

# AWM

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## ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 28, Number 3

NEWSLETTER

May-June 1998

### PRESIDENT'S REPORT

Dear Friends,

Many AWM events, plans and projects are underway.

In Toronto, we will hold a workshop July 12-14 in conjunction with the SIAM meetings at the University of Toronto and will also participate in the MAA Mathfest at Ryerson University July 15-17. Thanks to SIAM and MAA for allowing us to participate.

The workshop at SIAM, again organized by Suzanne Lenhart of the University of Tennessee, will feature a "Career Experiences" minisymposium, three research minisymposia with talks by recent Ph.D.'s, and poster presentations by graduate students. An opening dinner and "get acquainted" session will open the workshop, and an informal lunch with the poster session will close it.

The Mathfest will feature an invited AWM/MAA address by Margaret Wright of Bell Labs (introduced by Suzanne Lenhart) at 2:50 P.M., Thursday, July 16. AWM President-Elect Jean Taylor of Rutgers will give the series of three MAA Hedrick Lectures on "Geometric Variational Problems." Asia Ivic Weiss of York University is the local organizer for AWM Mathfest activities. AWM and MAA will cooperate in giving a reception on Thursday evening, July 16 at 9 P.M. (after the SIAM barbecue). We extend a warm welcome to these activities to all Canadian supporters of women in mathematics.

We invite all registrants for the International Congress of Mathematicians (ICM) in Berlin (August 18-27) to the special programs highlighting women. Bhama Srinivasan (chair; Chicago, USA), Bettye Anne Case (Tallahassee, USA), and Christine Bessenrodt (Magdeburg, Germany), who represent AWM, the European Women in Mathematics (EWM) and the Committee on Women and Mathematics of the European Mathematical Society, form the organizing committee for the panel.

The events will begin at 7:30 P.M., Friday evening, August 21, with a panel discussion on "Events and policies: Effects on women in mathematics." At 9:15 P.M. we will show the film "Women and mathematics across cultures" in which four women mathematicians

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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. The *Newsletter* is published bi-monthly. The Editor welcomes articles, letters, and announcements.  
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discuss the impact of cultural differences on the status of women in the profession. The film was directed by Marjatta Naatanen (Helsinki, Finland) in collaboration with Bodil Branner (Lyngby, Denmark), Kari Hag (Trondheim, Norway), and Caroline Series (Warwick, UK).

Saturday, August 22, at 11:00 A.M., Cathleen Synge Morawetz, Courant Institute, New York University (introduced by Irene M. Gamba of the University of Texas at Austin) will deliver the Emmy Noether Special Lecture on "Variations on Conservation Laws for the Wave Equation." A luncheon meeting may be arranged for Saturday, with details available later.

A Resolution on Diversity will be offered at the ICM. It reads:

Building on the resolutions adopted at the 1986 and 1990 IMU General Assemblies, the IMU shall continue working to improve the level of participation of all talented mathematicians, including women and those in traditionally underrepresented mathematical subfields and geographic regions. Such efforts shall apply to all articles of the IMU including as members of ICM planning committees, as panelists, and as speakers.

AWM will have a full program as usual at the joint meetings in San Antonio, January 13-16, 1999. More details will be announced later, but we want to draw your attention to several related deadlines: nominations for the Alice T. Schafer Mathematics Prize to be awarded to an undergraduate woman for excellence in mathematics are due September 15th and for the Louise Hay Award for Contributions to Mathematics Education are due October 1st; applications for the January workshop are due September 1st. The AWM workshop at the SIAM meetings in 1999 is tentatively scheduled to be held May 11-14, 1999 in conjunction with the 6th SIAM Conference (May 10-12, 1999) and the 1999 SIAM Annual Meeting (May 12-15, 1999); the application deadline has not yet been determined.

Congratulations to everyone funded to hold a Sonya Kovalesky High School Mathematics Day in 1998! See page 16 for a complete listing. We hope to apply soon for SK funding for 1999 and beyond.

Jean Taylor has obtained a new permanent address (no more switching with every president!) for the AWM web page at <http://www.awm-math.edu>. Check it out regularly and watch it develop! Submit ideas to our new web editor, Tammy Kolda (kolda@msr.epm.ornl.gov), and we'll run it through our approval process. We are grateful to our previous web editor, Judy Walker of the University of Nebraska, for her work on the web page there.

We are continuing our efforts to obtain funding to encourage the participation of women in our profession. We have reapplied to the National Science Foundation for our research travel program. We will apply for funds for an Olga Tausky-Todd Celebration (tentatively scheduled for summer 1999) and for infrastructure support.

We appreciate the work of our selection committees who choose recipients for travel funds, workshop funding, and prizes. Also we appreciate those willing to be AWM liaisons to other organizations and to answer queries sent to AWM. (Please let me know if you would like to help with any of these jobs.)

In my travels I am frequently asked these questions: 1. Is there data on the benefits of AWM workshops and other programs? 2. Which graduate schools provide a friendly atmosphere for women? We are interested in collecting personal testimonials for the first; if a program helped you, let me know at swiegand@math.unl.edu. We may do a more extensive survey also. To assist in applying for the travel grant renewal, we asked past recipients to explain the benefits of the support — their stories and their gratitude were heartwarming and inspiring. For the second question, perhaps some of you grad students or new Ph.D.'s could write to us about departments that were especially helpful or encouraging; we may put some of these comments in the newsletter.

As the special representative for AWM at many functions, I've seen how the collective image of women in the mathematical sciences has been enhanced tremendously by those of you who have worked so hard for AWM and its programs and who have promoted women and our profession. The achievements of distinguished women in mathematical sciences, education and public relations, together with the efforts of our male counterparts, are greatly improving our profession and our world!

Best wishes,

*Sylvia*

Sylvia Wiegand  
March 27, 1998  
on sabbatical at Purdue  
West Lafayette, Indiana



#### MEMBERSHIP AND NEWSLETTER INFORMATION

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Individual: \$40  
Family (no newsletter): \$30  
Retired, part-time: \$20  
Student, unemployed, developing nations: \$10  
Contributing: \$100  
All foreign memberships: \$8 additional for postage  
Dues in excess of \$10 and all contributions are deductible from federal taxable income.

##### Institutional:

Level 1 (one free basic job ad and up to ten student memberships): \$120 (\$200 foreign)  
additional student memberships: \$10 (\$18 foreign) for next 15; \$6 (\$14 foreign) for remainder

Level 2 (one free basic job ad and up to three student memberships): \$80 (\$105 foreign)

Corporate: \$150      Affiliate: \$250  
Friend: \$1000      Benefactor: \$2500

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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 \$40/year (\$48 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.

## THE PRESIDENT'S TRAVEL

My semester at Michigan State University (MSU) ended in December, and I am now continuing my sabbatical at Purdue. Both places have been wonderful for my work as well as congenial.

### MSU Challenges and Rewards

Last December we participated in a lively and enlightening panel discussion at MSU on "The Challenges and Rewards of Being a Woman in Science." The other panelists were MSU faculty members Donna Koslowsky, Microbiology; Vicki McGuffin, Chemistry; Eileen Van Tassell, Entomology; and (moderator) Estelle McGroarty, Associate Dean of the College of Natural Sciences. Mathematics graduate student Sarah Sword serves on the Dean's Student Advisory Committee, which organized the panel.

One question considered was: what barriers exist(ed) for women in science? The first answer was "society's restrictive view of what women do and are." A woman in the audience added "There's the barrier of not knowing the unwritten rules." (Why don't you know? Because you're not in the "inner circle.") For example, women "aren't supposed to be loud — it took me years to learn that; there was no feedback." Eileen said "My mother accepted that I would not have a family; I didn't know the rules — I still say what I think." Another member of the audience was the first woman accepted into her program; she "couldn't get help from the others there. Some *won't* help." Donna said, "There are very few direct barriers; they are more subtle and make it easy for women to quit." Estelle mentioned the inspiration of a "fascinating" book on women Nobel prize winners who overcame barriers.

Several pointers were given for mentoring others: project a positive outlook and help sort out the "real and the paranoia." Also, "tell the mentee the unwritten rules!" A young male professor in the audience asked, "How can I mentor undergraduate woman effectively?" My first reaction, "The same as undergraduate men," was amended by others who said, "Women need extra care; women internalize." (Why do we do this? Because we have to be morally right!) "Don't help women when they don't need it; don't do it all for them." It's important for women to picture themselves in their future

role; their professor doesn't have to be female, but should be accepting and encouraging of their aspirations. Eileen's advisor's love for his research inspired her and, because he set high standards for her and believed in her ability, she met the challenge.

Donna, the only panelist besides me with children, is stressed because her children's needs conflict with her need to produce papers and get a large grant before next year's tenure decision (already delayed). Another panelist's view that "perhaps people who want a family should consider choosing a less demanding career" bothered me; I'd like to think it's always possible! I told about getting all the help I possibly could, even Saturday babysitters. But save time for meaningful activities with the kids. Perhaps spouses can do more during particularly stressful periods.

The panelists presented a convincing argument that science is a satisfying, rewarding and reasonable choice for women; each seemed to have found her niche, despite the difficulties. At the end panelists and audience threw out other advice and comments: "Practice being wrong, read widely, go to meetings. Persistence is very important in science. Women can change the rules."

### CMS

I attended the Canadian Math Society (CMS) Board meeting in Victoria December 13. This year the CMS Board includes more women than ever before — 11 out of 33! — and two students. A celebration on Canadian women in mathematics will be held May 22–23, 1998 at the University of Waterloo (for more information, email [cwim@math.uwaterloo.ca](mailto:cwim@math.uwaterloo.ca), visit <http://www.math.uwaterloo.ca/~cwim>, or see page 24 of the March–April *Newsletter*.) The CMS is producing a new series of booklets "A Taste of Math" (ATOM) to appeal to high school students.

### NSA

In early January, I visited the National Security Agency (NSA), the largest single employer of mathematicians in the U.S. and a good friend for AWM. The support of the NSA and its willingness to help with our projects is extremely gratifying! The Women in Mathematics (WIM) group at NSA has shown particular interest in the Sonia Kovalevsky High School Mathematics Days; some

Mathematical women at Michigan State University



Some U Conn Women with Sylvia Wiegand



have participated in SK events and had suggestions to offer based on their experiences. The Math-Education Partnership Program (MEPP) at NSA is currently coordinating the funding of the SKHS Program. The MEPP developed from NSA concerns about the supply of mathematicians in the future and about schools for children of NSA employees; as part of this program, NSA volunteers speak at schools in the area and distribute attractive materials related to mathematics.

### Purdue

Purdue is a kind of commutative algebra heaven, one of the world's best places for my favorite mathematics. My husband Roger and I visit and take sabbaticals here whenever we can; we're having a wonderful semester.

In January I spoke to a group of graduate students and faculty in science (over half from the mathematical sciences) on "Outreach activities for women in science," which was mostly a discussion about AWM and related activities. Purdue's office for Women in Science Programs schedules two meetings each month, one for undergraduates and one for graduate students. Tami Worner, a graduate student in mathematics, made many of the arrangements for the evening, which also included a group brainstorming exercise about possible outreach activities (our group designed a math-soccer camp for girls).

### Women in mathematics: Wisconsin perspective

I was pleased to accept an invitation to the University of Wisconsin (UW) in Madison, home of my upbringing and source of rosy memories of graduate school days in the late 60's and early 70's. It was a friendly, mathematically exciting place and time — there were huge numbers of faculty and grad students, including many outstanding women.

At Wisconsin we held a general discussion on women in mathematics, arranged by the UW chapter of the Noetherian Ring. (This group was started by Wisconsin graduate student Cheryl Grood, who will be at Swarthmore next year; she is happy to advise groups forming at other places.) The main topics were whether and why women are still discouraged from or less inclined to study mathematics and what we could do about it. Math Ed grad student Abbe Herzig thinks that a narrow

definition of what mathematics is — just deductive proof and rational thought — makes mathematics less appealing and inclusive, whereas actually the patterns, contradictions, and ambiguities of mathematics have wider appeal for a diverse range of thinkers. Mathematics research seems to me to be much more collaborative and communicative now than it used to be. Mary Ellen Rudin interjected: "It's been that way for me for fifty years!" She added: "More women should do mathematics because it is a magnificent thing to do!" Another commented, "Many women are less confident than men; they don't pursue as advanced or difficult choices. Possibly they are more practical."

Possible steps for faculty and grad students to take include being involved — and many are — in mentoring undergrads. In their teaching they can encourage the women to volunteer and use examples that involve women. According to Bob Wilson, "Even those teachers who appear sensitive are surprised by a playback video showing they are responding to men differently." A postdoc said she regularly changes the problems in the book to involve women more, for example by using statistics about pregnancy tests.

The Women in Science and Engineering (WISE) and the Wisconsin Emerging Scholars (WES) programs try to concentrate women and minorities in certain sections of calculus and engineering courses; the mostly women sections have been "blowing everyone else away" (with their high scores on common exams). A high school mathematics "Talent Search" has been held by UW for about thirty years, usually with minuscule participation by women. But last year for the first time, more women than men were recognized for outstanding performance on the difficult problems. Anatole Beck (faculty member) pointed out that although few women take the Putnam exam, one of the two Wisconsin students who have earned an honorable mention over the years was female. On the other hand, one female graduate student in mathematics was disappointed that during her time at Wisconsin the fraction of women was only about one in six. Perhaps the UW statistics reflect a trend of fewer women going to elite graduate schools (see the November–December *Newsletter* letter from Joan Birman). The department hopes to recruit and retain more women faculty and graduate students; Chair Richard Brualdi appreciates the help of the Noetherian Ring in making a friendly and welcoming atmosphere for women.

## U Conn Women in Math

Later in February we visited the University of Connecticut (U Conn), another place with good memories — from a sabbatical spent there, friends from graduate school days, and from more recent mathematical ties.

About 40 of us, including graduate students, undergraduates, and faculty members in math education and math, met for a discussion on women in the mathematical sciences. Nobody seemed prepared for new Vice Provost Susan Steele's question "Why are there so few women on the faculty in science departments at U Conn?" The ensuing discussion, however, showed that the math professors who participated want women to feel welcome and encouraged. The question: "Why do more women drop out of math than men?" drew a number of comments, such as, "Men are better risk-takers than women." Eliana, a Math Ed grad student, thought that women who can succeed in math go to engineering instead because it is considered more practical. Sarah Glaz (my host, friend and a fine algebraist) sees it as "a question of self-image and self-esteem. It's a daring thing to get into math. You have to be a dreamer, to some extent distance yourself from reality and follow your dream." Grad student Kristen Moore mentioned that women are more skeptical of their abilities, whereas male grad students are quick to pronounce something "clear." An undergrad, Tina, minoring in math and majoring in engineering, wasn't aware of opportunities using a math degree. This produced a flood of information on careers for mathematicians and ideas about how to disseminate this information to students. Stephanie (an undergraduate) said a high school teacher had influenced her a lot and that professors at U Conn were helpful and encouraging to women. But she also mentioned differences: "Women are taught through peer pressure to learn silently." She has twice been the only female in a math class. Her teachers, both male and female, ask the men more questions. Tina said she'd never had a female math teacher. Two other women math majors both said they were most encouraged by men and that subtle messages discouraged other women. Another mentioned that high school counselors still discourage outstanding women from mathematics and science.

Melissa, an Ed Psych grad student, said that most female undergrad math majors choose high school teaching over mathematical research. She thinks the usefulness of math isn't emphasized and that

teachers don't explain what possibilities exist. Lisa Humphries, a former U Conn grad student who is now a professor at Providence College, had planned to be a high school teacher; people pressured her to do it to "make a difference." Men didn't have that pressure. When she switched to a research career, she was made to feel selfish. Despite pressure for teaching, Caragh, a grad student, is determined to do "pure math," not even college teaching.

We were so absorbed in the discussion that most of us stayed for over two hours! Kristen later mentioned how pleased she was with this discussion; she, together with Talitha and other graduate students, is starting a support group for women math graduate students there (with advice from Cheryl Grood at Wisconsin).

## CVD98, February 25-26

Along with President-Elect Jean Taylor, Past-President Alice T. Schafer and about 300 other scientists, we participated in another Congressional Visits Days event in Washington DC on behalf of science. The format, as for last April (see the July/August 1997 *Newsletter*), included extensive briefing — lawmakers, government personnel and scientists presented arguments and statistics for our use and enlightenment — followed by a day of appointments with legislators and their aides. A year ago our briefings and conversations had a much less optimistic tone: between 1994 and 1998, funding for research and development (R&D) declined by 2.5% in constant dollars. The President's R&D budget for 1998 would have cut the federal investment by an additional 14% by 2002. The success of last April's effort plus the budget surplus and a generally rosy outlook on science by legislators has made increased support quite promising. This year the President has requested a 2.6% increase for overall R&D and 5.8% for nondefense R&D. Senate Bill 1305, introduced by Gramm (R-TX), Lieberman (D-CT), Domenici (R-NM) and Bingaman (D-NM) proposes to double the support for science in a decade.

At the briefings the speakers stressed that the best lobbying strategy is to seek support for science as a whole and to emphasize that scientific research has proven to be a smart investment, not only for our development of a better world and for the pursuit of knowledge, but for the cash value — what other investment pays a thirty percent rate of interest? (An NSF report of 2/6/97 states that

“investment in research and development average 20–30 percent annual return on investment to firms, and approximately 50% to society overall. One study ... estimated (returns) to have exceeded 80% per year between 1987 and 1991.”) State the obvious, such as, federal investment in science is down. The legislators may not have scientific training, so explain in simple terms. Relate the cause to your state or district. Limit the presentation. Never be negative about politicians; don't whine or lecture. Send a follow-up letter of thanks afterwards offering to be a source of information in the future.

In his presentation, Nobel Laureate and physicist Burton Richter of Stanford emphasized that scientific research is at least twenty years ahead of its applications, whereas in industry research products are at most three to five years from development — and industry is cutting back on research. Past federal support has paid off: lasers, telecommunications, the Internet, the semiconductor industry, HIV protease inhibitors. Senator Frist (R-TN), surgeon, scholar and chair of the Science, Technology and Space Committee, said that Bill 1305 (the doubling bill) is important because it gives a focus for efforts and clarifies a commitment to science. Congressman Brown (D-CA): It is “vitally important that we communicate that the American public supports science.... It's not only morally good but we'll get rich!”

Senator Phil Gramm, a former teacher, urged those of us at universities to enlist the assistance of the teachers of our congresspersons and senators; no one can resist the appeal of a favorite teacher! So, if any of you once taught a lawmaker, persuade him or her to support science! Although the push of our group was not directly for education, the front page headlines that week about the poor mathematics performance by U.S. twelfth graders in international tests gave politicians an extra reason to take seriously the decline of the U.S. position in science.

At our visits we urged other senators to sign onto the Double in a Decade bill. At the offices of Nebraska legislators (Senators Hagel and Kerrey and Congressman Bereuter) all seemed sympathetic and interested in the support of science. We explained that the National Science Foundation and other national agencies have been vital for our department at the University of Nebraska. Jim Lewis invited legislators to visit our department and offered to arrange a group meeting with scientists back home. We spoke of the need to encourage women and left some AWM literature with them.

The CVD was organized by the Coalition for Technology Partnerships, a group of businesses, trade associations and technical societies (led by Kathleen N. Kingscott of IBM, 202-515-5193) and the Science-Engineering-Technology Work Groups, an information network of professional, scientific and engineering societies, higher education associations, institutions of higher learning and trade associations (contact Janis L. Tabor, 202-429-3971). These groups prepared a useful package of materials highlighting the core messages and offering more tips for the legislative visits.

Unlike other areas, science has no unified constituency; we need to develop a large support group for science. Lobbying does not need to be done in Washington; some legislators are more receptive to visits in their home office. The Association for Women in Science (AWIS) has a web page on government relations and science policy at <http://www.awis.org/html/government.html>. Please, everyone, contact your representatives and senators and urge them to support science research and education.

## LETTERS TO THE EDITOR

To the editor:

I regret to inform you that I have decided not to vote in the 1997 AWM Election. In fact it is your directive to force me to put my name on the outside of the envelope that has led me to this decision. One of the fundamental cornerstones of a democracy is the right of voters to cast their vote anonymously. The person who opens the envelope will immediately know how I voted and I find this violation of my rights to be unacceptable and repulsive. Your reason for doing this is clearly because you are trying to prevent someone from voting more than once. I belong to eight other mathematical associations and other educational organizations and they have all managed to design schemes to prevent this from happening. I would like to strongly encourage you to study how other organizations conduct their elections and then to make the necessary changes to make the AWM process truly democratic.

Ron Lancaster, Mathematics Teacher and Coordinator,  
St. Mildred's-Lightbourn School, and Past President of  
the Ontario Association for Mathematics Education



To the editor:

I wrote in this *Newsletter* (Vol. 25, No. 6, p. 22) that "there is, in print, nothing remotely close to evidence or argument that women are discriminated against in the math community." Not surprisingly, there was disagreement. I have written an article with evidence and arguments, but it is too long for this newsletter, so it appears only at [math.berkeley.edu/~kirby/sexism](http://math.berkeley.edu/~kirby/sexism).

It begins with a discussion of what standards should be used when considering charges of sexism in math; I believe one should be skeptical of such charges, just as one is skeptical of charges that women can't do math, and the standards should be similar in both cases.

I then present some statistics such as speakers at the ICM's, percentage of NSF summer grants that go to women (7 to 9% in 1992), voting for the AMS Council (on the average, women get 400 more votes than men), and some statistics about Berkeley.

After some discussion of these statistics, I turn to some anecdotal evidence, for I think that anecdotes drive the belief in sexism in math. After discussing some examples, I summarize the case. I would be happy to hear arguments from those who are still interested in these issues.

Rob Kirby  
[kirby@math.berkeley.edu](mailto:kirby@math.berkeley.edu)

## WORKSHOP MENTORS

Volunteer mentors are needed for the AWM Workshop (July 12–14) held in conjunction with the SIAM meetings at the University of Toronto (July 12–17). Each mentor will be matched with a postdoc giving a talk in the workshop. Mentors should attend the postdoc's talk and give some constructive advice about it. If possible, the mentor should meet the postdoc at the AWM dinner or at some other time before the talk.

Volunteers are also needed to participate in a "get-acquainted" session on Sunday afternoon. Career advice and situations will be discussed.

Volunteers should contact Suzanne Lenhart at [lenhart@math.utk.edu](mailto:lenhart@math.utk.edu) or the AWM office at [awm@math.umd.edu](mailto:awm@math.umd.edu).

## BIRMAN CONFERENCE

A conference in low-dimensional topology in honor of Joan Birman's 70th birthday was held the weekend of March 14–15 at Columbia University and Barnard College. Attending were many colleagues, former students, and current students of Joan's. The talks began (unofficially) at the Algebraic Topology Seminar on Friday the 13th, with talks by Hugh Morton of Liverpool and Ted Stanford of USNA. On Saturday, the speakers were Colin Adams (Williams College), whose talk was entitled "What Cusps Have to Say about Knots, Links, and 3-Manifolds and How They Repay the Favor"; Xiao-Song Lin (UC Riverside), "Invariants of Homology 3-Spheres"; William Menasco (University at Buffalo), "Stabilization in the Braid Group"; and Robert Ghrist (UT Austin), "Contact Topology, Templates, and Inviscid Flows."

Saturday evening Barnard College held a reception in Joan's honor, with over 80 people in attendance. The speakers came from all parts of Joan's life: Elizabeth Boylan, Provost of Barnard College; Robert Friedman and David Bayer, Professors at Columbia University and Barnard College, respectively; Jean Taylor of the AWM; Professors Lin and Menasco, both longtime collaborators with Joan; Professor Vaughan Jones (UC Berkeley); Professor Robion Kirby (UCB); Jozef Przytycki, professor at George Washington University and former student of Joan, who brought along many graduate students of his own ("grand-students" as he called them) to help celebrate. Then Joan's husband Joseph Birman and her son Kenneth Birman each spoke, followed by Joan herself. There were many toasts to Joan's boundless energy and candor, while others pointed out her great works not only in mathematics but in human rights and as a mentor to other women mathematicians.

On Sunday the conference continued with talks by Caroline Series (University of Warwick), "Simple Closed Curves on the Twice Punctured Torus"; Vaughan Jones (UCB), "Planar Algebra"; Arkady Vaintrob (New Mexico State University), "Multi-Variable Alexander Polynomial and Solvable Lie Algebras," and Jozef Przytycki (GWU), "Algebraic Topology Based on Knots: A Case Study in the History of Ideas." Abstracts of the talks

*Nancy Wrinkle and Jean Taylor*

are available at <http://www.math.columbia.edu/conf/birman/schedule.html>.

Many of the speakers worked in amusing stories and/or pictures related to Joan. One of Colin Adams' transparencies had Joan's face superimposed. And Robert Ghrist showed a picture from St. Peter's Cathedral in Ausberg, Germany that he called "Saint Mary of the Knots." It shows Mary standing on a snake tied in a trefoil knot and holding, with the help of several cherubim, a ribbon tied in a knot. He therefore said that "Our Lady of the Knots is already taken, but Our Lady of the Braids or Our Lady of the Mapping Class Groups is still open." (Incidentally, his talk on his mathematical results ended with the memorable words, "I can't give you any reason it's significant except that it is just so darn pretty.")

Jean Taylor made the following remarks at the banquet:

I've been asked to talk on behalf of the AWM, and it is my pleasure to do so. I've known Joan for some time now, and from our email conversations it is clear to both of us that we could be very good friends indeed.

Joan has been a staunch supporter of AWM, while devoting most of her energies to doing mathematics. For example, the joint math meetings were held in Biloxi at a time when ratification of the Equal Rights Amendment was in the balance, and Mississippi had not ratified. I'm told Joan showed up at the AWM table every morning to have her green armband, the AWM symbol of protest, tied on — and that there is a photo showing this in Bettye Anne Case's archives.

Then there was the time when most members of the Noether Lecture Committee suddenly realized they wanted Joan to be the Noether Lecturer. Problem was, Joan was on the committee, and they couldn't very well kick her off. So they had to wait — impatiently — for her term to expire, and *then* they could name her for that honor.

Many of you know that Joan's husband Joe chairs the Human Rights Committee of the New York Academy of Sciences. Joan shares his conviction of the importance of protecting human rights. After I'd tried unsuccessfully to deliver the Heinz Pagels Award Certificate to Professor Xu in China, Joan was considerate enough first to reassure me at the time and then more recently to send me the letter of the Chinese woman who finally did manage to deliver it, detailing the extraordinary measures she had to take to do so.

Joan also appreciates the message of the Fourth UN Conference on Women, held in Beijing. In addition to the fundamental "Women's Rights are Human Rights," the conference emphasized how important it is to improving the economies of poorer nations to enable women to make money. Contributing to the economics of the household gives women an independence that is important in enabling them to do things like control their own fertility. Joan wrote to me encouraging me to publish my report in the *AWM Newsletter* (which I did), saying "your report was very moving. You said all the important things.... The point you make about the importance of women having independently earned income touched a special chord for me." She went on to say "When I started to earn money I suddenly understood how financial dependency automatically lowers one's self-esteem."

Joan's concern for the rule of law even extended to fighting the Board of Mathematical Sciences' unilateral takeover of the U.S. National Committee for Mathematics!

Here is a letter from the AWM President, Sylvia Wiegand:

The Association for Women in Mathematics wishes to offer its congratulations to our heroine, friend, and supporter Joan Birman on the occasion of this conference in her honor. Her research work and her devotion to the cause of women in mathematics and to the underprivileged everywhere is an inspiration to us. The fine example she sets and her assistance with these goals have kept us going and have had an enormous positive effect on our profession and on our world. Good luck to you, Joan — please continue to watch over our institutions!

Or as a friend of mine put it succinctly, "Thanks for your work on knots and the have-nots."

Joan has done a wonderful thing for women in mathematics by establishing the Satter Prize, given to a woman mathematician by the AMS every third year, in honor of one of her sisters. But the most useful thing she has done is simply to be herself. Just her existence, and her mathematics, ought to demolish the stereotype that "mathematics is a young man's game." She attributes a lot of her success to luck, and luck is always important. But you have to make use of the opportunities it presents with a lot of hard work and enthusiasm. These Joan has brought to her work with abundance. She is an inspiration to us all.

## BOOK REVIEW

Edward Yourdon and Jennifer Yourdon, **Time Bomb 2000**, Prentice-Hall, Upper Saddle River, NJ 1998. xxv+416. ISBN 0-13-095284-2 (paper), \$19.95.

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

This column is usually devoted to the latest books on gender, science, mathematics, and education. The present review is clearly a departure from the usual fare. I have chosen to review this book, in this issue, because I firmly believe that the year 2000 problem is a serious one, with which every member of AWM should be familiar and for which every member of AWM should be prepared. *Time Bomb 2000* offers common-sense risk assessment and balanced, reasonable advice on how to prepare for the most likely year 2000-related disruptions. It is by far the best book on the year 2000 problem for the layperson that I have yet seen.

What is the year 2000 problem? In a nutshell: computers and microprocessors that use six-digit dates (e.g., dates in the format MM/DD/YY, with two digits each devoted to the month, day, and year) will have difficulty recognizing and processing date information when the year 2000 rolls around.

Why? Well, suppose you use your Visa card to pay for the holiday gifts you buy during the month of December, 1999. And suppose the closing date of your monthly Visa statement is January 3, 2000. The bank's computer will look at the \$100 in purchases you bought on Christmas Eve (12/24/99) and subtract the date of purchase from the current date (1/3/00). Now, if the bank hasn't solved its year 2000 problem, one of two things will happen. Either (a) the computer will spit out an error message, because the date of purchase is *later* than the current date — and the bank won't know how to bill you; or, (b) taking the absolute value of the difference in dates (as banking programs sometimes do), the computer will determine that your bill is more than 99 years overdue. Assuming continuous compounding of interest at an annual rate of 16%, what will the bill for that \$100 of last-minute Christmas gifts amount to? (Try giving this problem to your sophomore calculus/ODE students!)

Now, on first glance, this seems like a ridiculous problem — and one that should be very easy to

solve. The bank's data processing department simply needs to re-write its programs so that dates are represented in eight-digit format (MM/DD/YYYY), and all will be well. Indeed, my very own bank has sent me a comforting notice in my most recent bank statement saying that they are "committed to solving" their year 2000 problem — not to worry!

But the problem is in fact more serious than it would at first appear. Nowadays, computer memory is incredibly cheap and getting cheaper all the time; but in the early days of computing, memory was precious, and dates and date-fields in computer programs were assigned six digits in order to conserve memory. In fact, in 1970, the National Bureau of Standards (now the National Institute of Standards and Technology) made six-digit dates a standard for federal computer systems. Now, difficult as this may be to believe, many businesses — federal agencies, banks, brokerage houses, manufacturers, etc., etc. — are *still* using six-digit dates; what's more, many of them are still using computer programs written in the sixties and seventies to do their date-sensitive computing. Six-digit dates are embedded in hundreds of millions of lines of computer code — indeed, six-digit dates are ubiquitous in financial transactions all over the world.

Even if my own bank fixes all of its year 2000-related programming problems, its computers must communicate with computers at hundreds of other banks and businesses, not to mention the computers of the Federal Reserve System. The financial environment in which we live and work depends upon a complex web of interconnected, intercommunicating computers. A year 2000-related failure in one part of the financial system is likely to create a ripple effect of unintended consequences that could spell disaster even for those who thought they had their year 2000 problems solved.

Although computer professionals have recognized the problem for many years, no one really expected that so many old computer programs would still be running — or that computer programs would still be using six-digit dates — as late as 1998. But it is only in the last three or four years that the data processing departments of businesses large and small have begun to pay attention and to devote resources to the massive reprogramming efforts needed to prevent year 2000-related business disasters. And over the past three or four years a whole host of technical articles, books, and websites have cropped up offering assistance to computer programmers and data processing managers in their

effort to get these problems fixed on time.

On March 19, 1998, *The New York Times* reported that “with only 653 days to go, it is too late for Federal agencies to fix all of the year 2000 bugs in their critical computer systems, and some Government functions are likely to be disrupted.” Experts in the private sector estimate that at least 15% of all year 2000 bugs will go unrepaired before the deadline of January 1, 2000. What seems certain at this point is that our increasingly computer-dependent lives and lifestyles are going to be seriously disrupted in the year 2000. The question is: how serious is the disruption likely to be, and what can we do to prepare for it?

This and related questions are addressed in the book *Time Bomb 2000*, written by the father-daughter team of Edward and Jennifer Yourdon. Despite the sensational-sounding title, the book offers cogent, common-sense advice on how to prepare for a possible breakdown in the computing infrastructure of our lives. The initial working title for the book was the less alarming *Fallback*, since the book offers practical advice on what sorts of strategies one can “fall back on” in the event of a two-day, one-month, one-year, or ten-year disruption in the everyday, computer-regulated functioning of postmodern life.

The book is organized into topical chapters which assess the effects of uncorrected year 2000 bugs in such areas as jobs, utilities, transportation, banking and finance, food distribution, health and medicine, education, telephone service, and so forth. Perhaps the most eye-opening chapter deals

with the year 2000 problem in “embedded systems” — the tiny microprocessors found in automobiles, microwave ovens, VCR’s, heart pacemakers and defibrillators, industrial process control systems, and indeed, every piece of electronic equipment which contains a microchip. Yes, computer engineers have replicated the six-digit date format in a good many of these chips — the critical question is, how many? The Yourdons write:

[O]nly a small percentage of these chips are likely to be “year-sensitive,” and only a small percentage could be described as “mission-critical” (in the sense that a failure could cause severe economic consequences and/or loss of life) — but even a small percentage of a small percentage can be a large number when we start with a population of 25 billion chips. The vast quantity of these embedded systems is one of the key issues that you need to keep in mind. There are simply not enough programmers, not enough repair technicians, and not enough time to repair and/or replace them all; even if only one tenth of one percent of the 25 billion chips are year 2000-defective, that still leaves us with 25 million repair jobs. (p. 285)

This excerpt offers a glimpse into the size and scope of just one aspect of the year 2000 problem.

I am not normally a devotee of doomsday literature — and despite its scary title, *Time Bomb 2000* is not a doomsday book. It is a practical, balanced guide to a frightening problem which, for all its simplicity, is absolutely stunning in its complexity. In their concluding remarks, the Yourdons write:

## 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](mailto:awm@math.umd.edu). Nominations via email or fax will not be accepted.

We are optimists at heart, and we agree with the late Mary McCarthy's assessment: "The happy ending is our national belief." But we are also deeply concerned about the impact of year 2000 software problems in every aspect of our lives. The more we've investigated the situation during the course of preparing this book, the more worried we have become. We would like to believe that actions by computer technicians, business executives, and government leaders during 1998 and 1999 will give us cause for optimism — but we are reminded of Oscar Wilde's observation in *The Picture of Dorian Gray*: "The basis of optimism is sheer terror." In the final analysis, we believe that it's better to be terrified now and take appropriate actions, even if it turns out that the year 2000 problems are no worse than a few mosquito bites. The alternative — being complacent now and facing the possibility of severe year 2000 problems without any fallback plans — could turn out to be the equivalent of a fatal rattlesnake bite. Consequently, we're making our fallback plans now — and we hope this book has convinced you to begin making yours. (pp. 347-348)

I urge you to go out and buy this book.

## EDUCATION COLUMN

The final round of test results from TIMSS (the Third International Mathematics and Science Study) has now appeared and, predictably, produced the flow of enough ink to make the Mississippi run black for a week. As I write this, less than a month has passed since the twelfth grade scores were released, but I have seen articles trumpeting the imminent doom of our country, articles writing off the results as meaningless, interesting analyses, bombast, invective — the entire gamut. The trickle herewith added to the ink flow does not constitute any claim whatever to expertise, but rather the impressions of a relatively innocent bystander who has been observing all these reactions.

The poor test results seem to me to be inextricably entwined with some of the values we hold dearest in this country. We are, as R.J. Samuelson wrote in the *Washington Post*, a country of infinite second

chances. High school drop-outs can return via the GED and people can rise to impressive heights through energetic self-education, and our society has a lot of respect for those who do so. To change that would be unthinkable. But that means that our students will never approach tests with the heartfelt sincerity of those facing examinations whose outcomes will determine irrevocably which doors in life will be open and which slammed shut and locked. The art of studying for tests will never rise to the heights here that it does in countries which have such examinations — but neither, it is to be hoped, will the rate of student suicide.

On the other hand, score differences like the ones TIMSS produced do not simply result from the presence or absence of pressure on the students. They also result from what's going on in the education system, and there we run into a less attractive facet of America: as a society, we don't value what we don't pay for. We don't pay teachers enough, so it must follow that they don't deserve much respect. That, obviously, is a generic comment with a raft of exceptions. Some school districts have highly reasonable pay scales, and many individuals and even groups accord teachers plenty of respect. But by and large, I think the situation is pretty well represented by the appalled observation of my daughter, now teaching through Teach for America in a semi-rural high school: "How can we expect to maintain good high school teaching when any of my colleagues that wants to support a family has to take on a second job?" The spectacularly dedicated stay on, as do the distressingly incompetent, but in between lies a huge amount of burn-out and/or buy-out.

But, grandiloquent generalizations about society aside, do the TIMSS results tell us anything? Yes, indeed, but they seem to tell different people different things. That's where the soapboxes come out. One is the well-worn soapbox from which it is announced, "Look! Reform isn't working!" Considering that the test was administered to twelfth graders seven years after the publication of the NCTM *Standards* which launched the beginning phases of reform, this strikes me as evidence of dubious arithmetic skills on the part of the denouncers. And if it is a call for a return to the good old days and ways, a little skepticism seems in order given the results of FIMSS and SIMSS, respectively the First and Second International Math and Science Studies. The studies were not conducted in exactly the same way as the most recent one, and the data were broken down in

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Ginger Warfield, Education Committee Chair,  
warfield@math.washington.edu

slightly different forms, but in every report that I have seen we look just as lackluster as we do now.

But as long as the soapboxes are out, I shall take this opportunity to leap onto my own: this is not a set of numbers which we at the university can afford to regard as interesting statistics wafted in from foreign turf. Nor can we afford to take the high ground and accuse "those guys" of messing up "our students." For a start, "those guys" are the ones we ourselves have educated. Anyone who teaches college mathematics is, ipso facto, a teacher of future teachers. We all take very seriously the question of what we teach — but perhaps if we see ourselves as role models for future teachers we might think a little more seriously about how we teach it.

And finally, K–12 teachers are a beleaguered lot, facing a situation which is in many ways even more complex than our own. We at the university level have the potential to provide them with a tremendous amount of support. We won't achieve a thing by looking down our long academic noses and telling them what they are doing wrong. Nor will much be accomplished if we pop in with a few helpful suggestions and pop right back out again. But if we take an intelligent interest and find the questions which we can answer and the places where we can lend our voices to advocate for them, then, bit by little bit, we can achieve quite a lot. Enough of those bits and we can achieve the thing that would provide a solid foundation for all our future efforts: a mathematics community extending from kindergarten through graduate school — and up!

## NUMBERS

On April 8, PBS aired the first episode of the mini-series "Life By the Numbers." Hosted by Danny Glover and produced by WQED of Pittsburgh, the seven episodes of "Life By the Numbers" explore the uses of mathematics in everyday life. The series introduces the non-specialist to a vast range of topics in mathematics: knot theory, mathematical biology, and topology are touched on.

One episode discusses the mathematics behind determining your exact location on a map using the network of satellites known collectively as the global positioning system (GPS); another episode addresses the "fourth dimension" and discusses connections between mathematics and art.

Throughout the series, prominent mathematicians are interviewed. Each mathematician talks about his or her interest in studying mathematics and talks about the enticing problems that encouraged them to pursue careers as mathematicians.

The series makes a great effort to demystify mathematics and illustrate the many uses of quantitative skills in the modern world. Extensive information about the mini-series, including plot summaries of each episode, is available at the web site <http://www.mathlife.wqed.org>.

*Elizabeth S. Allman, Mathematics, UNC-Asheville,  
<http://www.unca.edu/~eallman>*

### CALL FOR NOMINATIONS: ALICE T. SCHAFFER MATHEMATICS PRIZE

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schaffer 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 Schaffer Prize was established in 1990 by the Executive Committee of the AWM and is named for AWM former president and founding member, Alice T. Schaffer, who has contributed a great deal to women in mathematics throughout her career. The ninth annual Schaffer 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. Schaffer 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](mailto:awm@math.umd.edu)). Applications via email or fax will not be accepted.

## JOINT COMMITTEE ON WOMEN

The Joint Committee on Women in the Mathematical Sciences (JCW), founded in 1971 as a committee of the American Mathematical Society (AMS), is now a joint committee of seven mathematical and statistical societies: AMS, American Statistical Association (ASA), Association for Women in Mathematics (AWM), Institute of Mathematical Statistics (IMS), Mathematical Association of America (MAA), National Council of Teachers of Mathematics (NCTM), and the Society for Industrial and Applied Mathematics (SIAM). The charge of JCW is "to identify some of the disadvantages that women mathematicians now experience, and recommend actions which those societies should take to alleviate these disadvantages, as well as to document its recommendations and actions by presenting data."

For the past several years, JCW has held an annual intensive weekend meeting in Chicago. Due to scheduling conflicts this did not occur in 1997. It is hoped that this practice will resume in 1998. Most participating organizations provide at least some travel support for their members to attend this meeting; the AWM has not been able to do so.

For many years, the main activity of JCW has been to make recommendations to the various societies to collect, assemble, and publish data concerning the participation of women in the mathematical sciences. By far the most extensive collection, compilation, and publication of data is done by the AMS-IMS-MAA Joint Data Committee; results are published on a regular basis in the *Notices of the AMS*. In particular, the November or December *Notices* has included a one-page summary of "Statistics on Women Mathematicians Compiled by the AMS" containing information on speakers at AMS meetings, broken down by gender, and a multi-year breakdown of the numbers of women and men receiving Ph.D.'s, appointed to the editorial boards of AMS journals, and serving as trustees and members of the AMS Council. The MAA has published a small amount of data on women in the August 1997 issue of *MAA Focus*. We have received no further updates on data collection and publication efforts underway at ASA and NCTM.

In recent years, the Joint Data Committee has begun a longitudinal study of 1990-91 degree recipients whose Fall 1991 position or address was in the United States. JCW will recommend to the Joint Data Committee that this longitudinal study be continued at least until the end of the century. The data we have seen thus far makes it difficult to determine the quality of the first and subsequent jobs of recent Ph.D.'s. For example, if a new Ph.D. is hired by a Group I school, is that individual in a named postdoctoral position, a tenure-track job, a temporary position with a heavy teaching component, or something else? Are there gender patterns which emerge from an analysis of the quality of these early jobs? With the blessing and assistance of JCW, Marie Vitulli (AWM) and Mary Flahive (MAA) have published a gender analysis of recent employment data, "Are Women Getting All the Jobs?" (*Notices of the AMS*, March 1997, pp. 338-39). They conclude that "there seems to be little reason for concern that women are getting preferential treatment in the new Ph.D. job market." JCW would like to undertake more careful qualitative studies of the available data. To do so, however, would be a major undertaking, and it is not clear that the members of JCW have the time to devote to such a study. Perhaps a future cooperative effort between JCW and the Data Committee could lead to a deeper understanding of current gender patterns in employment.

In January 1997, members of JCW met with two of the Associate Secretaries of the AMS, Susan Friedlander and Lesley Sibner, to discuss strategies for increasing the representation of women and minorities at special sessions of the AMS. Ideally, JCW would like to see special session organizers provided with a list of individuals whose specialties (as indicated by the MR numbers given on their membership forms) match those of the session. Such lists would provide a valuable service to special session organizers and serve the broader purpose of increasing the diversity of session speakers, not merely in terms of gender but in a variety of other ways as well.

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*The above is a summary of the Joint Committee on Women 1997 Annual Report written by outgoing committee chair Margaret Murray. The summary was prepared by AWM representative Tara Smith. Marie Vitulli has been an AWM representative to the Committee for the past several years. Her term has expired, and Diane Herrmann will replace her.*

## SONIA KOVALEVSKY HIGH SCHOOL DAYS

We thank the National Security Agency for continuing to fund the SKHS Days Program!! The schools listed below were awarded grants in the most recent funding competition. The schools are named in alphabetical order; in parentheses you will find the tentative date in 1998 of the SKHS Day and contact information.

Congratulations to all those funded: Elizabeth City State University, Elizabeth City, NC (Fall; Dr. Linda Hayden, 919-335-3696, lhayden@ga.unc.edu); Indiana University-Purdue University, Fort Wayne, IN (11/14; Marilyn Reba, 219-432-3153, reba@lpfw.edu); Messiah College, Grantham, PA (4/25; Angela Hare, 717-766-2511 x7230, ahare@messiah.edu); Michigan Technological University, Houghton, MI (6/19-20; Kalpana Godbole, 906-487-2938, kgodbole@mtu.edu); Mississippi University for Women, Columbus, MS (3/28; Jane Wenstrom, 601-329-7237, jwenstro@muw.edu); National University, La Jolla, CA (10/24; Frances Rosamond, 619-642-8473, frosamon@nunic.nu.edu); Norfolk State University, Norfolk, VA (5/7; Eleanor G.D. Jones, 757-683-9135, e\_jones@vger.nsu.edu); North Carolina Agricultural & Technical State University, Greensboro, NC (9/17; Alexander Kurepa, 336-538-0242, kurepa@ncat.edu); North Dakota State University, Fargo, ND (10/24; Ken Johnson, 701-231-8192, kejohnso@plains.nodak.edu); Rivier College, Nashua, NH (10/22; Yvonne Greenleaf, 603-888-1311, ygreenle@rivier.edu); St. John's University, Jamaica, NY (4/6; Rora Iacobacci and Anne Hughes, 718-990-6285, iacobacr@stjohns.edu and hughesa@stjohns.edu); Syracuse University, Syracuse, NY (11/7; Douglas Anderson, 315-443-1472, danderso@mailbox.syr.edu); University of Alaska, Fairbanks, Fairbanks, AK (10/10; Kara L. Nance, 907-474-6104, ffln@uaf.edu); University of Albany, SUNY, Albany, NY (10/17; Karin Reinhold, 518-442-4641, reinhold@math.albany.edu); University of Minnesota, Minneapolis, MN (10/24; Cynthia Kaus, 612-625-3474, kaus@math.umn.edu); University of Mississippi, University, MS (4/24; James Reid, 601-232-7437, mmreid@olemiss.edu); University of Tulsa, Tulsa, OK (11/6; Shirley Pomeranz, 918-631-2990, pomeranz@euler.mcs.utulsa.edu); Valdosta State University, Valdosta, GA (5/15; Denise Taunton, 912-333-5784, dtaunton@valdosta.edu); and Wright State University, Dayton, OH (10/16; Ann M. Farrell, 937-775-2193, afarrell@nova.wright.edu).

### Elizabeth City State University

The Celebration of Women in Mathematics was held at Elizabeth City State University on October 28, 1997. The event was co-sponsored by AWM, NSA, the Office of Naval Research Nurturing ECSU Research Talent Program and the NASA Network Resources and Training Site. Girls and teachers from five area schools made up the 123 participants. Registration packets included a portfolio, drink bottles, notepad and mirrors imprinted with the Women in Mathematics Logo. AWM and NSA literature was distributed to all participants. The Celebration consisted of a series of workshops, a career panel, a math sprint competition, lunch and a Web Chat. Photos from the event can be viewed at <http://www.ecsu.edu/nrts/SoniaK.html>.

The career panelist included Dr. Eleanor Jones, mathematics professor at Norfolk State University; Ms. Sandra Speiser, a mathematician with the National Security Agency; and Dr. Georgia Lawrence, a professor of mathematics at Elizabeth City State University. All girls and their teachers participated in the career panel. Ms. Sandra Speiser also conducted the workshop on Cryptography: Codes, Ciphers, and Puzzles.

The mathematics sprint competition involved eight teams of five girls. The winning teams received trophies. Winning teams were Women, Inc., in first place and the Ladycats in second place, both from Columbia High. The third place team was the Black & Gold Bomberettes from Perquimans Middle School.

This year teams of girls and their teachers were invited to conduct workshops. Two workshops resulted: M&M Math (statistics) and Name that Tune (harmonics).

Girls had the opportunity to explore mathematics sites on the Internet and to participate in a WWW Math Scavenger Hunt. The closing workshop involved an on-line chat with Dr. Mona Kessel, NASA Astrophysicist.

Some comments from the evaluations were:

I think this is a great way for young women to learn more and more math. [8th grader Elizabeth City Middle School]

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*Elizabeth Hayden*



I really enjoyed this exciting adventure. I think that this gave me an exciting thrill to further my knowledge in certain aspects of math and I would love to go on another one of these trips. Thank you so much. [11th grader Perquimans High]

I didn't know anything about the Internet all of it was great. [8th grader Southwestern Middle]

I really enjoyed today, it was a lot of fun. [11th grader Columbia High]

This was a fun, exciting day. I enjoyed doing a presentation/workshop also. [12th grader Columbia High]

### Indiana University-Purdue University Fort Wayne

Indiana University-Purdue University at Fort Wayne held its first Sonia Kovalevsky High School Mathematics Day on Saturday, November 22, 1997. All public and private schools in the area were invited to send their high school female students with their teachers. A total of 81 students and 20 teachers from 14 schools attended.

The event was sponsored by AWM which, through a grant from NSA, provided most of the funding. The organizer was Marilyn Reba, an instructor in the Department of Mathematical Sciences. She was assisted by Christine Zielinski from the Center for Women and Returning Adults and Marjorie Kever, Chair of the Math Department at Northrop High School, as well as a committee of other high school and college faculty. The faculty and students at IPFW from the Department of Mathematics, the Computer Science Department, and the Department of Fine Arts volunteered to give talks, run workshops, and assist the guests during the day's activities.

During welcoming remarks by the organizers and the Chair of the Math Department, Raymond Pippert, the students learned that this day of activities is dedicated to Sonia's curiosity and determination and that today the opportunities for them are unlimited because the kind of obstacles Sonia faced no longer exist. Students then moved to one of three 50-minute workshops being held simultaneously. (On their registration forms, they ranked the six workshops being offered; every attempt was made to honor their choices. Their assignments were listed on the cover of a folder which contained the

program, a math study-hint sheet, some career brochures and statistics about women in various careers, and information not only about Sonia, but also about R. Dumitriu, the college sophomore from Romania who recently won the William Lowell Putnam Mathematical Competition.)

The three morning workshops were as follows: (1) Lowell Beineke, a graph theorist, and his daughter, Jennifer Beineke, a recent Ph.D. in number theory now teaching at Trinity College, involved the students in solving puzzles and games using graph theory and probability. Eager volunteers participated in the fun and students were thoroughly engaged. (2) William Frederick, Professor of Computer Science, explored issues in computer science in a visual way that enticed students to discuss issues in programming, artificial intelligence, and even Ulam's conjecture. (3) John LaMaster, math instructor and graphing aficionado, in his workshop entitled "Sonia Takes a Dive (Using Simulation and Modeling to Bungee-Jump Safely)," divided students into groups and had them raucously exploring with calculators to discover how many rubber bands to use to toss a Sonia-doll over a stairwell to maximize the thrill of her bungee-jump without hitting the ground.

Students returned to the ballroom to hear a panel of six women from various professions explain not only what they do and how they use mathematics, but also how they chose their fields and what obstacles they faced in getting to where they are today. The professions were cryptographer (NSA), number theorist, geneticist and pediatrician, actuary (Lincoln National Life Insurance Company), computer scientist (Purdue), engineer and patent attorney. The panel spoke for approximately 50 minutes, with time for questions before lunch. There were lots of questions answered, including some on scholarships and internships). The panel members graciously agreed to stay for lunch and to sit with the students.

During lunch, in addition to talking with the panel members, the students could visit a computer presentation on Sonia's life and on current statistics about women's participation in various fields in different countries. We did not do a problem solving competition, but we hope to include group problem-solving activities with prizes next year.

After lunch students attended another workshop. The three afternoon sessions were: (1) Sandra Speiser, from NSA, presented a variety of historical methods for breaking secret codes. She kept the students working and generated wonderful enthusiasm.

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*Marilyn Reba*

(2) Yvonne Zubovic, a statistician from IPFW's math department, had groups of students making slime (which they loved doing) and then using statistics and graphing calculators to predict the shapes it would form when dropped. (3) Marjorie Keever and Linda Brietenbach from the math and chemistry departments at Northrop High School used CBL/graphing calculators to measure the heat generated by mixing certain chemicals.

All the students returned to the ballroom for an exciting presentation from Ann Marie LeBlanc and Robert Murray, both of the IPFW's Fine Arts Department, on creating virtual worlds. The presenters talked about the geometry involved while they showed amazing computer-generated art. The logo on the program cover and on the t-shirts was explained at this time.

At the end of the day students and teachers were given t-shirts and teachers were given copies of the MAA book *She Does Math! Real Life Problems from Women on the Job*. They filled out questionnaires to express their opinion about the day's activities. Among the comments from students: "I didn't realize how math could be connected into so many different fields." "I like the hands-on learning; it keeps you attentive and interested." "I've never been around computers and it sounds really neat. I think I'd like to find out more about this." "I'm glad they [the panel] want to let other women know that just because you are a woman, you don't need to be discouraged if there is a certain field that you are interested in." And the consensus was — do it again next year!

### National University, San Diego

We were grateful and excited to be awarded a grant from AWM and NSA for a Sonia Kovalevsky High School Mathematics Day (National University was so pleased that I was invited to speak about it to our Board of Trustees). We established an advisory board that included teachers and those involved in the public school system, both county and city. We also included two high school students, two presenters, five National University mathematics majors, and a Girl Scout leader. We met with math classes on several occasions to describe the event and obtain advice from those students, many of whom also teach in the public schools.

Frances Rosamond

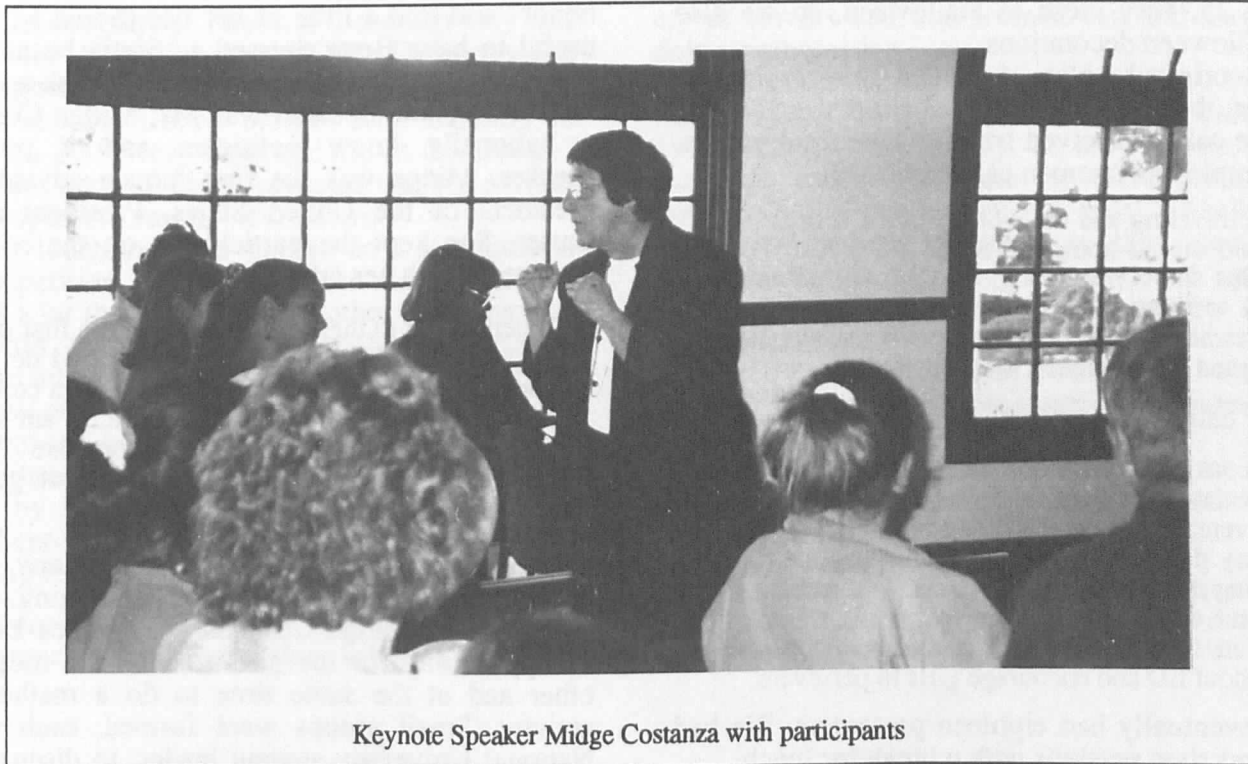
Some of our initial concerns included transportation, cultural diversity, choice of afternoon versus Saturday, and age range of the participants. We included junior high school girls because girls make their decision to take high school mathematics during junior high school.

We developed a brochure in bright neon colors to describe the Day. So that the pictures on the brochure would represent minority groups, I scanned pictures and retouched them. We sent several brochures, a letter to math teachers, and a poster to all the high schools and junior high schools in San Diego County. We wanted to reach out to those girls who might not be the first ones to volunteer to come to a mathematics day. A project involving the Girl Scouts did not work as well as we had hoped, due to lack of time.

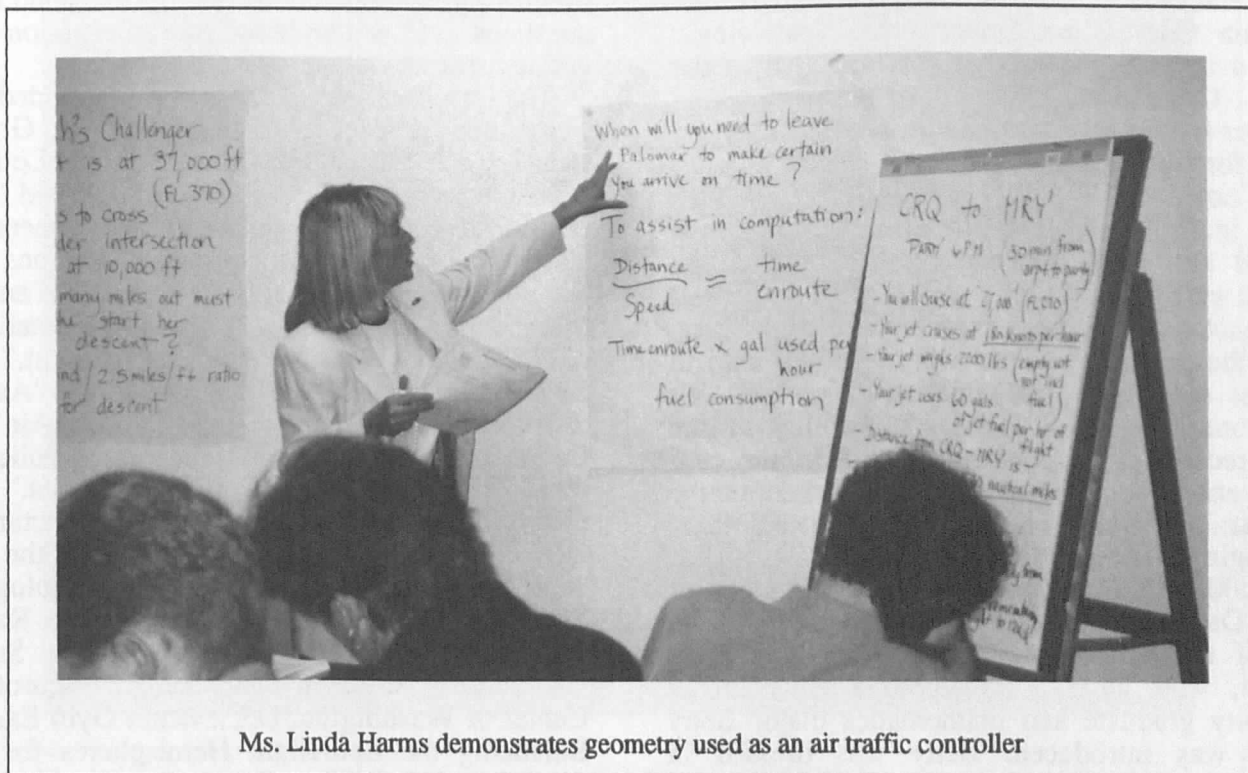
Press releases sent through National University's Public Relations Department resulted in articles about the SK Day in the *San Diego Business Journal*, *The LaJolla Light*, *The San Diego Union* (Saturday and Sunday versions), *The North County Times*, and *The Pacific Beach and Bay Press*. I also contacted the San Diego Council on Literacy who then wrote to the television stations requesting them to cover the event. I met with San Diego Regional Educational Development President Julie Meier Wright to endorse the SK Day; she has spoken to the San Diego School Board encouraging stronger graduation requirements in mathematics.

Public radio station KPBS talk show "These Days" with host Gloria Penner invited me on the air to talk about Sonia Kovalevsky Mathematics Day. The invitation came the afternoon prior to the show! Questions that were asked included: "Why do girls need a special mathematics day? Why not boys?" "How do girls think about math differently than boys? Give an example." "Should there be single sex schools?" The half-hour program was fast-paced, with a somewhat aggressive air to keep it lively for the audience. Many people were informed about the goals of AWM and the importance of women doing mathematics.

The atmosphere of the SK Day was one of celebration — celebrating women's intelligence and their involvement with mathematics. Over 200 balloons decorated the building, and Radio Station 93.3 greeted the girls and teachers and added to the festive feel. Sea World, the San Diego Zoo, the Aeronautics Museum, Jambo Juice, Cybernet Cafe and many others had donated prizes which we gave



Keynote Speaker Midge Costanza with participants



Ms. Linda Harms demonstrates geometry used as an air traffic controller

out often throughout the day. Our SK Day was October 25, very close to Halloween, so we also used Halloween decorations.

Our original plan included six speakers. However, the more people heard about the SK Day, the more calls I received from volunteer presenters. For example, one woman called and said,

I was traveling and the woman in the seat next to me told me all about the Sonia Kovalevsky Day and that she is presenting. I do a lot of geometry in my work as an air traffic controller at Palomar Airport and I think that young women would be interested in this career. May I present?

Another called and explained,

I am a civil engineer but had to take my mathematics courses over and over and really persevere. It was very difficult for me. Recently, I had my daughter tested and found that she has a learning disability that is hereditary. I must have it too and that's why learning was so difficult so difficult for me. I'd like to talk about my work and about LD and encourage girls to persevere.

So we eventually had eighteen presenters. We had three workshop sessions with a break for lunch.

At registration, participants received packets including information from many organizations. Dr. Susan Hackwood, Executive Director of the California Council on Science and Technology, wrote an inspiring letter that was included in the packets. Casio Calculators donated a graphing calculator for the grand competition award and also posters for the packets, and Kinko's Copy Center donated notepads.

Also in the packets were three postcards we had designed and produced. During the introduction students were asked to take the three postcards out of the packet and address each card to themselves. During the day, the students were to give a card to whatever speaker or mathematics major they felt some connection with. The responsibility of the person receiving the postcard is to send the card with an encouraging note back to the girl sometime this year. This way, each girl will receive three encouraging postcards during the year.

At 9:00 A.M. all gathered for the introduction of the SK Day. Dr. Frances Rosamond introduced the Dean of the School of Arts and Sciences Betty Schutler, who gave a welcome. Then National University graduate and mathematics major Betty Russell was introduced. Betty was dressed in 1870's costume to play the part of Sonia

Kovalevsky. She welcomed all to the "day in her honor" and told a little of her life (Sonia's). It was useful to have Betty dressed as Sonia because she was an easy person to recognize and to ask advice.

Our Keynote Speaker was Ms. Midge Costanza, a nationally known politician and a powerful speaker. Midge was the first female advisor to a President of the United States, President Jimmy Carter. She kept the participants on the edges of their seats with her talk. She said,

When I went to the White House for the first time, I was scared. I was really scared ... and do you know why? It was because I didn't have a college education. I never went to college. I am first generation Italian. Some of you are first generation Hispanic, or other. *You* must go to college.

Midge was tremendously inspiring. Many of the questionnaires cited her as very encouraging.

Following Midge Costanza was an Ice-Breaker, an opportunity for the girls to mix and meet each other and at the same time to do a mathematics activity. Small groups were formed, each with a National University student leader, to discuss various voting methods. After about half an hour the groups rejoined and Dr. Maxine Sheerard from San Diego City College and Dr. Fran Rosamond fielded questions and summarized the discussion about voting methods.

The presentations for the day included three workshops for teachers: "Using the Casio Graphing Calculator," "Brain Gym Exercises and Left/Right Hemisphere Research, and Teaching," and "Mathematics and the Environment." The teachers could also join the students in the other sessions which were the following: "Mary Kay Cosmetics and How Mathematics Is Used in Your Own Small Business," "Mathematics and the Environment," "Civil Engineering and Learning Disabilities," "Architecture: Scale and the Built Environment," "Air Traffic Controller: Land that Aircraft Safety!" "Police Academy: Reconstruction of Traffic Collisions," "Gemology Institute of America: Crystal Structures and Gems," "Princeton Review: Success on the SAT," "San Diego Zoo: Reproductive Physiology and Statistical Experimental Design," "Dr. Raphaela Santa Cruz, San Diego State University: Statistics Used and Misused in Daily Life," "Neurotherapy Center of Washington, D.C.: Brain Gym Exercises, Balancing the Left/Right Hemispheres for Maximum Learning," "San Diego Sea World: Math is

Used in All Sea World Careers," "Scripps Institution of Oceanography: Physical Oceanography and the El Niño," "Tin Yen Lee, UCSD: Geometry and the Imagination," and "San Diego Aerospace Museum and the United States Navy: Landing an Aircraft on a Moving, Tipping Ship in the Ocean." The student questionnaires revealed that the participants enjoyed the variety of sessions.

During lunch the girls worked on a competition. The competition was to calculate the amount of candy in a jar that also included other items such as balls, cones, etc. that were visible. The person with the most interesting solution as determined by a committee of NU mathematics majors and teachers would win the grand prize of the Casio calculator. Second through fourth prizes were sweat shirts donated by National University. A separate prize for teachers was software donated by Prentice-Hall Publishing Company.

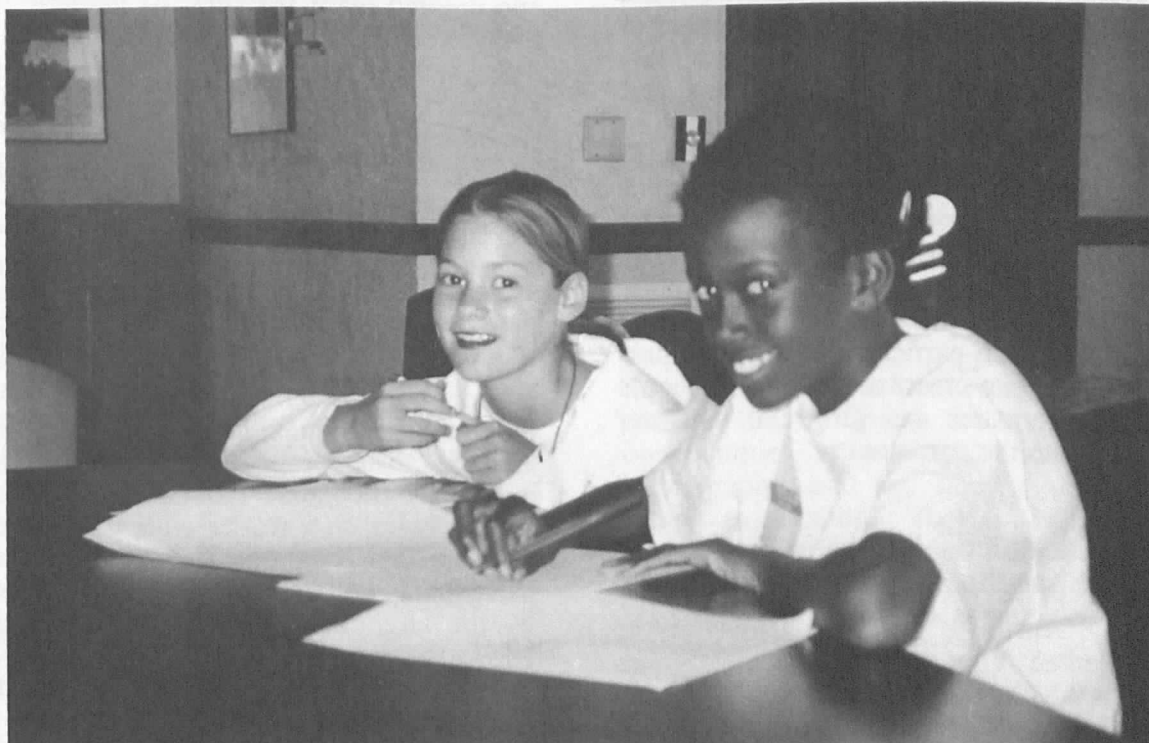
The purpose of the SK Day was fulfilled. Many young women and girls and their teachers from San

Diego county learned about mathematics in a variety of careers and that women can and should be doing mathematics.

A recent Washington Post article, "A Perilous Age for Girls" by Judy Mann (Friday, October 10, 1997), states, "The survey, as have others, shows that high school years are far more positive for boys' self-confidence than for girls'." Feelings of self-worth eroded for girls as they got older. Because of this article, we included a question about self-confidence on our questionnaire: As you go through school do you find yourself becoming more self-confident or less? Please tell why. We also asked if the person was ever discouraged from doing math.

All but two responded that they felt more self-confident. Their answers cited increased knowledge, experience and comfort with school.

More. Because I think we all gain knowledge and information throughout our lives that gives us a sense of understanding in the world that we live



Alert students at the National University SKHS Day

in. The older I get, I feel more confident and secure with the decisions I make.

Probably more because of the experience of all the classes and the support of friends and family.

More. Because as I go through the day I get more and more used to school and my surroundings.

I feel just as confident as I always do. I started out school with high expectations from myself and have strived to maintain them and if I've missed out on something then I move on. That's why I haven't lost any confidence in myself.

More because my skills improve, my teachers compliment my work more and I've become a "leader" in some of my classes.

One who was not so sure said:

More and less. Because I get more confident and sometimes feel helpless.

Almost all said they were never discouraged from doing mathematics. Some made comments such as:

At times I felt no need for math but after this conference I can't believe I thought like that.

When I had a bad, boring teacher it made me not want to learn.

One suggestion would be for all who are putting on a Sonia Kovalevsky Day to agree on a couple of questions to include on all questionnaires. This would allow us to create a database of responses from the girls.

The San Diego community was more than willing to donate food and prizes for the mathematics day. It is far too much work to go around soliciting, but the generosity was overwhelming, and it really felt like it made the SK Day more of a community event (also, it allowed us to fulfill our promise to provide a t-shirt to each participant). The Day provided the opportunity to create a database of people interested in mathematics and girls and to foster greater outreach into the community.

### **IT Center for Educational Programs, University of Minnesota**

On Saturday, April 19, 1997, the University of Minnesota Talented Youth Mathematics Program, supported by AWM and NSA, sponsored an exploration of opportunities in mathematics. Sixty-five

female high school students and their parents/guardians participated in the event at the University of Minnesota, Twin Cities Campus.

The purpose of the day was to engage the young women and their parents in mathematics beyond the traditional classroom and standard curriculum. As cited in various studies, mathematics events and competitions provide the chance for students to gather together to work on solving math problems and exploring applications. They also offer students the chance for recognition of their talents by their classmates, instructors, families, and the public. Sonia Kovalevsky Day was intended to address these issues as a way to motivate female students to continue their interest in mathematics.

After a welcome from Dr. Karen Singer, the day began with Professor Clitia Neuhauser, University of Minnesota, leading an interactive presentation about her work on probability models for spatial ecology. Professor Neuhauser presented an overview of her work on metapopulation dynamics and then led a cooperative exercise that applied the basics of her theories on virgin habitat versus destroyed habitat and the mathematics that support the findings. Students and parents worked in groups of three to four to map the results using graph paper and colored place markers. At the end of the hour, the experiment was summarized and Clitia discussed the implications of the results with the audience. Participants' survey comments on their reactions to the Probability Models for Spatial Ecology activity included the following remarks: "Nice combination of theory, fun, hands-on, and on an issue that has strong support (environmental issues)." "Excellent visuals. Fun hands-on activity." "I loved it. It was really fun and interesting." "I liked that it related to the real world."

The morning presentation was followed by an introduction to competitive events, featuring a few individual activities but emphasizing team relay activities. The competition was developed and conducted by Stephanie Houdek, a local high school teacher who also works with the Talented Youth Mathematics Program. The intent was to give the participants an overview of competitions sponsored by the High School Mathematics League and to allow the students to experience how these activities provide social interaction as well as valuable educational opportunities. Female students tend to be underrepresented at such events unless they receive some encouragement or intervention. Only one of the female students who participated in the mock

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Andrea Olson

event had previously been in a competition. The experiences of programs and leagues that have successfully recruited females indicate that some familiarization with the concept of the programs prior to the events increases female participation. Although students commented on the survey that they were able to get an idea of what competitions were like, the competitions were not rated as the most enjoyable component of the day.

In the afternoon, a panel comprised of female professionals for whom mathematics is a critical part of their work presented valuable information about the opportunities for females in mathematics. The career panel activities received the highest rating from the participants. The nine panelists were divided into groups of three. The participants were divided into three groups and spent 30 minutes with each set of panelists. This allowed time for a brief presentation by each professional followed by 20 minutes of open discussion. The survey results indicated that the opportunity to have individual questions addressed was what made the panel so successful. In addition, participants commented that they learned about a range of information, from the number of opportunities available in mathematics for women to the importance of math and science in the future workplace.

At the end of the event the participants completed an evaluation of the day. Overall 83% of the participants rated the event a 4 or 5 out of 5. The activity they enjoyed the most was the career panel, and the mock competition had the most neutral reaction. The following two comments from a student and a parent best reflect the enthusiasm about the career panel: "I thought having the panelists was very interesting and informative to see what types of jobs are available with these majors." "I think the whole program to motivate girls to consider careers in science is very timely. You're doing a great job!"

The information on the students' preregistration forms was used to create a participant database that will allow us to trace the participants after the event. We will conduct a follow-up survey in the spring of 1998. More importantly, the database allowed us to invite these young women to our enrichment program for high school students, Great Activities Motivating Mathematics (Project GAMMA), and 10 participants from this group are now enrolled in the 1997-98 Project GAMMA (for more information visit our web site: <http://www.math.umn.edu/itcep>).

Finally, we would like to express our sincere appreciation to AWM and NSA, without whose support this event would not have been possible. We plan to sponsor a Sonia Kovalevsky booth at our annual Math Fun Fair in the spring of 1998 to continue to motivate young women in mathematics. Our 1997 experience reinforced the concept that encouraging young women to begin thinking about math and science careers before making their college and career choices will contribute to bridging the gender gap of scientists, engineers, and mathematicians.

## SUMMERMATH

SummerMath is a six-week program for girls in the eighth through twelfth grades held at Mount Holyoke College. Classes and workshops focus on the hows and whys of mathematics in real life, allowing students to build confidence that can serve them in any career. The SummerMath program is based on pioneering research in mathematical education for young women.

At SummerMath, girls will explore math in a new way — using their hands, their eyes, their imagination, and their fellow students to learn and understand. They won't memorize formulas or sit in lectures, but will prepare themselves for a real world of math. They'll learn that math isn't only about algebra problems or geometry proofs — math is in everything from architecture and astronomy to sculpture and sociology. We'll show them that the more math they understand now, the more options they'll have later.

SummerMath isn't all work. Girls get a taste of college life by living on campus. They'll have opportunities to participate in athletics, writing, photography, and art. They'll visit museums and travel to Boston. They'll experiment on the computer. They'll make friends from all over. And they'll develop learning skills and self confidence to take back to high school, to college, and beyond.

This summer's program will be held June 28 to August 8. The application deadline is **June 1, 1998**. For more information, contact: SummerMath, Mount Holyoke College, 50 College Street, South Hadley, MA 01075; [summermath@mtholyoke.edu](mailto:summermath@mtholyoke.edu); 413-538-2608.

## GIRLS HAVE FUN WITH MATH

The Mathematical Sciences Department hosted an all-expenses-paid two-day workshop for high school girls in grades 10 through 12 during summer 1997. The workshop was made possible by a grant from the Mathematical Association of America and the TENSOR Foundation that covered room and board and stipend for six undergraduate students. The focus of the workshop, Girls Enjoying Mathematics (GEM), was to show girls the usefulness of mathematics.

This residential workshop ran with 33 participants from throughout the Western Upper Peninsula of Michigan on July 8th and 9th 1997. 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. The unifying theme of the mathematical activities was the mathematics underpinning all technical fields. The projects chosen were fun, accessible, tractable, interesting, with substantial active participation and extensive reliance on intuition and common sense rather than the rote mechanics of algebra and trigonometry.

Topics discussed included counting biological populations, an Internet scavenger hunt for data to answer physical questions, an animated discussion concerning how to define the concept of straight on a surface, physical and computer experiments to determine the dependence of Spirograph pictures on the sizes of the wheels, discussions and interpretation of the fourth dimension, decoding postal bar codes, and a surprising (at least to the students) discussion of some open combinatorial questions. A number of puzzles were purchased for the program; these puzzles provided a natural and low-stress introduction to the workshop and a number of mathematical concepts. It turned out to be the most popular activity; puzzles and toys were distributed among the participants at the end of the workshop. We hope that in addition to a memento of the workshop the participants will enjoy explaining the puzzles and underlying mathematics to parents, siblings, peers, and teachers. Along with educational

topics the organizers, undergraduate facilitators and invited faculty shared a wide range of experiences and generated a lively and informative conversation about the life of a "career woman" in general.

The GEM program was assessed using a pre-participation survey and a post-participation survey. The pre-survey was based on a survey developed by Alan Schoenfeld (1989, "Explorations of Students' Mathematical Beliefs and Behavior," *Journal for Research in Mathematics Education*, 20 (4), pp. 338-355). We added some additional open-ended questions to assess participant perceptions of college and careers in mathematical fields. The post-survey included selected items from the pre-survey and some items to assess the GEM program directly. In sharp contrast with school mathematics, the participants thought that the math at GEM had little to do with memorization. The responses showed that participants particularly liked meeting people, the overnight stay, the loosely structured activities (groupwork, exploration), and the friendly instructors. The participants gave up two days of summer vacation to attend this workshop and for instructors it was a labor of love. The instructors were Anant Godbole, Kalpana Godbole, Jeff Holt, David Olson, Tamara Olson and Allan Struthers. Overall, the participants clearly enjoyed the program, and many asked to attend next year.

## CUR CONFERENCE

The Council on Undergraduate Research (CUR) will hold its Seventh National Conference, "Creating Undergraduate Research Opportunities in Changing Communities," June 25-27, 1998 at Occidental College, Los Angeles, CA. The primary mission of CUR, founded in 1978 is to promote research by faculty and undergraduate students in the sciences, mathematics and engineering at predominantly undergraduate institutions. Contact: Council on Undergraduate Research, 734 15th Street, NW, Suite 550, Washington, DC 20005; phone: 202-783-4820; fax: 202-783-4811; email: [cur@cur.org](mailto:cur@cur.org); url: <http://www.cur.org>.

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## IN MEMORIAM

Gertrude Scharff Goldhaber died at 86 in February. One of the great women pioneers in what was an almost exclusively male profession, she discovered at the University of Illinois in 1942 that neutrons are emitted in spontaneous fission. Because it was classified, she received little recognition. In 1948, she and her husband, Maurice Goldhaber, confirmed the identity of beta rays and atomic electrons. A Ph.D. student of W. Gerlach in Munich, she felt ostracized after Hitler took over in 1933. She fled in 1935 and did postdoctoral research with G.P. Thompson in London. An inspiration to generations of women in physics, she was only the third female physicist elected to the National Academy of Sciences. Asked how she succeeded in a male-dominated field, she once said she married the right man. For more about her and other women in physics see: [www.physics.ucla.edu/~cwp](http://www.physics.ucla.edu/~cwp).

From "What's New," the electronic newsletter by Robert Park, American Physical Society.

Two founding members of the Seaway Section of the MAA, the last survivors of the original group of 43, died in 1997.

Dr. Caroline A. Lester was born in Seneca Falls, NY, the daughter of a physician. After her undergraduate work at Cornell, she did graduate work with C.C. MacDuffee at Ohio State and the University of Wisconsin. Dr. Lester taught for nearly 40 years at The New York State College for Teachers (now the University at Albany), interrupted only for her service during World War II in the WAVES.

Dr. Harriet F. Montague was a professor of mathematics at SUNY Center at Buffalo for 44 years. A nationally recognized educator and author, she wrote *The Significance of Mathematics*, a textbook for non-science students, with Mabel D. Montgomery. She was active in the Presbyterian Church, the AAUP, and the Buffalo Zoological Society. Contributions to the Harriet F. Montague Award Fund may be sent to the University of Buffalo Foundation, POB 900, Buffalo, NY 14226-0900.

This information has been abstracted from the Fall 1997 issue of *The Seaway Current*, the newsletter of the Seaway Section of the MAA. Lester's obituary was by Kenneth Wooster; Montague's, by Stephen Cavior.

James R.C. Leitzel, MAA Governor-at-Large for Teacher Education and co-director of Project NExT, passed away in February after a courageous battle with cancer. NExT, from its inception, was especially dear to Jim. Jim also played a lead role in MAA's work on teacher education, editing "A Call for Change," which established standards for the mathematical education of teachers. Over the years, Jim served on and chaired numerous MAA committees, including the Committee on the Undergraduate Program in Mathematics, Committee on the Teaching of Undergraduate Mathematics, and Committee on the Mathematical Education of Teachers. He was the author of numerous publications and articles on mathematics and mathematics education and was a frequent speaker at national and regional conferences.

Jim served as MAA Visiting Mathematician and Director of Special Projects at MAA Headquarters from 1990 to 1993. He was a mathematics professor at The Ohio State University, 1965–1992, the University of Nebraska-Lincoln, 1993–1996, and the University of New Hampshire, 1996 – present.

Jim is survived by his wife, Joan Leitzel, also a mathematician and president of the University of New Hampshire, and two sons, their wives, and one granddaughter.

Donations in Jim's memory may be made to the Greater MAA Fund, 1529 18th Street, NW, Washington, DC 20036; James Leitzel Scholarship Fund, c/o UNH Foundation, 9 Edgewood Road, Durham, NH, 03824; or the Jimmy Fund, c/o Dana-Farber Institute, 1309 Beacon Street, Brookline, MA 02146.

from an obituary by Marcia Sward, MAA Executive Director, *CYM Newsletter*, 26 February 1998

## CONCERNS OF YOUNG MATHEMATICIANS

This electronic newsletter continues to publish interesting items. Volume 6, Issue 1, 14 January 1998 contains "When the advisor is away..." by Kevin Knudson, Northwestern University. This helpful advice from someone who's been there was written in response to a question at one of the Young Mathematician's Network Town Meetings.

In Volume 6, Issue 4, 4 February 1998, a job candidate quite reasonably complains about receiving, via a huge cc: list, email to acknowledge receipt of an application. As a member of two hiring committees this year, I understand why departments need to use mass mailings — with hundreds of applicants, there isn't time to send personalized responses — but also feel we should do all we can to respect the privacy of individuals. And it seems to me there is an easy answer for this one: send a message to the fictitious candidate@your.school.edu, and bc: your applicant list.

Volume 6, Issue 2, 19 January 1998 tells us that universities in Virginia have received a directive from the state that a certain percentage of "permanent" positions must be "non-tenurable." Renewable term positions have been developed in response; those holding the positions are eligible for promotion under the usual guidelines. An anonymous department head from a state school in Virginia posted a survey asked for the reactions of young mathematicians to renewable term positions versus tenurable ones.

Volume 6, Issue 3, 28 January 1998 contained some responses to the survey, not surprisingly indicating that most regarded a renewable term position as inferior to a tenurable one. The question was raised whether the creation of these positions would save the state money (presumably the reason for the directive), or whether it would be more costly because salaries would need to rise when the security of tenure is no longer available.

As Frank Sottile puts it:

Those of us who choose to pursue academic careers do so at a significant economic cost: lost/deferred earnings while in graduate school, a lifetime of a lower salary than other career paths despite very long hours, and significant lack of choice in location. We do so because there are many compensations, most notably the pleasures of an academic life of research and contact with students, and the security of tenure. Our jobs require a lifetime of specialized training acquiring skills that are not readily transferred to or from other lines of work. This imposes a huge cost to change jobs in mid-life, more so than in other careers. Without tenure, there would need to be a substantial increase in remuneration in order to attract good people to devote themselves to academia.

The continuing attack on tenure is disquieting, to say the least.

## JPBM TIDBITS

### National Math Tests

The proposed national tests in 8th-grade mathematics and 4th-grade reading became one of the hottest controversies during the waning days of the first session of the 105th Congress, holding up completion of the largest appropriations bill for more than a week. After several false starts and six continuing resolutions needed to keep the government running, a compromise was reached and the FY 1998 Labor-HHS-Education appropriations bill was signed into law. The compromise allows continued development of the tests under the aegis of the National Assessment Governing Board, but prohibits their implementation in FY 1998, even in trial runs as the Administration had planned.

February 5th the House passed a bill, HR 2846, which would prohibit new federal testing of grade school students without the explicit authorization of Congress. As the appropriations bill only applies to FY 1998, which ends on 30 September, President Clinton has been asserting that testing would begin "soon," presumably meaning in October. The House's leading test opponent and author of HR 2846, Rep. Bill Goodling (R-PA), was angered by those statements and says his bill "reasserts the authority of Congress over the development and implementation of new federal tests." (Two ongoing series of tests, NAEP and TIMSS, are both authorized and thus would not be affected by the bill.) Rep. Goodling's staff say his intent is to prevent new national tests altogether; as Chairman of the Education and the Workforce Committee, he has no plans to authorize any. The bill is not expected to be considered by the Senate, so the testing issue will probably have to be addressed again in this year's Labor-HHS-Education bill.

### 21st Century Research Fund

Toward the end of his State of the Union speech, Clinton brought up basic research, proposing "a 21st century research fund for pathbreaking scientific inquiry, the largest increase in history for the

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*Abstracted from the December, January and February issues of the weekly newsletter of the same name by Lisa Thompson, Congressional Liaison, Joint Policy Board for Mathematics, Washington, DC; 202-234-9570; fax: 202-462-7877; jpbm@math.umd.edu; <http://forum.swarthmore.edu/social/jpbmcan>.*

National Institutes of Health, the National Science Foundation, and the National Cancer Institute.”

The President's FY 1999 budget proposal is the first to project a federal budget surplus in 30 years. After several years of essentially stagnant science budgets — and dire threats of sharp decreases in the future — the Administration has proposed strong growth in the federal investment in research, especially nondefense basic research. Total federal spending on R&D, including equipment and facilities, would increase by 2.6 percent. But 60 percent of that increment would be devoted to basic research programs. This represents something of a departure for the Clinton Administration, which has tended to favor applied research.

Many of the nondefense components of the S&T portfolio have been “bundled” into the 21st Century Research Fund and targeted for an aggregate eight percent increase in FY 1999 and a 32 percent increase over the next five years. But don't be confused by the use of the word “Fund”; appropriations will proceed as usual with each component requiring its own justification. The “Fund” designation was used in an attempt by the Administration to exceed the discretionary spending caps enacted last year, with some portion of the Funds' budget growth to be offset with new revenue sources outside the cap.

Congressional Republicans immediately criticized the budget's spending levels and reacted with skepticism to the projection of a surplus. Rep. Bob Livingston (R-LA), Chairman of the House Appropriations Committee, said, “The President's budget violates the spirit of last year's discretionary spending caps and has no basis in legislative reality.” He also denounced the “Funds,” calling them “backdoor attempts to violate last year's Budget Agreement.”

Those statements should probably be viewed more as criticism of the “Fund” tactic than of research spending increases per se. Key Republicans have been increasingly supportive of expanding the federal investment in research, with Senator Phil Gramm (R-TX), a dyed-in-the-wool fiscal conservative, leading the charge. Last fall he and three of his Senate colleagues introduced bipartisan legislation to authorize doubled aggregate funding for civilian research agencies. This and other Republican expressions of support probably sparked President Clinton's new-found appreciation for basic research, although the shrinking deficit made his conversion easier.

With goodwill toward science emanating from across the political spectrum, there is cause for optimism, at least with respect to noncontroversial agencies like NSF and NIH. The science, mathematics, and engineering communities will need to be on full alert and continue to intensify their advocacy activities.

### Riley and Minihan Speak at Joint Meetings

Two federal agency heads spoke to audiences at the Joint Mathematics Meetings in Baltimore in January: Secretary of Education Richard Riley and Lt. Gen. Kenneth Minihan, Director of the National Security Agency. Riley called on the mathematical community to take a leading role in meeting the challenges of improving mathematics education. He urged listeners to make the preparation of K-12 teachers a priority, including working with schools of education and taking “a critical look at the curriculum and teaching methods used in undergraduate mathematics courses.” He said the community must “make the importance of mathematics for our nation clear, so that all teachers teach better mathematics and teach mathematics better.” He cited a number of findings that underpin the Department's new catch-phrase, Mathematics Equals Opportunity, related the latest data on student performance in mathematics, and defended the Administration's proposal for voluntary national tests in 8th grade mathematics. Addressing the “math wars,” Riley described himself as troubled by “the increasing polarization and fighting about how mathematics is taught and what mathematics should be taught.” He said, “It is perfectly appropriate to disagree on teaching methodologies and curriculum content. But what we need is a civil and constructive discourse.”

### National Science Foundation

The FY 1999 budget proposes the largest increase ever for the National Science Foundation, an increase of 10 percent. The NSF budget documents cite the agency's priorities and directions: advance science and engineering at and across the frontiers, move forward in key multidisciplinary areas, and educate for the future.

The Mathematical and Physical Sciences Directorate would increase by 10.7 percent. Research emphases for FY 1999 include fundamental and applied mathematics, the origins of the universe, the

quantum realm, and molecular connections. The integration of research and education will continue as an overriding objective, and more than \$19 million of MPS's FY 1999 funding increment would be used to expand support for programs such as Grant Opportunities for Academic Liaison with Industry (GOALI), Faculty Early Career Development (CAREER), Research Experiences for Undergraduates (REU), and the Integrative Graduate Education and Research Training program (IGERT).

The Division of Mathematical Sciences, part of MPS, would receive a generous \$16.9 million increase in FY 1999, which would bring its budget to a total of \$114.1 million. The increment is to be divided roughly evenly between the two program elements: Research Project Support would grow by 12.7 percent, and Infrastructure Support would increase by 29.6 percent. The new funding under Research Project Support would be used primarily to increase the average size and duration of DMS awards, an objective being sought throughout NSF. The \$8 million increment for infrastructure support would be divided among the Grants for Vertical Integration of Research and Education program (VIGRE), a joint DoEd-NSF initiative in K-8 mathematics (see below), and enhanced support for institutes.

The FY 1999 budget proposal includes \$683.0 million for the Education and Human Resources Directorate, an increase of more than \$50 million or 8 percent over this year's budget. EHR's proposed budget increase would be used to expand investment in collaborative efforts with the Department of Education, supporting joint initiatives in K-8 mathematics and education research, NSF's contribution to the latter focusing on K-12 education and training technologies; implement strategies to accelerate production of K-12 science and mathematics teachers in response to demands of standards-based reform and aging of the instructional workforce; expand urban systemic programming to redress inequitable access to quality education; and support application of learning technologies across EHR activities.

In FY 1999 EHR's undergraduate programs will be realigned to focus on institution-wide implementation of high quality instructional materials and educational practices in classrooms and laboratories. Emphasis will be placed on innovations that apply state-of-the-art research on learning, instruction, and educational technologies; ensure access to cutting-edge science; and respond to the

varying cultural, academic backgrounds, and learning styles of students. DUE is merging the Course and Curriculum Development, Undergraduate Faculty Enhancement, and Instrumentation and Laboratory Improvement programs into a Course, Curriculum, and Laboratory Improvement (CCLI) program, in which the integration of faculty professional development would be encouraged in all projects. Its budget would total \$52.8 million in FY 1999, an increase of \$2.7 million over the FY 1998 levels. The additional funds would be used to support educational technology activities and initiate an effort to reform undergraduate earth science curricula.

### **NSF, Education Department Team Up on Mathematics Initiative**

The budget requests of the NSF and the Department of Education include \$28 million and \$32 million respectively to begin collaborating on a strategy to improve K-8 mathematics instruction and achievement, as called for in a presidential directive issued last spring. NSF's contribution will focus on professional development of teachers and implementation of standards-based instructional material. DoEd's efforts will involve the development of technology-based materials and training models that emphasize teaching for conceptual understanding of mathematics while at the same time ensuring mastery of the basics. The Department will also expand technical assistance and dissemination in support of the initiative.

### **Department of Energy**

The Department of Energy's FY 1999 budget request, subtitled "Science, Technology, and Energy for Our Future," totals almost 9 percent above the FY 1998 level. Research and development account for about 40 percent of DOE's budget. The Office of Energy Research's budget proposal for Computational and Technology Research includes \$141.3 million for the Mathematical, Information, and Computational Sciences (MICS) subprogram, up from \$127.2 million in FY 1998. MICS would provide \$22 million for research in support of the Next Generation Internet as well as continue funding several "Grand Challenge" projects started under the old HPCC program. MICS also maintains a mathematical sciences program to support researchers in DOE labs and academic

institutions. Its base budget would remain at \$16 million and could be supplemented by an additional \$1.5 million in FY 1999 for a new initiative on Predictability of Complex Phenomena.

### Department of Defense

The Department of Defense's FY 1999 budget request for military research, development, test, and evaluation (RDT&E) would decrease by 1.6 percent below the FY 1998 level. Basic research would increase by 6.7 percent. DOD support for applied research would grow by only 0.8 percent.

### Department of Education

According to its FY 1999 budget submission, the Department of Education intends to replace its Graduate Assistance in Areas of National Need program (GAANN), which provides funds to college and university departments for traineeships, with National Need Graduate Fellowships. Funds would still be awarded to institutions, and emphasis would be placed on encouraging women, minorities, and individuals with disabilities to prepare for postsecondary academic careers in fields in which they are, and traditionally have been, underrepresented. This and other programmatic changes in the postsecondary education arena are included in the Department's proposals for reauthorizing the Higher Education Act, on which the 105th Congress is currently working.

The Department of Education is requesting \$31.2 billion in discretionary funding for FY 1999, an increase of about six percent above the FY 1998 level. The increased funding would be devoted to meeting critical needs identified by the President: reducing class size and modernizing the Nation's schools; ensuring that kids "master the basics," particularly English, reading, and mathematics; strengthening urban and rural schools; recruiting, preparing, and supporting quality teachers; developing educational technologies; and helping students prepare and pay for college.

The Eisenhower Professional Development Program would receive the same funding as in FY 1998, \$335 million, although a \$25 million set-aside for reading education would not carry over into FY 1999. While the first \$250 million of Eisenhower appropriations is supposed to support mathematics and science programs, DoEd has granted waivers to seven states allowing them to circumvent this

requirement. The Eisenhower Federal Activities and Eisenhower Regional Consortia programs would grow from \$38.3 million to \$75 million, with the extra funding intended to support the joint DoEd-NSF mathematics initiative described above.

DoEd is also seeking funds for two new programs: \$50 million for an Interagency Education Research Initiative to support rigorously designed and implemented large-scale research studies focused on classroom-based strategies for improving teaching and enhancing learning and student achievement and \$67 million for a set of programs in teacher recruitment and preparation, with emphasis on underserved populations.

### Congressional Republicans Have Different Views on Education

Deep philosophical differences have led to virtual showdowns between the Administration and Congressional Republicans over recent education appropriations. This year will be no different. Rep. Bill Goodling (R-PA), Chairman of the House Education and the Workforce Committee, assailed the Department of Education's FY 1999 budget proposal because it "shifts support to the Washington education bureaucracy and away from programs that send funds directly to teachers and classrooms." He and strong contingents of Republicans in both chambers oppose any expansion of the federal role in education and favor programs that send funds to states and school districts with few strings attached. President Clinton, on the other hand, wants a dynamic Department of Education that identifies and tracks problems and undertakes programs tailored to address them. There's little room for compromise.

Last year the Senate passed a proposal that would have transferred \$11 billion in Department of Education funding directly to school districts. Although the proposal did not make it into the final appropriations bill, the idea is far from dead. Twelve Republican Senators recently introduced legislation, S 1590, that would roll funding for Eisenhower, Educational Research and Improvement, and many other programs into a single block grant for states. Moreover, a Task Force on Education set up by the Senate Budget Committee will soon issue a report declaring that there are too many federal education programs and that states and school districts need less regulation and more flexibility in using federal funds. It could also call for

school choice and voucher programs, which Republicans have been trying to expand or enact for years.

### **U.S. 12th-Graders Do Poorly on TIMSS; Joint Action Strategy Announced**

More results from the Third International Mathematics and Science Study (TIMSS) were released this week, those from the assessment of students at the end of secondary school, e.g., 12th-grade in the U.S. (4th- and 8th-grade results were released last year). Tests were conducted in four areas — mathematics general knowledge, science general knowledge, physics, and advanced mathematics — and the performance of U.S. 12th-graders was among the lowest of the participating countries in all four areas. Secretary of Education Richard Riley called the results “entirely unacceptable” and reiterated some of the Administration’s policy goals for improving achievement, including having more students study algebra and geometry by 8th and 9th grade; implementing the proposed voluntary national test in 8th-grade mathematics; encouraging students to take demanding courses, such as calculus by 12th grade; and improving teaching and reducing the number of teachers teaching out-of-field, which is especially prevalent in mathematics courses.

The Secretary and National Science Foundation Director Neal Lane also announced a \$60 million joint Action Strategy for Improving Achievement in Math and Science, focusing primarily on middle-school mathematics; many elements of the strategy are included in the agencies’ FY 1999 budget requests as described above. The NSF and DoEd were directed to develop the strategy last spring, shortly after the TIMSS 8th-grade results were released.

Meanwhile Republicans were busy touting their own education agenda. A Republican Education Task Force made up of Members of Congress and state governors released a core framework of principles for education policy, including an overriding principle that parents and state and local authorities and “not Washington bureaucrats, are the ones who know what’s best for our children.” Following similar action in the Senate as described above, Rep. Joseph Pitts (R-PA) and more than 50 cosponsors introduced the Dollars to the Classroom Act (HR 3248) which would replace many federal education programs with block grant funding.

### **New DMS Program on Portable Algorithms and Application Libraries**

The NSF Division of Mathematical Sciences has issued a program solicitation on Optimized Portable Algorithms and Application Libraries (OPAAL). The effort is being undertaken in collaboration with the Defense Advanced Projects Research Agency (DARPA) and other units within NSF. They plan to support jointly research and development on new approaches to the design and creation of efficient algorithms and optimized libraries for large-scale numerical modeling and simulation of physical phenomena arising in industrial applications. Fresh ideas, approaches, techniques, the formation of new teams, and the participation of researchers new to such problem areas will be encouraged (areas of mathematics that are not currently considered “applied” are a likely source). The deadlines are **May 22, 1998** for email letters of intent and **July 1, 1998** for receipt of proposals.

## **150 YEARS**

This year is the 150th anniversary of the Women’s Rights Movement. The National Women’s History Project is leading the national celebration in a variety of ways, reaching out to schools, the government, businesses, community organizations, and the media. Visit the web site at [www.nwhp.org](http://www.nwhp.org). NWHP needs our help to continue this outreach; one important objective is to build respect for the Movement among our youth. Send your tax-deductible donations to NWHP, 7738 Bell Road, Windsor, CA 95492; receive a lapel pin for a contribution of \$50 or more.

## **SATELLITE TOWN MEETING**

The Department of Education holds a monthly teleconference on various issues. The April topic was “Making Math Count: World-Class Achievement Starting with Algebra.” For information on how to participate in future conferences, see <http://www.ed.gov/inits/stm/>.

## 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:** The next AWM Workshop will be held in conjunction with the annual Joint Mathematics Meetings in San Antonio, Texas, January 13-16, 1999 (*pending renewal of funds*). The Workshop will be held on Saturday, January 16, 1999 with an introductory dinner for participants on Thursday evening, January 14, 1999 (tentative schedule as of 4/10/98).

**WORKSHOP:** Twenty women will be selected in advance of the workshop to present their work: the selected graduate students will present posters and the postdocs will give twenty-minute talks. AWM will offer funding for travel and two days subsistence for the selected participants. Participants will have the opportunity to meet with other women mathematicians at all stages of their careers. The workshop will also include a panel discussion on issues of career development and a luncheon. All mathematicians (female and male) are invited to attend the program. Departments are urged to help graduate students and postdocs who do not receive funding to obtain some institutional support to attend the workshop and the associated meetings.

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

**APPLICATIONS:** To be eligible for funding, *graduate students* should have made substantial progress toward their theses. The word "postdoc" refers to any mathematician who has received her Ph.D. within approximately the last five years, whether or not she currently holds a postdoctoral or other academic position. All non-U.S. citizen applicants must have a current U.S. address. All applications should include a curriculum vita, a concise description of research (two to three pages), and a title for the proposed talk/poster. All applications should also include at least one letter of recommendation; in particular, a graduate student should include a letter of recommendation from her thesis advisor. Nominations by other mathematicians (along with the information described above) are also welcome.

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

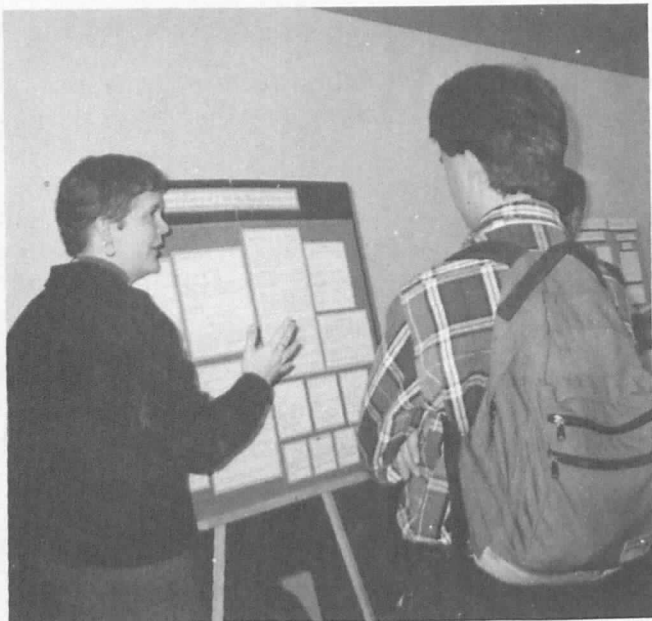
Workshop Selection Committee  
Association for Women in Mathematics  
4114 Computer & Space Sciences Building  
University of Maryland  
College Park, Maryland 20742-2461

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 **September 1, 1998**.

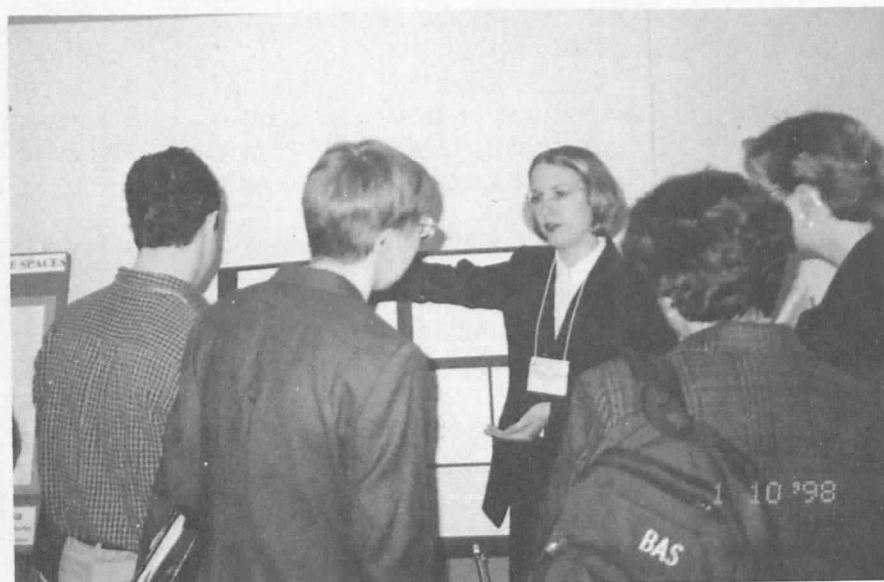
# AWM WORKSHOP



Stephanie Edwards, University of Wisconsin, explaining her poster



Cynthia McCabe, University of Iowa, explaining her poster



Elizabeth Lee Wilmer, Harvard University, explaining her poster



## IN BALTIMORE



Nancy Cunningham, Rice University, explaining her poster

### ADVERTISEMENTS

**HUNTER COLLEGE OF THE CITY UNIVERSITY OF NEW YORK - DEPARTMENT OF MATHEMATICS AND STATISTICS - One Tenure Track Assistant Professor** - Anticipated Faculty position available September 1998. Salary Range: \$40,440 - \$52,213 depending on experience. Doctoral degree required. We are primarily interested in statisticians (people interested in teaching and research in statistical applications). Mathematicians are encouraged to apply. Send C.V. and three letters of reference by May 30, 1998 to: **Professor Martin Bendersky, Chair, Department of Mathematics and Statistics, Hunter College 695 Park Avenue, New York, NY 10021**. Review of applications will commence May 30, 1998. Hunter College is an Equal Opportunity/Affirmative Action Employer (M/F/D/V). Minorities and women are encouraged to apply.

**THE UNIVERSITY OF ALABAMA AT BIRMINGHAM - DEPARTMENT OF MATHEMATICS** - Applications are invited for a tenure-track position at the level of assistant professor to begin September 1, 1998. Applicants should have demonstrated strong potential in research and a commitment to excellent teaching. Post-doc experience is desirable. All qualified candidates are encouraged to apply. We are especially interested in candidates whose research is compatible with the department's current research expertise in differential equations, differential geometry, dynamical systems, mathematical physics, and topology, including the computational aspects of these research areas. In order to apply please send a completed *AMS standard cover sheet* (available from the AMS - <http://www.ams.org/employment/coversheet-info.html>) and a curriculum vita. Please arrange for at least three letters of reference to be sent. Since our notification of this position was late, we urge applicants to complete their file as soon as possible for full consideration. Applications and letters of reference should be sent to the following address: **Search Committee, Department of Mathematics, UAB, Birmingham, AL 35294-1170**. UAB is an AA/EEO Employer. For more information about the position or institution/company: <http://www.math.uab.edu/>

**THE UNIVERSITY OF NEW HAMPSHIRE - DEPARTMENT OF MATHEMATICS** - Assistant Professor of Mathematics Education - The Department of Mathematics at UNH seeks applications for a tenure-track position in mathematics education beginning August 1998. Duties and responsibilities include teaching undergraduate and graduate courses in mathematics education, teaching undergraduate courses in mathematics, advising undergraduate and Ph.D. students in mathematics education, and developing a mathematics education research program that ultimately can support graduate students. In addition, opportunities exist for teaching/advising students in the Department's summer Master of Science for Teachers Program, and for collaboration with local schools and teachers in research and teacher education efforts. A doctorate in mathematics education with graduate work in mathematics or statistics, or a doctorate in mathematics with extensive experience in mathematics education research is required. Experience with precollege teaching or on-going work with precollege teachers is highly desirable. Salary is competitive and commensurate with qualifications and experience. Applications will be reviewed immediately and will continue until the position is filled. Candidates should send a letter of interest, vita, transcripts, and three letters of recommendation to: **Professor Karen Graham, Department of Mathematics, Kingsbury Hall, UNH, Durham, NH 03824-5091**, Tel. (603) 862-3621, Fax No.: (603) 862-4096, e-mail: [kjgraham@hopper.unh.edu](mailto:kjgraham@hopper.unh.edu). UNH is an AA/EEO Employer.

## AWM WORKSHOP: Focus on Research and Career Experiences

held in conjunction with the 9th SIAM Conference on Discrete Mathematics (July 12-15, 1998) and the SIAM Annual Meeting (July 13-17, 1998), University of Toronto, Canada

Preliminary Schedule as of April 15, 1998

The Association for Women in Mathematics (AWM) plans a workshop from Sunday evening through Tuesday morning, July 12-14, 1998. These events are held in conjunction with the 9th SIAM Conference on Discrete Mathematics (July 12-15, 1998) and the 1998 SIAM Annual Meeting (July 13-17, 1998). AWM and SIAM welcome your participation.

The sessions focus on showcasing the research of women graduate students and postdoctoral mathematicians and helping individuals to prepare for careers in the mathematical sciences. Our first session is a minisymposium which focuses on career planning and career experiences. Our workshop also has three research minisymposia presented by postdoctoral mathematicians and a poster session presented by graduate students. In addition, starting off our events on Sunday evening will be a dinner with a keynote speaker.

There is NO registration fee for the AWM Workshop. The minisymposia and poster session are open to all SIAM Meeting attendees. Pre-registration for the AWM dinner is strongly encouraged. Tickets on-site will be very limited. Individuals can inquire about ticket availability from the AWM staff on-site or by contacting the AWM office, 4114 Computer and Space Sciences Bldg., University of Maryland, College Park, MD 20742-2461; 301-405-7892 or awm@math.umd.edu. For further information on the workshop, contact the workshop chairperson, Suzanne Lenhart (lenhart@math.utk.edu) or Dawn Wheeler at the AWM office (awm@math.umd.edu).

### LOCATIONS (subject to change)

#### Sunday, July 12, 1998

- Sidney Smith Hall, Room 2130
- 4:00 p.m. - 6:00 p.m.      **AWM Discussion Group** (for selected Workshop participants) Hart House, Music Room
- 7:00 p.m.                      **AWM Dinner Banquet**
- Keynote Speaker:      **Rosemary E. Chang**, Silicon Graphics Computer Systems
- Title:                      **"On the Career Road and Some Thoughts about Traffic"**
- [see AWM staff on-site for ticket availability or email awm@math.umd.edu prior to the meeting]*

#### Monday, July 13, 1998

- Sidney Smith Hall, Room 2130
- 10:30 a.m. - 12:30 p.m.      **AWM Minisymposium on Career Planning and Career Experiences (MS9)**
- This minisymposium will feature four mathematicians/computer scientists in a variety of careers. The speakers will discuss their career experiences and their work and give some advice on career planning. Government and industrial careers will be included.
- Organizer: Suzanne M. Lenhart, University of Tennessee, Knoxville**
- Speakers:**
- 10:30 a.m. **Joan Feigenbaum**, AT&T Research                      *"Research Careers in Corporate Laboratories"*
- 11:00 a.m. **Maria Klawe**, University of British Columbia                      *"Mixing Mathematics, Computer Science, and the Magic of Multi-Media"*
- 11:30 a.m. **Karin Remington**, Natl. Inst. of Standards & Tech.                      *"Working for the Taxpayer"*
- 12:00 p.m. [ to be announced ]
- Sidney Smith Hall, Room 2130
- 2:00 p.m. - 4:00 p.m.      **AWM Minisymposium on Mathematical Biology (MS17)**
- This minisymposium will feature applications of mathematics in biological scenarios. Most of the applications involve ordinary or partial differential equations, governing population models. Examples of epidemic and immunology models will be included.
- Organizer: Suzanne M. Lenhart, University of Tennessee, Knoxville**
- Speakers:**
- 2:00 p.m. **Meghan A. Burke**, Kennesaw State University                      *"A Mathematical Model of Malaria Transmission"*
- 2:30 p.m. **Zhilan Feng**, Purdue University                      *"Mathematical Models for the disease dynamics of TB"*
- 3:00 p.m. **Ramit Mehr**, Princeton University                      *"Modeling the Metadynamics of Lymphocyte Repertoires"*
- 3:30 p.m. **Rebecca Tyson**, University of Washington                      *"Modeling the Swimming Behaviour of the Medicinal Leech"*

- continued on next page -

## *AWM WORKSHOP at the SIAM Annual Meeting*

**Monday, July 13, 1998 (continued)**

Sidney Smith Hall, Room 2128

**2:00 p.m. - 4:00 p.m. AWM Minisymposium on Discrete Mathematics/Modeling (MS18)**

This minisymposium will feature a variety of applications involving discrete mathematics and modeling. The computational side of solving various applications will be included.

**Organizer:** Brigitte Servatius, Worcester Polytechnic Institute

**Speakers:**

- |           |   |  |
|-----------|---|--|
| 2:00 p.m. | Katherine St. John, Santa Clara University                        | <i>"Sparse Random Bit Strings"</i>   |
| 2:30 p.m. | Sharon Crook, Montana State University                            | <i>"Modeling Cortical Oscillations with Networks of Coupled Phase Oscillators"</i>               |
| 3:00 p.m. | Joan Remski, University of Michigan, Dearborn                     | <i>"Modeling a Superconducting Junction Device"</i>  |
| 3:30 p.m. | Graciela M. Cerezo, Virginia Tech<br>& University of Buenos Aires | <i>"Modeling the Distributional Dynamics of a Clam Population along the Coasts of Argentina"</i> |

**Tuesday, July 14, 1998**

Sidney Smith Hall, Room 2130

**10:30 a.m. - 12:30 p.m. AWM Minisymposium on PDEs and Applications (MS19)**

This minisymposium will feature partial differential equations and various applications. A variety of types of equations will be involved. An inverse problem involving PDEs will be included.

**Organizer:** L. Pamela Cook, University of Delaware

**Speakers:**

- |            |  |   |
|------------|--|---|
| 10:30 a.m. | Natalia G. Berloff, Univ. of Calif., Los Angeles                 | <i>"Generalized Nonlinear Schrödinger Equations and Applications to Superfluid Turbulence"</i>  |
| 11:00 a.m. | Anna C. Gilbert, AT&T Laboratories-Research<br>& Yale University | <i>"Multiresolution Homogenization Schemes for Differential Equations and Applications"</i>   |
| 11:30 a.m. | Emei W. Li, Spelman College                                      | <i>"A Method to Detect A Surface Breaking Crack Motivated by The Classical Potential Drop Method- Mathematical Model and Computational Algorithm"</i> |
| 12:00 p.m. | Lizabeth V. Rachele, Purdue University                           | <i>"Inverse Problems for Elastic Media"</i>   |

Sidney Smith Hall, Room 2130

**12:30 p.m. - 2:00 p.m. AWM Poster Session -- poster presentation by selected Graduate Students**

*[AWM will have refreshment items available during the poster session.]*

**Graduate Student Presenters:**

- |   |   |
|---|---|
| Jamyllie Laurice Carter, Univ. of Calif., Los Angeles   | <i>"A Dual Method for Total Variation-Based Image Restoration"</i>                              |
| C. Maya, Mississippi State University                   | <i>"Multiple Positive Solutions for a class of Semilinear Elliptic Boundary Value Problems"</i> |
| Holly Gaff, University of Tennessee, Knoxville          | <i>"The effect of spatial heterogeneity on a tick-borne disease"</i>                            |
| Charlotte A. Knotts, University of Tennessee, Knoxville | <i>"Extremal Properties of Eigenvalues"</i>   |
| Catherine Lebiez, University of Virginia                | <i>"Uniform Stability of a Coupled Structural Acoustic System with Thermoelastic Effects"</i>   |
| Jeehyun Lee, Iowa State University                      | <i>"A domain decomposition method for an optimal control problem"</i>                           |
| Tanya L. Leise, Texas A&M University                    | <i>"Two Dynamically Accelerating Cracks in Elastic Material"</i>                                |
| Li Wu, University of Wyoming                            | <i>"Mixed Finite-Element Solution of Reaction-Diffusion Equations Using a Two-Grid Method"</i>  |

**VOLUNTEERS NEEDED** - "Volunteers are needed to be "mentors" at the AWM Workshop (July 12-14, 1998) held in conjunction with the SIAM meetings at the University of Toronto (July 12-17, 1998). Mentors are matched with a postdoc, who is giving a talk in the workshop. Mentors should attend the talk of the postdoc and give some constructive advice about the talk. If possible, the mentor should attend the AWM dinner to get introduced to the postdoc or arrange to talk with the postdoc at some other time." "Volunteers are also needed to participate in a "get-acquainted" session on Sunday afternoon, July 12 at the Toronto workshop. Career advice and situations will be discussed at the session." If interested, volunteers should contact Suzanne Lenhart at [lenhart@math.utk.edu](mailto:lenhart@math.utk.edu) or the AWM office at [awm@math.umd.edu](mailto:awm@math.umd.edu)

**ADDRESS CORRECTION FORM**

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 Please send membership information to my colleague listed below:  
 No forwarding address known for the individual listed below (enclosed copy of label):  
*(Please Print)*

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Telephone: Home \_\_\_\_\_ Work \_\_\_\_\_

- You may include this information in the next AWM Membership directory.

**MAIL TO:**

Database Corrections  
 AWM  
 4114 Computer & Space  
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 of Maryland, College Park  
 Maryland 20742-2461

**or E-MAIL:**

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**AWM**  
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