to show preference in applied mathematics, partial differential equations and global analysis, number theory, algebraic geometry, combinatorics, computational mathematics, and probability theory. Salary and teaching load are competitive. Applicants should have completed the Ph.D. (or equivalent) by the time the appointment begins and are expected to present evidence of excellence in research and teaching. Applicants should send a letter of applications, a curriculum vitae and publication list, and also arrange to have three letters of reference sent directly to the address below. It is the responsibility of the tenure-track applicants to make sure that letters of recommendation are sent. Send to: **Philippe Tondeur, Chair, Department of Mathematics, University of Illinois at Urbana-Champaign, 1409 West Green Street, Urbana, IL 61801.** email: search@math.uiuc.edu. For fullest consideration, all materials, including letters of reference, should be received by December 1, 1998; however, applications will be accepted, and interviews conducted, until the positions are filled. We encourage use of the application *cover sheet* provided by the American Mathematical Society. Applications from women and minority candidates are especially encouraged. The University of Illinois is an AA/EO Employer.

UNIVERSITY OF MARYLAND AT COLLEGE PARK - DEPARTMENT OF MATHEMATICS - Applications are invited for tenured and tenure-track positions in the Department of Mathematics. Strong preference will be given to applicants whose primary interest is in one of the following categories: (1) Algebra, number theory and algebraic geometry; (2) Applied and computational harmonic analysis; (3) Probability and statistics, with an emphasis on applications, including applications to financial mathematics. Candidates at all levels will be considered. Priority will be given to applications received by November 1, 1998. Appointments will commence in Fall 1999. The University of Maryland is an Equal Opportunity and Affirmative Action employer that strongly encourages applications from female and minority candidates. Please send a curriculum vitae and *AMS Standard Cover Sheet*, and arrange for three letters of recommendation to be sent to: **The Hiring Committee, Department of Mathematics, University of Maryland, College Park, Maryland 20742**.

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UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - Dunham Jackson Assistant Professor - This is a three-year appointment from Fall 1999 to Spring 2002 with a teaching load of 3 one-semester courses per academic year. Outstanding research and teaching abilities required. Preference will be given to applicants whose research interests are compatible with those of the School. Applicants should have received a Ph.D. or equivalent degree in mathematics no earlier than January 1, 1998, and no later than August 30, 1999. Summer School teaching may be available during the summer of 2000 and 2001 to supplement regular stipend. Salary competitive. Consideration of applications will begin December 1, 1998 and continue until available positions are filled. Send letter of application, current curriculum vitae, minimum 4 letters of recommendation, one of which should address teaching ability, and description of research to: **Naresh Jain, Head, School of Mathematics, University of Minnesota, 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - Post-doctoral Associate - Depending on availability of funds, positions may be available to conduct grant supported research in all areas of mathematics. Starting dates and duration of appointments may vary. Applications will remain active for twelve months. Next round of evaluations will begin December 1, 1998. Ph.D. by beginning date of appointment required. Submit letter of application, current curriculum vitae, description of research, and list of references to: **Naresh Jain, Head, School of Mathematics, University of Minnesota, 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - Tenure or Tenure Track Positions - Starting Fall 1999. The School of Mathematics may have available one or more tenure track Assistant Professor or tenured Associate or Full Professor positions starting Fall 1999. Ph.D. or equivalent degree in mathematics by the beginning date of appointment, outstanding re search and teaching abilities are required. Applications at all levels are invited; preference will be given to candidates whose research interests are compatible with those of the School. Consideration of applications will begin November 1, 1998 and will continue until available positions are filled. Salary competitive. Send letter of application, current curriculum vitae, minimum 4 letters of recommendation, one of which should address teaching ability, and description of research to: **Naresh Jain, Head, School of Mathematics, University of Minnesota, 127 Vincent Hall, 206 Church Street S.E., Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - Temporary or Visiting Positions - at all levels from Assistant to Full Professor may be available for terms ranging from one semester to three years beginning September 1999. Ph.D. or equivalent degree in mathematics by beginning date of appointment, strong research and teaching abilities are required. Preference will be given to applicants whose research interests are compatible with those of the School. Salary competitive. Consideration of applications will begin December 1, 1998 and continue until available positions are filled. Send letter of application, current curriculum vitae, minimum 4 letters of recommendation, one of which should address teaching ability, and description of research to: **Naresh Jain, Head, School of Mathematics, University of Minnesota , 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL - DEPARTMENT OF MATHEMATICS - Senior Level Position - Applications are invited for a faculty appointment in applied mathematics at the senior level, effective January 1, 1999. The successful candidate will assume the duties of the Associate Chair of Applied Mathematics, with leadership responsibility for the group currently consisting of 4 tenured/tenure-track faculty and 2 research assistant professors. The other duties consist of coordinating the applied mathematics course offerings in the graduate program, the applied mathematics seminar, supervising a full- time systems programmer and administrative assistant, recruitment, and oversight of the program resources. The term as Associate Chair is 3 years, after which the successful candidate will assume regular faculty duties in the Department of Mathematics. Rank and salary depend on qualifications and budget considerations. Ph.D. in mathematics or closely related field and exceptionally strong research record and commitment to excellent teaching required. Persons with established expertise in scientific computation and physical applied mathematics will be given highest priority in the search. Evidence of extramural funding, either from federal agencies or industry, is expected. Some experience with administration is desirable, though not necessary. A copy of this ad may be found on our World Wide Web page at http://www.math.unc.edu/General/Job.announcements. Send curriculum vitae, abstract of current research program, and four letters of recommendation to: **Applied Search Committee, Senior Position, Mathematics Department, CB #3250 Phillips Hall, UNC at Chapel Hill, Chapel Hill, NC 27599-3250.** EO/AA Employer. Women and Minorities are encouraged to identify themselves voluntarily. Applications will be accepted until the position is filled.

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL - DEPARTMENT OF MATHEMATICS - Tenure-Track Position in Mathematics - Applications are invited for one tenure-track assistant or associate professor position in applied mathematics, with employment to begin Fall 1999. Preference will be given to an exceptional candidate in applied scientific computation. A strong research record and doctorate in mathematics, applied mathematics or a closely related field are required. Preference is given to candidates with a commitment to interdisciplinary university research, collaborations with industry or government, and teaching including development of applied math curricula at undergraduate and graduate levels. This position contributes toward an aggressive plan to build a strong applied and computational mathematics group interacting with existing strengths at UNC in mathematics and its applications in materials, marine, biomedical, life, environmental, and the computational sciences. A copy of this ad may be found on our World Wide Web page at http://www.math.unc.edu/General/Job.announcements, and further information about the Applied Mathematics Program may be found at the website http://www.math.unc.edu/Applied. Send curriculum vitae, abstract of current research and four letters of recommendation to: **Applied Search Committee, Tenure Track Position, Department of Mathematics, CB #3250, Phillips Hall, UNC-Chapel Hill, Chapel Hill, NC 27599-3250.** EO/AA Employer. Women and Minorities are encouraged to apply and to identify themselves. Applicants are encouraged to submit a concise statement of current research plans and teaching interests. Completed applications received by December 1, 1998 are assured of full consideration.

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL - DEPARTMENT OF MATHEMATICS - Research Assistant Professor Position(s) - Applications are invited for one, possibly two, term 3-year research assistant professor positions in applied mathematics. The successful candidate(s) will begin duties effective Fall 1999. A strong thesis and research promise, and a doctorate in mathematics, applied mathematics or closely related field are strongly preferred. Preference is given to candidates whose area of specialization is complementary to that of the existing faculty in applied mathematics, or in areas of applied science which have direct ties to applied and computational mathematics, e.g., materials science, environmental sciences, biomedical sciences. atmospheric or geophysical science. Computational science and/or physical modeling are two areas of high priority. These positions are term appointments, with a maximum teaching load of three courses per year. A copy of this ad may be found on our website at http://www.math.unc.edu/General/Job.announcements. Further information about the Applied Mathematics Groups may be found at the math website http://www.math.unc.edu. Send curriculum vitae, abstract of current research and four letters of recommendation to: **Applied Search Committee, Research Assistant Professor Position, Department of Mathematics, CB #3250 Phillips Hall, UNC-Chapel Hill, Chapel Hill, NC 27599-3250.** EO/AA Employer. Women and minorities are encouraged to apply and to identify themselves. Completed applications received by December 1, 1998 are assured of full consideration.

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ADVERTISEMENTS

UNIVERSITY OF PITTSBURGH - DEPARTMENT OF MATHEMATICS - The department invites applications for two tenure-track positions, one each in Analysis and in Applied Mathematics, to begin Fall 1999. The appointments will be at the starting Assistant Professor level, but experienced candidates with outstanding records will be considered for higher level appointments. We seek excellence in teaching and research so applicants should demonstrate substantial research accomplishment and a dedication to teaching. We particularly encourage applications from minorities and women. The University of Pittsburgh is an affirmative action/equal opportunity employer. All appointments at the University of Pittsburgh are subject to budgetary approval. Send a vita, three letters of recommendation, and a research statement by December 11, 1998 to: **Hiring Committee, Department of Mathematics, University of Pittsburgh, Pittsburgh, PA 15260.**

UNIVERSITY OF WISCONSIN, LA CROSSE - DEPARTMENT OF MATHEMATICS - Two Assistant Professor (tenure track) positions in statistics - Appointment at Associate Professor level possible depending on qualifications and experience. Responsibilities: Teach both introductory and advanced statistics courses (average 12 hours per semester); contribute to the further development of the department's statistics program; direct student research; maintain a productive program of research in statistics. Qualifications: Ph.D. in statistics; evidence of successful college/university teaching; experience (or demonstrated potential) in directing undergraduate/graduate students on research projects and internships; background in applied statistics/biostatistics desirable. Salary is competitive and the start date is August 1999. Submit a letter of application, curriculum vitae, undergraduate and graduate transcripts and three letters of recommendation to: **Bruce Riley, Mathematics Department, University of Wisconsin-La Crosse, La Crosse, WI 54601**. Applications must be received by December 18, 1998. AA/EOE.

UNIVERSITY OF WISCONSIN, MADISON - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for one or more positions to begin August 23, 1999, at either the assistant professor (tenure-track) or associate professor (tenured) level. Applications are invited in all areas of mathematics. Among the Department's priorities are partial differential equations, and real and harmonic analysis. Candidates should exhibit evidence of outstanding research potential, normally including significant contributions beyond the doctoral dissertation. A strong commitment to excellence in instruction is also expected. Additional departmental information is available on our WWW site, http://www.math.wisc.edu. Applicants should send a completed *AMS standard cover sheet*, a curriculum vita which includes a publication list, and brief descriptions of research and teaching to: **Hiring Committee, Department of Mathematics, Van Vleck Hall, University of Wisconsin-Madison, 480 Lincoln Drive, Madison, WI 53706-1388**. Applicants should also arrange to have sent to the above address, three to four letters of recommendation, at least one of which addresses the applicant's teaching experiences and capabilities. Completed applications received by November 15, 1998 will be assured full consideration. Additional letters will be solicited by the Department for candidates who are finalists for a tenured position. The University of Wisconsin is an Affirmative Action, Equal Opportunity Employer and encourages applications from women and minorities. Unless confidentiality is requested in writing, information regarding the applicants must be released upon request. Finalists cannot be guaranteed confidentiality.

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL - DEPARTMENT OF PREVENTIVE MEDICINE AND BIOSTATISTICS - The Departments of Preventive Medicine and Biostatistics, University of Wisconsin Medical School are seeking to fill a joint tenure track position at the assistant professor level for a Biostatistician with interest and experience in the design and analysis of observational studies. Teaching responsibilities: teaching a course in the statistics core sequence and advising students in an M.S./Ph.D. program in Population Health with tracks in both epidemiology and health services research and some participation in the training of biostatistics graduate students. Research will involve both independent statistical methodologic investigation and collaboration with other investigators in epidemiological and health services research. Submit CV and letter describing research and teaching interests to: **Mari Palta, Ph.D., Chair, Department of Preventive Medicine, University of Wisconsin-Madison, 504 N. Walnut Street, Madison, WI 53705-2368.** UW-Madison is an EEO/AA employer. Unless confidentiality is requested in writing, information regarding the applicants must be released upon request. Finalists cannot be guaranteed confidentiality.

WAYNE STATE UNIVERSITY - DEPARTMENT OF COMPUTER SCIENCE - The Department of Computer Science anticipates several tenure-track faculty positions at the assistant/associate professor level. The candidate's education should be in the areas of networking, operating systems, distributed computing and data management. Candidates should have a Ph.D. in computer science, engineering or a closely related field, a strong interest in and commitment to both research and teaching, a publication record in their area and show potential for obtaining external research funding. Applications from minority and women candidates are especially encouraged. Applicants should send a letter of intent, a statement of research and teaching interests, a resume and the names of at least three references including the reference's address, email, telephone and fax number. Please send this information to: **Dr. William I. Grosky, Chair, Wayne State University, Computer Science, 431 State Hall, Detroit, MI 48202,** 313-577-6868 (fax), grosky@cs.wayne.edu (email). For full consideration, applications should be submitted by November 20, 1998. However, applications will be accepted until the positions are filled. Wayne State University is an equal opportunity/affirmative action employer. Wayne State University, People working together to provide quality service. All buildings, structures and vehicles at WSU are smoke-free.

WAYNE STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for two tenure-track positions at the rank of Assistant/Associate Professor in any area of specialization. Applications from female and minority candidates are particularly encouraged. There is also the possibility of visiting positions for 1999-2000 in any area of mathematics. Ph.D. in mathematics and a strong interest in research and teaching are required for all positions. Applications should include a signed, detailed vita, description of current research interests, and four letters of recommendation, including one addressing teaching. Solid evidence of excellence in teaching at the undergraduate level is preferred over a statement of teaching philosophy. Applications should be sent to: **William S. Cohn, Chair, Department of Mathematics, Wayne State University, Detroit, MI 48202**. Applications received by January 1, 1999 will be given priority. Wayne State University is an equal opportunity/affirmative action employer. Wayne State University - People working together to provide quality service. All buildings, structures and vehicles at WSU are smoke-free.

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS - Anticipated tenure-eligible position in statistics, beginning Fall, 1999, probably at the rank of assistant professor. In exceptional cases, however, more advanced appointments may be considered. Excellence in teaching and statistics, including scholarship and consulting, and Ph.D. required. Applicants with emphasis in operations research will also be considered. Please have a vita and three letters of recommendation on teaching and research sent to: **Hiring Committee, Department of Mathematics, Williams College, Williamstown, Massachusetts 01267**. Evaluation of applications will begin November 15, 1998 and continue until the position is filled. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

YALE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications accepted for Gibbs Instructorships/Assistant Professorships for Ph.D.'s with outstanding promise in research. 2-yr. appointments starting July 1999. Applications and supporting material must be received by January 1, 1999. Offers will be made during February. Salary at least $44,200. Request applications from: **Teresa Bowen, Administrative Assistant, Gibbs Committee, Department of Mathematics, P.O. Box 208283, New Haven, CT 06520-8283.** Email Address: tmb3@pantheon.yale.edu. Yale is an Affirmative Action/Equal Opportunity Employer.

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ASSOCIATION FOR WOMEN IN MATHEMATICS

1998/1999 MEMBERSHIP FORM

AWM's membership year is from October 1st to September 30th. Please fill-in this information and return it along with your DUES to:

AWM Membership
4114 Computer & Space Sciences Building
University of Maryland
College Park, MD 20742-2461

The AWM Newsletter is published six times a year and is part of your membership. Questions? (301) 405-7892, or awm@math.umd.edu

LAST NAME **FIRST NAME** **M.I.**

ADDRESS_____

Home Phone:_____ **Work Phone:**_____ **Email:**_____

Please include this information in: (1) the next **AWM Speaker's Bureau** (Yes/No) _____ (2) the next **AWM Membership Directory** (Yes/No) _____

PROFESSIONAL INFORMATION: If student, GRADUATE or UNDERGRADUATE? (circle one)

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Institution/Company:
City, State, Zip:

DEGREES EARNED:

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Doctorate:			
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INDIVIDUAL DUES SCHEDULE

Please check the appropriate membership category below. Make checks or money order payable to: **Association for Women in Mathematics**.
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INSTITUTIONAL MEMBERS WILL RECEIVE ONE FREE JOB ADVERTISEMENTS **(up to four lines)** IN OUR NEWSLETTER PER YEAR. Advertising deadlines are the 1st of every EVEN month. All institutions advertising in the AWM Newsletter are Affirmative Action/Equal Opportunity Employers. Also, Institutions have the option to nominate students to receive the newsletter as part of their membership. NOTE: List names and addresses of student nominees on opposite side or attach separate page. [ADD $15 ($23 for foreign members) foreign members) for each additional student add-on over initial 10 students for Category I; over initial 3 students for Category II]

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AWM

Newsletter Volume 28, Number 5, September–October 1998

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