AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

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# PRESIDENT'S REPORT

Having just returned from a wonderful whirl of travel, I'm happily absorbed in my remembrances; some travel notes related to women and mathematics follow this column. Somewhat at odds with this dreaminess is, however, the reality that there is AWM work to be done and soon — planning events, writing grant proposals, keeping current members and finding new ones — in order to advance other dreams! We need your help.

The new AWM membership year begins in October. Please renew now and encourage at least one other person to join. Send us your ideas and suggestions for AWM programs, fundraising, or membership drives. We need better computer equipment and more basic operating funds. We are grateful to those of you who volunteer your time and expertise for AWM and encourage more of you to do so.

As you read this newsletter, we are finalizing plans for AWM events at the Baltimore Joint Meetings, January 7–10, 1998. As usual we will sponsor a workshop for graduate students and postdoctoral mathematicians, the Noether lecture (to be given by Dusa McDuff), a general panel discussion, and meetings of major AWM committees. The AWM Education Committee will coordinate (with MER, the committee on Mathematics Education Reform) a section of the special session on Mathematics and Education Reform; the focus of the AWM section will be professional evaluation (including evaluation of teaching) and gender.

### SIAM Workshop and Atlanta MATHFEST

With the assistance of the Society for Industrial and Applied Mathematics (SIAM), AWM hosted an outstanding workshop at the 1997 SIAM Annual Meeting at Stanford in July. Suzanne Lenhart (University of Tennessee) and AWM Meetings Director Dawn Wheeler deserve special thanks: Suzanne for her superb overall organization of the workshop, as well as for her participation and leadership at the event; and Dawn for her work coordinating, producing, and taking care of all the crucial details. We thank also the many applied mathematicians who enhanced the program as mini-symposium organizers,

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AWM
ASSOCIATION
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MATHEMATICS

The Association was founded in 1971 at the Joint Meetings in Atlantic City. The purpose of the association is to encourage women to study and to have active careers in the mathematical sciences. Equal opportunity and the equal treatment of women in the mathematical sciences are promoted.
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The Editor welcomes articles, letters, and announcements.
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mentors, discussion group leaders, panelists, speakers and poster presenters. Even outside observers — "pure" mathematicians like me — could understand and enjoy the marvelous talks and posters. The ambiance at Stanford was pleasant for meeting participants and sponsors at the banquet, lunch and coffees. We appreciate the help and support of the Board, Council, and Meetings Department of SIAM, and we thank the Office of Naval Research for providing the funding and sending representatives.

In August AWM participated in the Atlanta MathFest; many thanks to Teresa Edwards of Spelman, who coordinated everything, to Suzanne Lenhart, who delivered an AWM/MAA invited lecture there, and to all of you who participated in AWM events.

More details on the workshop and MathFest will appear in future newsletters.

## AWM Political Activism Postscripts

The level of federal funding for the NSF [mentioned in the July/August *Newsletter*] will be decided in September, and your help and support are still needed. Please urge your legislators to support the *House*'s proposal of a 6.6% increase, rather than the Senate's 3.3%. Email your Senators (for the address, see http://wlo.org/woc/senate.html) and your Member of Congress (at http://www.house.gov/Whoswho.html).

The joint statement on scientific research presented to the U.S. government [see the May/June *Newsletter*] is now supported by forty-seven scientific societies, including AWM, AMS, MAA, SIAM, and AWIS and representing more than 1.5 million scientists, engineers and mathematicians. The final statement reads:

> As the federal government develops its spending plans for Fiscal Year 1998, we call upon the President and members of Congress to renew the nation's historical commitment to scientific research and education by providing the requisite funding for the federal agencies charged with these responsibilities. Our call is based upon two fundamental principles that are well-accepted by policy makers in both political parties:
>
> (1) The federal investment in scientific research is vital to four national goals: our economic competitiveness, our medical health, our national security and our quality of life.
>
> (2) Scientific disciplines are interdependent; therefore a comprehensive approach to science funding provides the greatest opportunity for reaching these goals.
>
> We strongly believe that for our nation to meet the challenges of the next century, agencies charged with carrying out scientific research and education require increases in their respective research budgets in the range of seven percent for Fiscal Year 1998. These agencies include, among others, the NSF, NIH, DOE, DOD, and NASA. The increases we call for strike a balance between the current fiscal pressures and the need to invest in activities that enable long-term economic growth and productivity. Such increases would only partially restore the inflationary losses that most of these agencies suffered during the last few years.

> Prudent planning argues for strengthening the respective activities of major research agencies, as already recognized in pending legislation. To constrain still further federal spending on their scientific programs would jeopardize the future well-being of our nation.

This statement has received wide support in the press, as the following two excerpts from news stories show:

1) The 7 percent solution [*US News & World Report*, 5/19/97]

> At a time of scarce resources in Washington, it is tempting to see the scientific community as just one more hungry claimant. That's shortsighted. Like public education, serious funding for science is a vital national investment. The men and women in our laboratories stand at the threshold of dazzling new breakthroughs and the nation should be standing there with them, supporting their work and sharing in their joy of discovery.

2) Public Science Is Pillar of Industry [*The New York Times*, 5/13/97]

> In recent years, as private industry in the United States has grown big and sophisticated enough to surpass the Government in overall spending on research, some conservatives have suggested that public support of basic research is passé. Publicly financed research gave birth to high-technology industry, they say, but it is no longer so important. The new study sharply contradicts that view.

## AWM Archives

AWM now has joint archivists, Alice T. Schafer, Wellesley (AWM Past-President) and Bettye Anne Case, Florida State (AWM Meetings Coordinator). If you have historical material on AWM (Alice and Bettye Anne will be happy to help you determine if it is suitable), please send it to Wilma Slaight, Archivist, Wellesley College Library, Wellesley College, Wellesley, MA 02181-8289. Also, let both Alice and Bettye Anne know you are sending material to Wellesley, by writing them at the addresses: aschafer@phoenix.marymount.edu and case@math.fsu.edu.

## New AWM Homepage, Account at Nebraska

The AWM Homepage address is now http://www.math.unl.edu/~awm/. Also, messages for AWM may be sent to the University of Nebraska's AWM

MEMBERSHIP AND NEWSLETTER INFORMATION

**Membership dues**

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

**Subscriptions and back orders**

All members except family members receive a subscription to the newsletter as a privilege of membership. Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for $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; phone: (773) 508-3554; fax: (773) 508-2123; email: leggett@math.luc.edu. Send all material regarding **book reviews** to Marge Murray, Department of Mathematics, 460 McBryde Hall, Virginia Tech, Blacksburg, VA 24061-0123; email: murray@calvin.math.vt.edu and for the **education column** to Sally I. Lipsey, 70 E. 10th Street, #3A, New York, NY 10003-5106; email: sallyirene@worldnet.att.net. 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.

account at awm@math.unl.edu, as well as to the Maryland AWM account at awm@math.umd.edu.

**Plans**

For the academic year 97/98 I will be on leave from the University of Nebraska; in the fall I will visit Michigan State University and in the spring, Purdue. Although the main purpose of this leave is to advance my research, especially with my wonderful collaborators Christel Rotthaus and Bill Heinzer, I hope to establish and continue connections and projects related to women in science and mathematics while on leave. I am grateful to Nebraska, Michigan State and Purdue for supporting the leave.

As many of you AWM members and friends begin a new academic year, we extend to you our best wishes that the year ahead will be productive, enjoyable and manageable. We hope you have had a rewarding and relaxing summer.

With hopes of seeing and hearing from many of you in the next months, and with best regards,

Sylvia

Sylvia Wiegand
July 20, 1997
Lincoln, Nebraska

# PRESIDENT'S TRAVEL NOTES

**University of Wisconsin Mathematics Ph.D. Centennial**

The UW Mathematics Department offered a warm welcome and an interesting program to alumni and others who attended the celebration May 21–24 in honor of 100 years of Ph.D.'s in mathematics. The invited hour speakers discussed famous mathematicians (such as Bing, Bruck, and Kleene) and great contributions to mathematics with connections to Wisconsin. These talks were wonderful — humorous, sentimental, interesting and understandable. There were also mini-symposia on current research in fifteen areas and two gala social events which provided opportunities for socializing and reminiscing. It was a great way to celebrate milestones, friendships and mathematics simultaneously!

The Mathematics Department at Wisconsin has always had a welcoming, friendly and supportive atmosphere — it was a great place to be a graduate student. I am grateful to my professors there for their wonderful teaching and for their help. Being a faculty daughter, faculty wife, and grad student all at the same time meant that I made friends with members of the department on three levels, and that it was my whole life at the time.

Department Chair Richard Brualdi announced that the faces in the department are changing as members retire: presently there are about 55 faculty members and 18 emeriti. He hopes that future hiring will include more women and underrepresented minorities. Thanks, Richard, for your good intentions and for your work on the centennial celebration, and thanks to all who made it such an impressive and congenial event.

**Betty Hirschfelder, UW Math Ph.D., 1930**

As part of the Wisconsin Math Department celebration, a special luncheon was held Wednesday, May 21 to honor Elizabeth (Betty) Hirschfelder, the third woman (and twentieth person) to earn a Ph.D. in mathematics there. Her 1930 dissertation was titled "Matrices conjugate to a given matrix with respect to its minimum equation." Betty, who had just celebrated her 95th birthday, appeared to be in wonderful good health and sparkled to see so many old friends. As an assistant professor with tenure,

she taught math for almost twenty years at UW and co-authored a popular textbook, *Higher Mathematics for Engineers and Physicists*. Later Betty and her second husband Joe, a professor of chemistry, established a theoretical chemistry institute at Wisconsin. She edited and proofread a famous textbook *Molecular Theory of Gases and Liquids*, coauthored by Charles Curtiss, Robert Bird and Joe.

Betty has been a longtime friend of my family and an early role model for me. Her commitment to science and women is demonstrated by the four funds she has established at the UW Foundation. The first recipient of the latest award, a special Betty Hirschfelder Award for Women in Chemistry, Math and Physics, is math grad student Susan Hollingsworth. Congratulations to Betty and Susan!

### Women in Mathematics at Wisconsin

Two of the first four Ph.D.'s awarded at the University of Wisconsin went to women — Charlotte Elvira Pengrain (1901, "On the conformal representation of plane curves, particularly for cases p = 4, 5, and 6") and Florence Eliza Allen (1907, "The cycle involutions of third order determined by nets of curves of deficiency 0, 1, and 2"). At the Centennial celebration, Jeanne LaDuke gave an interesting talk — part of her continuing project with Judy Green — about the eight women Wisconsin Ph.D.'s before 1940. She also mentioned other early women mathematicians with ties to Wisconsin, including Christine Ladd-Franklin and Mary Winston Newson.

During my years as a graduate student at Wisconsin (1967–1972) there were enough other women that we didn't feel strange. Most of us would not have thought then of needing an organization for women in mathematics — our awareness that women were treated differently came later. By a quick tally from the Ph.D. list on the UW Math Department webpage (http://www.math.wisc.edu/), there appear to be 20 women Ph.D.'s in the total of 205 from 1969 to 1975. I'm listed in 1971 as one of five women out of 39. Of this group of twenty, five others were at the celebration: Christina Bahl (National Security Agency), Melinda Certain and

Betty Hirschfelder and Mary Ellen Rudin

Yvonne Nagel (both at the University of Wisconsin), Carol Shilepsky (Wells College), and Sue Whitesides (McGill University).

Mary Ellen Rudin, a Wisconsin faculty member from '59 to '91, was always a great role model and friend to all the graduate students at Wisconsin. We were thrilled when she solved a famous problem mentioned in our first-year topology course that had been open for fifty years: whether the product of a normal space with the unit interval is again normal. (She found an example such that the product is neither normal, separable nor first countable.) Since then she has continued to do outstanding research in set theory, logic and topology. For many of her years at Wisconsin, she held the Grace Chisholm Young Distinguished Chair. Although now retired from teaching, she is still active in research, is in wide demand as a speaker and has received several honorary degrees.

### The Canadian Mathematical Society

On June 6 I attended the Canadian Mathematical Society (CMS) Board meeting held in Winnipeg, Manitoba. Once again I was impressed by the efficiency and friendliness of the Canadian Board, ably led by President Kathy Heinrich. They have serious concerns about funding and jobs, but are optimistic and energetic about finding solutions. Joan Geramita reported on the situation for women in mathematics in Canada; she promised an article for a future AWM *Newsletter*. Three items may be of particular interest to AWM: 1) an all-woman Canadian mathematics conference will be held May 22–23, 1998, 2) Cathleen Morawetz, of the Courant Institute and Past-President of the AMS, delivered the third CMS Krieger-Nelson Prize Lecture (for distinguished research by a woman) in June 1997 on "Existence problems in transonic flow" and 3) in the recent CMS election, seven women were elected among the sixteen new Board members. [See related articles on pages 19 and 32.]

### Conferences in Marseille and Padova

The main topics at Marseille were nearly factorial domains and integer-valued polynomials. The participants included mathematical friends from all over, especially the U.S., Italy and France. The participants at the Padova conference —in honor of Adalberto Orsatti's 60th birthday — spoke on topics reflecting Orsatti's broad interests: topological algebra, module theory and abelian group theory. Orsatti is responsible for a great tradition in algebra in Italy and for the development of many fine women algebraists. Claudia Menini, a professor at Ferrari and a major collaborator with him, gave a moving speech about how Orsatti had inspired her to do mathematical research. Although Orsatti is not feeling well and has difficulty speaking, he spoke with me about a talk I had given at an earlier conference. I am pleased to be a part of the friendly, supportive commutative algebra community; seven of 29 speakers at Padova were women, and nine of 27 at Marseille.

### South Africa

A historic first, the South African Mathematical Society (SAMS), Southern African Mathematical Sciences Association (SAMSA), and AMS joint meeting held in Pretoria June 25–29 was a big endeavor (over 400 delegates, eighteen sessions, over 300 speakers). The South African hosts were well-organized and hospitable. The London Mathematical Society and UNESCO also provided support for the conference; we speakers from the U.S. were extremely grateful to the National Science Foundation for providing some travel assistance and to the AMS for obtaining and coordinating the assistance. This conference marking the fortieth anniversary of the South African Mathematical Society was important for South Africa's future international mathematical interactions.

The participants were welcomed by two dignitaries: Vice-Chancellor and Principal Johan van Zyl of the University of Pretoria and Roger Jardine, Director General of the South African Department of Arts, Culture, Science and Technology. The University of Pretoria is the largest residential university in South Africa and is heavily biased towards the sciences. Niko Sauer, President of SAMS, mentioned that the white men who were the founding fathers of the Society would be surprised at the transformation of the Society; and that, to the somewhat isolated South Africans, the meeting was like a ship coming in to brighten their long winter nights — they would be sad when the ship sailed away but would hope that another ship would come soon. Hyman Bass, representing the AMS, said that mathematics, as one of the noblest tools of the human spirit, was an appropriate vehicle for beginning the profound and difficult changes needed in South Africa. Dumisani Vuma, for SAMSA,

L.C. Young (Sylvia's father), Betty Hirschfelder, Melinda Certain, Sylvia Wiegand

Conference Center, Pretoria, South Africa Meeting

particularly regretted the low representation of women in mathematics in South Africa and emphasized the need to encourage girls, saying that South Africa is wasting 51% of its talent [see page 28 for the text of his address].

Most of the invited hour addresses were well-paced and understandable to a general audience. Our small commutative algebra session provided a good opportunity to renew and establish research connections with South African mathematicians. The South African hosts had arranged social events and excursions, including a conference reception hosted by the mayor of Pretoria at a special municipal reception site for official functions, a performance by an African jazz band, happy hour meetings and teas. Several participants visited Kruger National Park, the world's largest natural game reserve.

### AWM Lunch in Pretoria

With the assistance of AWM Past President Cora Sadosky and Marie Vitulli, AWM Representative to the Joint Committee on Women, we organized an AWM lunch attended by about twenty women and five men. The twelve Americans at the lunch included Audrey Terras, Doris Schattschneider, Kate Okikiolu, Yonatan Katznelson, Zoe Haskell-Craig, Deirdre Haskell, Steven Givant, Walter Craig, and Gail Burrill, president of the National Council of Teachers of Mathematics.

The South African women described how it feels to be a female mathematician there. South Africa lags behind the U.S. in acceptance of women mathematicians. (Many comments at the opening ceremony were about working toward racial harmony and cooperation, which may take precedence over gender equity.) One woman commented at the lunch: "It's a man's world, but the women do the work," and the others agreed. They mentioned the isolation, the difficulty of networking, the lack of role models for young women, the problems of child care at meetings, and their discomfort in approaching male senior lecturers at their institutions. In all of South Africa, there are only about five women at the rank of Associate or Full

At the AWM luncheon

Professor. AWM would like to establish more ties with these women, and we plan to provide some newsletter subscriptions.

One of the women at the lunch, Angela Spalsburg, was born in Nebraska, studied in the U.S. and now is at the University of Witwatersrand in South Africa. Another woman, Generosa Cossa, is the chairperson of an organization called the Women's Academic Nucleus (NUMAC), based in Mozambique and formed "as an institution for debate and action for the whole female population of the institutions of higher education and research in Mozambique." NUMAC aims to fight discrimination, to encourage female students, and to promote the research of women.

### Arranging an AWM Get-Together

Suggestion to readers: It is easy to arrange an event for supporters of women in mathematics as part of any mathematics meeting: you decide on a place and time for a breakfast, lunch, coffee/tea, or dinner; alert others you know are going to the meeting; at the meeting put up notices, try to get the meeting announced officially, and tell people you see about it. You might say "Luncheon for Women Mathematicians and Their Friends, Sponsored by the Association for Women in Mathematics" with pertinent information. At the event, we usually go around the room with introductions: name, where from, area, response to some topic of discussion if any. If you hold an event like this, please send us a report for the newsletter and tell us who came. Thanks!

## VOLUNTARY NATIONAL EIGHTH GRADE MATH TEST

This spring President Clinton announced that there would be a Voluntary National Eighth Grade Math Test starting as early as this academic year. There is a national committee working on the issues involved in preparing a test at the present time. A first draft of a report is available on the website maintained by this group: http://www.mprinc.com/nationaltests/math.html.

Cora Sadosky with South African mathematicians

# 1997 AMS ELECTION

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

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

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

The Council nominated Felix Browder and Srinivasa S.R. Varadhan for President-Elect, one to be elected for a term of three years. The Council nominated Jennifer Tour Chayes and Efim I. Zelmanov for Vice-President, one to be elected for a term of three years. The Council nominated Roy L. Adler and Frederic Y. M. Wan for Trustee, one to be elected for a term of five years. The Council nominated the following candidates for Member-at-Large of the Council: Edward F. Aboufadel, Alejandro Adem, Ara S. Basmajian, Robert L. Bryant, Jane M. Hawkins, Lisa Claire Jeffrey, Karen V. H. Parshall, Michael Starbird, Abigail A. Thompson, and Deanne Yang. Mary Beth Ruskai was nominated by petition. Five will be elected to serve terms of three years. The President has nominated the following candidates for the Nominating Committee: Michal Misiurewicz, Catherine L. Olsen, Paul Rabinowitz, Eli Stein, Eugene Wayne, and Sylvia Wiegand. Three will be elected. The President has also nominated the following candidates for the Editorial Boards Committee: Jay Goldman, David Jerison, Abel Klein, and Ronald Solomon. Two will be elected. Unless otherwise noted, the respondents are faculty members in departments of mathematics.

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

## PRESIDENT-ELECT

### Felix E. Browder, Professor, Rutgers University

In my statement for the ballot for the AMS Presidency, I listed a number of major challenges that the AMS faces: employment problems of young mathematicians, mathematics education at all levels, research funding, recruitment of mathematical talent, public appreciation of mathematics, and underrepresentation of women and minorities in the profession. There is a broad consensus in the American mathematical community that these are serious problems which the AMS and other mathematical organizations must tackle in a realistic and effective way.

Of these problems, the most pressing is the employment problem, not only for its effect on the lives and mathematical careers of young mathematicians but also for its long-range impact on the future of American mathematics (and on the possibility of finding ways of tackling the other problems). The decisive cause of the employment problem in the present period has been the downsizing of university and college budgets, particularly in state-supported institutions which contain the lion's share of students in the American higher education system. For mathematics as contrasted with most other fields in the sciences, the impact of the academic depression has been accentuated by the fact that around two-thirds of new Ph.D.'s in the mathematical sciences have been entering academic employment, which is at least 20% more than in most other scientific fields.

There is not much the AMS can do in terms of direct action on the level of academic budgets. Since decisions on student support or academic hiring are made on an institutional level, there is very little that the AMS has direct power over in these areas. What the AMS can and must do is to create the possibility for mathematics departments on the one hand and for young mathematicians on the other to understand the situation in a realistic and timely way and to guide their own actions by that understanding.

To be more specific, we must upgrade and speed up our information gathering from mathematics departments and young mathematicians on student and hiring policies and job prospects and distribute the results of that information gathering online. We have very useful precedents here in the activities of the American Institute of Physics and the American

Chemical Society. In line with our new efforts to collaborate with those groups on policy issues, we ought to study their activities and profit from them.

Let me address a very important aspect of this situation. A considerable number of recent mathematics Ph.D.'s are in temporary academic employment, often with extremely poor salary levels, no fringe benefits (including medical insurance) and poor future prospects if any. We must find ways of helping them to escape from this situation. It will most likely have to be into areas outside the academic system since the prospect for many new jobs in the latter in the near future are very poor. New areas of employment must be encouraged and brought effectively to their attention. One recent example which has affected many elite departments (including Princeton, Chicago, Columbia, and even the Institute for Advanced Study) has been the mathematics of finance in which investment banks and other financial institutions have been seeking the services of recent mathematics and theoretical physics Ph.D.'s as well as other mathematically trained people.

One should observe that such possibilities do not necessarily involve the creation of substantial research groups in mathematics departments in mathematical finance.

My own inclination is to try to raise the consciousness as well as the effectiveness of the mathematics community in connection with the fate of our younger generation. Mathematics departments and the AMS must keep track of the situation of recent Ph.D.'s and must be encouraged to face the responsibility for policies which affect young mathematicians. We ought to encourage the development of greater flexibility and breadth in our young people, encourage broader mathematical and scientific knowledge, discourage excessive specialization, and encourage skills of analysis and exposition that will be useful to our Ph.D.'s in any kind of employment.

The AMS has channels of influence that it must use intelligently for the benefit of the mathematics community and of the younger mathematicians who are its future.

**Raghu Varadhan, Professor, New York University, Courant Institute**

I do not think that there is an easy solution for the current job crisis for new Ph.D.'s. Still there are steps that we as educators could take that will help. There is demand outside academia for persons with advanced training in mathematics. This will probably continue for some time. We should train our students for the larger market and not just as academic mathematicians. This could be a professional master's degree or even a doctoral degree. Many institutions are moving already in that direction.

On the academic side the budget cuts at various levels of government and the continuing mantra of tax cuts are not going to be of much help. Graduate education will always remain expensive, and the colleges have traditionally recovered part of this cost on the undergraduate side. The budget squeeze is made more painful because of this. We need to

## 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 by **October 1, 1997** to: The Hay Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. For more information, phone (301) 405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.

convince politicians and society at large that sustaining a graduate education in mathematics as well as other sciences is important. Training our students for a wider role will be a useful step.

Regarding the second point you raised, namely the underrepresentation of women and minorities among us, this needs to be consistently addressed at several levels. For various reasons many students, particularly women and minority students, become discouraged early on. It is very difficult to correct at the college level the lasting effect this creates. Moreover the lack of dependable career opportunities is a disincentive to many students trying to improve their economic position in society. Law, medicine and business appear far more attractive.

There are things we could do at both the individual and institutional level. As faculty we could provide the time and effort necessary to mentor minority students and make it easier for them to enter and become successful in our profession. This is a slow process, and I am sure that many of us doing it already.

Part of the problem is also societal. Students performing well in mathematics are often named nerds by their peers. Educational institutions should pay special attention to minority groups and provide the extra support necessary to make a career in mathematics and science possible. Affirmative action will be a big help in the recruitment of women and minorities. But without adequate follow-up support and mentoring it is not likely to be a big success. While the situation may be improving slightly for women, there is still a lot to be done for women as well as other minorities.

VICE PRESIDENT

**Jennifer Chayes, Professor, UCLA and Manager, Theory Group, Microsoft Research**

There has been tremendous progress in many branches of mathematics, both pure and applied, during the last few years. From the solution of Fermat's Last Problem to the many beautiful applications of wavelets, mathematics is flourishing on both an intellectual and a practical level. Nevertheless, there are serious issues which the mathematics community must address. Principal among these are: (1) shrinking funding from government agencies, (2) a shortage of conventional academic positions, (3) underrepresentation of women and minorities, and (4) challenges to long-standing affirmative action programs. The AMS can and should take an active role in addressing these issues.

In spite of the health of the economy, government funding for "pure" scientific research, including much of mathematics, is shrinking at an alarming rate. We are often told that the reason for the move away from pure research is that Congress will no longer support endeavors that it cannot appreciate or understand. I propose a twofold response to shrinking government funding: First, the AMS should assume a leadership role in communicating the beauty and utility of mathematics to Congress and the general public. It is our responsibility to convey our enthusiasm. Second, the AMS should seek new sources of funding of mathematics in the private sector. I think that I am well-qualified to represent the AMS on both fronts. As a Professor of Mathematics at UCLA for the past decade, I have spent a great deal of time (and won several teaching awards for) addressing the concerns of non-mathematics majors. More recently, as Manager of the newly formed Theory Group at Microsoft Research, I have been directly involved in creating private sector support for basic mathematics.

I believe that the same problems are responsible for, and the same solutions apply to, the shortage of conventional academic positions. We are losing many academic positions because the teaching of mathematics to non-majors is shifting away from mathematics departments. In addition, many universities are putting greater resources into more obviously applied disciplines than into mathematics. The AMS should take an active role in ensuring that the teaching of core mathematics is done in mathematics departments; in particular, the AMS should encourage and support the development of mathematics curricula for non-mathematicians. The AMS should also assume a greater role in explaining the short- and long-term applications of fundamental mathematics to both the scientific community and the general public. This would serve to preserve academic jobs and to encourage the development of attractive alternatives to academic positions in the private sector. I am well-qualified and committed to represent the AMS in these endeavors.

Finally, a major problem still facing the mathematics community is the underrepresentation of women and minorities. This problem has been exacerbated by recent challenges to (and, unfortunately, defeat of) affirmative action policies in California and other states. Particularly in light of these challenges, the AMS must attempt to ensure that

talented and dedicated women and minorities have every opportunity to learn, teach, discover and create mathematics.

TRUSTEE

**Frederic Y. Wan, Professor, Vice Chancellor for Research, and Dean of Graduate Studies, University of California, Irvine**

The state of women in American academic mathematics is quite a bit better today than it was thirty years ago when I was junior faculty. However, we still have a long way to go in bringing it to a state of robust health. From a systemic viewpoint, we need to address problems and issues in a number of areas as described below to benefit even more from the mathematical talents of one half of our population.

1) The Pipeline Issue: Experience with MathCounts and other mathematics competitions indicates that girls are more and more willing to step up to the plate to show their mathematical talents and aspire to a career which requires quantitative skills. We continue to need a good supply of enlightened school teachers and counselors to maintain this healthy trend. We also need good curriculum and instruction for mathematics (and science). We must work to have all students take at least one mathematics course every semester in school. Beyond these imperatives, students in rural, suburban and urban areas have different needs and require different types of care and programs.

2) The College Years: All mathematically talented female students should be encouraged to pursue a course of study which makes use of their talent. It would be wonderful if they should major in mathematics. However, it is equally desirable for them to be interested in science, engineering, or other quantitative careers. The academic environment for woman mathematicians will be enhanced when there are more women in science and engineering.

For those who are interested in working with young people, it is also important to emphasize to these undergraduate students that teaching mathematics in schools is a very important and rewarding profession. We need teachers who are well educated in mathematics and science to maintain and increase the flow of mathematical talents up the ladder, especially for future woman mathematical scientists.

Finally, we need to improve our infrastructure for identifying those specially gifted woman students and encouraging them to go on to graduate school.

## NSF-AWM TRAVEL GRANTS FOR WOMEN

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

Travel Grants. These grants provide full or partial support for travel and subsistence for a meeting or conference in the applicant's field of specialization. A maximum of $1000 for domestic travel and of $2000 for foreign travel will be applied. International travel must be on U.S. flag carriers whenever possible.

Eligibility. These travel funds are provided by the Division of Mathematical Sciences of NSF, and the research conference must be in an area supported by DMS. For example, this includes certain areas of statistics, but excludes most areas of mathematics education and history of mathematics. Applicants must be women holding a doctorate (or equivalent experience) and having a work address in the U.S. (or home address, in the case of unemployed mathematicians). Anyone who has been awarded an AWM-NSF travel grant in the past two years or who has other sources of external funding, including *any* NSF grant, is ineligible. Partial support from the applicant's institution or from a non-governmental agency does not, however, make the applicant ineligible.

Applications. There will be three award periods per year, with applications due February 1, May 1 and October 1. An applicant should send *five* copies of 1) a description of her current research and of how the proposed travel would benefit her research program, 2) her curriculum vitae, 3) a budget for the proposed travel, and 4) information about all other sources of travel funding available to the applicant along with *five* copies of her cover letter to: Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461.

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

3) Graduate Programs: Women were about 23% of the graduate enrollment in American universities in 1995, the latest statistics available. That percentage should be increased by better recruitment as well as more proactive preparation and advising to encourage woman undergraduates to go on to do graduate work. Some graduate programs are more hospitable for women than others. Those with more active women faculty generally do better. Programs which promote student interaction tend to offer a more positive environment for all students, particularly women students.

Whatever the job market in mathematics may appear to be, it is important to encourage more women to pursue a Ph.D. degree in mathematics or some area of the mathematical sciences. My two years at NSF as Division Director of DMS and my many years of experience in academic administration convinced me that there is on the whole a genuine effort to appoint more women to faculty position in mathematics, science and engineering. I have no doubt that there will continue to be academic opportunities to sustain at least the current level of woman Ph.D. production in mathematics.

4) The Academic Career: There are still many obstacles for women pursuing an academic career. Two-career couples often face one huge hurdle even before they can get started. When they both seek an academic position, there may not be a position for both individuals at the same (or a nearby) institution regardless of their credentials. For these situations, the central administration should offer a bridge position for the second appointment, bridging it until the next vacancy occurs in that unit.

Other efforts in making an academic career more hospitable for women include sensible maternity and paternity leave policies and the possibility of sharing a position during the period of raising children. Along with supportive and nurturing departmental mentors, these policies should provide a better environment for career growth for junior women faculty.

5) Academic Administration: Woman mathematicians, in fact all mathematicians, should consider academic administration when an opportunity arises. At the level of a department chair, it is possible that a fixed term appointment would impact your research only minimally but impact the department more significantly. At the level of senior management, an administrator can have significant impact on the entire institution, including policies helpful to women faculty and students.

## MEMBER-AT-LARGE

**Edward F. Aboufadel, Assistant Professor, Grand Valley State University**

Before discussing my views of the current academic job crisis and the inadequate representation of women and minorities in mathematics, I wish to describe my beliefs about the AMS itself, which can be summarized by the timeless phrase, "Think globally, act locally." Most of the critical issues in mathematics today can only be solved locally — school by school, business by business, while the AMS provides a connective tissue between mathematicians, creating a community through vital communication lines (for example, the *Notices*, conferences, www.ams.org). Through the AMS (and, for that matter, the MAA), I can learn of new approaches that I can then bring back to my university and teach my students (in the case of mathematics) or try to influence my administration (in the case of policy issues).

A case in point is the current academic job crisis. The word "crisis" isn't really appropriate anymore, since this situation is almost a decade old. What can be done? Locally, faculty need to lobby deans and provosts to make wise decisions about hiring. Retiring tenured faculty need to be replaced with tenure-track faculty, not adjuncts. Globally, the AMS can support this lobbying by adopting worthwhile resolutions and organizing relevant sessions at conferences. Further, by publicizing issues, the AMS can draw the interest of mathematicians who might not otherwise have paid attention. I believe the history of the job situation in the 90's is an example of this.

The inadequate representation of women and minorities in mathematics is a complex issue. On the one hand, I observe that most mathematics majors at my school are women seeking to become high school teachers. On the other hand, there are few women and minorities in graduate programs. Locally, other faculty and I need to take the initiative, approach talented students, and ask them to consider graduate school. The interest in mathematics exists among women and minorities, it just needs to be more aggressively nurtured. At the graduate level, the sense of isolation among graduate students recently reported in *Focus* (and I think

that nearly all students feel demoralized at some point during graduate school) can only be solved when faculty, locally, step forward and act. Globally, the AMS can encourage faculty to do this and can also publicize non-typical graduate programs (e.g., the University of Delaware's applied mathematics program) that might be more attractive to undergraduates considering their future than the traditional schools.

As a member of the AMS Council, I would represent the views of younger mathematicians and of faculty members at schools without doctoral programs. With my background, I hope to be a thoughtful and effective member of the Council.

**Alejandro Adem, Professor,**
**University of Wisconsin**

The mathematical profession is experiencing numerous changes, the scope of which we have yet to fully comprehend. What seems clear to all is that mathematicians will play an increasing role in non-academic settings. We should welcome this as a potential avenue for strengthening our position in society and providing more realistic career options for graduating students. Academic institutions must take on the responsibility of adequately training students in this context, making clear from the start the limitations and differing types of employment which are now available.

As professional mathematicians it is in our best interest to identify and nurture mathematical talent in all sectors of society. The underrepresentation of women means that we have failed to adequately attract an essential intellectual source; creative solutions must be found for this.

We should stop looking back at how things were and instead pursue the future with new ideas and strategies. As a member of a younger generation I am more interested in finding solutions than dwelling on past situations that many of us never experienced. In this context the increased participation of women and minorities is indispensable.

**Jane Hawkins, Professor,**
**University of North Carolina**

The AWM has asked me to make a statement regarding my candidacy for membership in the AMS Council in the upcoming election. Included with the request was a list of difficult issues reflecting some near-crisis situations we face in our profession: the job shortage, decreasing graduate enrollment, the funding crisis to name a few.

My statement prepared for the AMS I feel reflects my opinions and hopes for many of these issues; I see no quick or easy solution to any of them. I will print that statement here, as my goals are the same for the AWM membership as for the AMS membership, adding only that I would continue to support the successful collaboration between the two organizations. It is clear to me that the AWM officers and members have had a positive impact on mathematics research and education by actively inspiring qualified women to join (and stay in) the profession.

"The AMS should vigorously support the research mathematics being done by mathematicians at state universities (in all 50 states), small colleges, and diverse private institutions (including nonacademic), to accurately reflect the last decade of changes in the job market. Extremely talented research mathematicians are no longer concentrated in just a few locations in the country. Journal editorial policy, grant and conference support, and invited conference speakers should reflect this diversity.

"A serious problem which the AMS should address is that only a very small percentage of mathematicians receive any government grant support. Many excellent researchers and educators are being excluded from critical conference activities as a consequence. The AMS should work closely with the other professional organizations (like MAA, AWM, and SIAM) to support advances in mathematics education from the elementary schools through graduate school.

"The AMS should continue to pursue policies of encouraging underrepresented groups into mathematics and helping them achieve success once they become mathematicians."

**Lisa C. Jeffrey, Assistant Professor,**
**McGill University**

In the United States (as in most other western countries) young mathematicians are having increasing difficulty finding academic positions at the present time. I feel it is urgent that the mathematical community should make an effort to increase awareness in the private sector of the benefit that private companies can derive by hiring mathematically trained individuals. Often mathematical skill enables such individuals to spot the solution to

problems entirely unrelated to their original field of expertise; the private sector should be encouraged to view mathematical training in an applicant not as overqualification but rather as an asset. Some groups outside academia have already discovered how effective the employment of mathematically trained people can be: organizations like the AMS have an obligation to further this trend by enhancing the public perception of our discipline.

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

**Karen V. H. Parshall, Associate Professor, University of Virginia**

Looking back at past sheets of mission statements, one sees the following repeated in a variety of phrasings: "The main mission of the AMS is the promotion of mathematical research." This is certainly true, but this mission seems consistently compromised by an inability to convey to legislators and to the broader public just exactly why mathematical research merits promotion and support. Astronomers with their comets and supernovae, physicists with their quarks, biologists with their human genome project, all captivate the public imagination and win broader support. As an AMS Council member, I would like to work toward devising a short-term as well as a long-range strategy for effectively addressing the fundamental public relations problems of the mathematical community.

**Mary Beth Ruskai, Professor, University of Massachusetts, Lowell**

For those suffering in a crisis, few things seem more ineffectual than appointing a commission to study the situation. Yet the fact remains that one cannot solve a problem unless one understands it, and the data obtained by the AMS in the various surveys it conducts in collaboration with other organizations have proved invaluable. A few years back, when complaints were heard that "women are getting all the jobs," AMS data provided the basis for an effective refutation of that claim. Now, some would make foreign immigrants, rather than women, the scapegoats. However, recent CBMS data suggests that we ought to be paying more attention to other factors. In particular, from 1990 to 1995 enrollment in calculus *decreased* by over 7,000 students at doctoral mathematics departments and by almost 10,000 at all four-year institutions. This decrease is not entirely due to declining enrollment or a shift away from engineering majors; during the same time period enrollment in "mainstream" calculus at two-year community colleges *increased* by 5,000. Both the net enrollment decrease and the shift from doctoral departments to two-year colleges represent a significant number of positions. The rise of technology-based "distance learning" threatens to further erode the number of academic positions in mathematics.

If calculus is most effectively taught in small sections by full-time mathematics faculty interacting with students, we need to confirm and document that. Mathematician need to replace spouting off the top of their heads about the pros and cons of "calculus reform" and technology with careful studies of educational practices. The AMS should encourage this and publicize the results in ways that will enable department heads to convince administrators that a quality mathematics faculty is a necessity, not a luxury.

Rather than trying to decrease the number of foreign immigrants, we should do more to improve the educational system in the U.S. so that our students have the skills and opportunity to succeed in mathematics at all levels. We must also insist that all those who hold academic positions in the U.S. be prepared to deal with students who come from our often-flawed school systems and help them develop their mathematical talent. Immigration itself should also follow the "equal-opportunity" principle, i.e., those from countries with large numbers of female mathematicians should not be disproportionately male. Finally, the AMS must always insist that its international activities follow the principles of gender (and ethnic) equity. In the 1994–96 AMS program which provided small grants to

mathematicians in Russia and FSU countries, women formed 12% of the applicants, but only 3% of the awardees! This deplorable record must never be repeated.

Having chaired the Joint Committee on Women in Mathematics from 1992–95, I am well aware of how much inequity remains and how difficult it can be to convince some people of the reality and seriousness of the more subtle forms of discrimination. In the current backlash against "affirmative action" I have found it increasingly important to remind people that our goal is genuine equity, *not* differential standards.

Nor are these the only issues that concern me. Part of my statement for the AMS said "... research does not take place in a vacuum. Mathematics research is affected by the quality of mathematics education, employment opportunities, the funding climate in Washington ... I believe the AMS can be most effective in these areas by ... working collaboratively with other organizations and other disciplines." As a mathematical physicist, I am particularly interested in seeing the mathematics community benefit from improved communication with physicists, chemists and engineers and collaboration with the organizations that represent them.

In my statement for the AMS, I concluded "particularly in view of the fact that many promising young mathematicians are trying to develop research careers in difficult circumstances, the AMS must strengthen its commitment to support research mathematicians in *all* types of environments, including those at non-doctoral institutions." Many women have long coped with the difficulty of trying to do research while holding positions at "second-tier" or non-doctoral institutions. Now, when faculty from top-ranked schools see many promising young mathematicians take positions at such institutions, may be an opportune time to garner more support for this position. As I strive to do so, I will continue to emphasize that we should support these mathematicians, not because they are female or young, but because of the *principle* that the AMS has a responsibility to support *quality* research *wherever* it is done by *whomever* it is done.

**Michael Starbird, Professor and Associate Dean, University of Texas at Austin**

Society has a great, unmet need for clear thinkers with analytical skills. Mathematics is an ideal study for empowering people to meet these societal opportunities and demands. Unfortunately, several historical habits of the mathematics profession tend to diminish our profession's role in society rather than mining its full potential. Mathematics is seen as a rather forbidding, enigmatic, and fixed territory to be entered only with trepidation by an elite few. Several current initiatives are underway to reverse these traditions and to translate mathematical ideas and insights to make them accessible to a wider range of people. The effort to make our work understandable and attractive outside our specialties and outside mathematics will be well rewarded. Other scientists can offer increased collaboration across disciplines, and interest in mathematics from legislators and the public can result in increased research support. We must develop incentives within the profession for mathematicians to foster that interest and support.

The underrepresentation of women and minorities is another consequence of our limited success at making mathematics inviting and accessible to people whose backgrounds differ from the majority of current mathematicians. No student succeeds or fails to learn science or mathematics because of ethnicity or gender. Students succeed or fail based on preparation, encouragement from teachers, mentors, and the mathematical community, habits of thought, compatibility between teaching and learning styles, and other variables that affect a student's ability to grapple successfully with mathematical concepts. We may do well to move toward a philosophy of referring to student success issues in terms of the pertinent variables that directly affect performance. The University of Texas at Austin has had some success in this direction.

Ten years ago, Jacqueline McCaffrey, subsequently Director of Special Projects in the College of Natural Sciences at the University of Texas, undertook the challenge of fostering minority participation and success in our Department of Mathematics. The most visible of our programs is the Emerging Scholars Program — a joint project of the Dean's Office and the Department of Mathematics. This program was modeled on Uri Treisman's work at Berkeley and brings together a group of students of balanced ethnicity and gender. The program has enjoyed significant success. A decade ago there were 45 African-Americans and Hispanics and 106 females among 266 undergraduate mathematics majors at UT Austin. Last year out of the 407 undergraduate mathematics majors, 196 were women, and 102 were African-American and

Hispanic — an over-representation of minority students relative to the entire student population of the university. A high proportion of the increased number of mathematics majors came from underrepresented groups. In a study to ascertain some of the reasons for this success, the most common answer minority students gave for becoming mathematics majors is that they were asked. Our program is solidly based on challenging academic work. The inviting and supportive atmosphere of our department is the key to our students' success.

The mathematics profession is in an enviable position to flourish, because we've got the goods — a subject that can empower anyone to think better and can produce results that are at the heart of the deepest advances in the human understanding of our conceptual and physical worlds. Let's continue to invite many more people to view mathematics as the intriguing, useful, and culturally central subject that it is. The AMS can encourage this inclusive and welcoming posture by developing, recognizing, and supporting projects aimed at expanding the accessibility of both classical and research mathematics.

**Abigail Thompson, Associate Professor, University of California, Davis**

The primary purpose of the AMS is to foster a healthy environment for mathematical research. As part of this task, the AMS should be making every effort to ensure equal access for women and minorities to jobs and research opportunities in mathematics.

## NOMINATING COMMITTEE

**Catherine L. Olsen, Professor, SUNY at Buffalo**

Among the serious problems facing American mathematics are the history of decreasing funding, the lack of appropriate employment for Ph.D. graduates, and increasing demands by government and educational institutions for greater productivity. Taken together, these result in overall pressure for contraction of the profession, and we are challenged to maintain the integrity of our research and teaching missions. It is crucial that the AMS should continue to be a vital organization, providing leadership and an effective forum to deal with these and other pressing issues. To this end the members of the Nominating Committee must actively seek out candidates for AMS offices who are highly qualified, energetic, and who represent the broad spectrum of the profession.

**Gene Wayne, Professor, Penn State**

As mathematics finds applications in an increasing array of fields, mathematicians are finding employment in a variety of circumstances other than the traditional academic environment. In addition, the community of mathematicians is itself becoming more diverse, as it begins to encompass members of underrepresented groups such as women and minorities. The Nominating Committee should insure that the candidates for offices in the AMS reflect this increasing breadth. In addition, in the face of an increasingly difficult job market and restricted funding of mathematical research, the officers of the AMS must be persuasive and effective advocates for the importance of mathematics outside of the mathematics community, and the ability to act in this capacity should also be one of the criteria considered by the Nominating Committee.

**Sylvia Wiegand, Professor, University of Nebraska**

I am running for the Nominating Committee of the AMS in order to involve more mathematicians in the workings of the AMS; I would work to nominate new and diverse candidates as well as dedicated individuals who have worked hard and effectively.

I support the recent directions and achievements of the AMS, particularly in increasing the public's awareness of mathematics and in joining with other scientific societies to promote funding for science and education. The usual activities of the Society, such as publications and meetings and conferences, have been handled extremely well.

The topics suggested for possible discussion in this statement are important and yet too complicated for easy solutions. Here are my views of two of them:

(1) Regarding the current academic job crisis, my department helps our graduate students to find academic employment by giving them broad experience in all facets of an academic career (teaching, research and service). For example some of our students spearhead the use of new technology in their classes. Our students are encouraged and supported to go to national meetings. Another useful strategy is to prepare students well for jobs in industry and

alert them to such jobs. Many departments have found effective ways of making their students employable, and this is helpful in the short run. Ultimately there needs to be a change of attitude about mathematics, by the government and the general public — mathematics is useful, worthy of study, and worthy of support. This is something that the AMS and the rest of the mathematics community have been working on through lobbying in Washington and sponsorship of popular general lectures and writings about mathematics. Meanwhile the AMS should continue to assess the job market, to sponsor the employment register for whatever jobs it can provide and to make information available to departments and graduate students.

If despite our best efforts there still are not enough jobs, then we must rethink our system of graduate education.

(2) Regarding the underrepresentation of women and minorities in our field, programs like those that the AWM undertakes have been very successful. The AMS has been supportive of AWM's work and should continue to be; the AMS should also work on some projects that AWM cannot, such as the data collection and analysis. The AMS should include women and underrepresented minorities in all aspects of the AMS governance and programs. These are among the fundamental goals of the AMS, and members and officers of the AMS usually show good faith in efforts to achieve them. Vigilance may sometimes be necessary to see that they are not overlooked.

Thanks for your consideration of my candidacy.

## EDITORIAL BOARDS COMMITTEE

### Jay Goldman, Professor, University of Minnesota

As a candidate for the Editorial Boards Committee of the AMS, I submitted the following statement where I decided to comment on one issue:

"I believe that the major problem facing the Editorial Boards Committee relates to electronic journals with no corresponding paper version. The increased cost of adding extra papers to such journals is probably quite small. Thus is it very important to find editors who will do their best to maintain the highest quality journals."

I would like to add the following for members of the AWM.

There are certainly enough very good mathematicians who are women to counter any excuses against their fair representation on the editorial boards of AMS journals. I am not familiar with the current representation, but if I am elected to the Editorial Boards Committee I will educate myself very quickly.

### David Jerison, Professor, MIT

I have served on several editorial boards, including the *Transactions/Memoirs* of the AMS. I have agreed to join two more in 1998, namely, the editorial board of the *Notices of the AMS* and the editorial board of *IMRN* (*International Mathematics Research Notes*).

The work of editorial boards, especially those of the AMS, is very important to the health of our mathematical community. I will try to find as many good candidates for the editorial boards as possible. I welcome suggestions from anyone. You may write to me at jerison@math.mit.edu.

### Abel Klein, Professor and Chair, University of California, Irvine

The American Mathematical Society was created to further mathematical research and scholarship. The journals it publishes are the face the AMS presents to the world. The Editorial Boards Committee has the responsibility of monitoring the Editorial Committees and of submitting nominations of members for these committees to the Council. It is essential that the Editorial Boards Committee ensure that the editorial boards of the AMS journals maintain the high standards of excellence to which the AMS is committed and also reflect the broad diversity of mathematical research conducted by AMS members. Electronic publishing is rapidly changing the way journals are published. At the same time most of our libraries are going through severe financial problems, caused in large part by the proliferation of journals and the increasing high cost of some journals. (Many mathematics departments are being asked by their libraries to cut journals, in an unpleasant yearly ritual.) The AMS has been a leader in electronic publication, and it is also a low cost publisher. It is very important that the AMS continues its leadership in electronic publication and also addresses the problem of high-cost journals.

**Ronald Solomon, Professor,
Ohio State University**

Surely the retirement of mathematicians of my generation will begin to improve the employment situation in mathematics, although the halcyon days of the 1960's and 1980's may well be gone for the foreseeable future. The AMS must continue and expand its efforts to present the best possible case for the importance of mathematics research (both basic and applied) and of mathematics teaching to the intellectual and economic life of the nation. I believe that the underrepresentation of women in mathematics will disappear before long. We should certainly do all we can to shorten this time.

# CMS SUMMER MEETING

In Canada, actions for encouraging women in mathematics are organized not only through AWM (which has many members here) but also through the Canadian Mathematical Society. It has a Committee on Women, now chaired by the irrepressible Joan Geramita, and it has recently established an annual lecture for women. The lecture series is named for Cecilia Kreiger-Dunaj and Evelyn Nelson.

Though these two women mathematicians were in different generations, some of us were friends of both and remember their contributions and cheer with gratitude. As it happens, the 1997 Krieger-Nelson Lecturer was Cathleen Morawetz; she came to the CMS Summer Meeting in Winnipeg to deliver the lecture and on that occasion recalled that Cecilia Krieger played an important part in her life.

Cathleen, as an undergraduate at the University of Toronto, knew Cecilia, a colleague of her father J.L. Synge in the Mathematics Department. As Cathleen was nearing the end of her undergraduate years, she met Cecilia on campus. Cecilia asked about her plans, and she said she doubted she could go to graduate school, she thought she would like to spend a couple of years seeing India. Cecilia told her in no uncertain terms that she must do graduate work, and that she Cecilia was sure she could get a fellowship from the University Women's Club. As she did. (When Cathleen told this story in Winnipeg, an Indian-Canadian man present commented graciously, "Unfortunate for India!")

The lecture itself was about partial differential equations of mixed type. Cathleen had lectured on similar things at Toronto earlier in the year. She didn't mention it in the talk, but I will pass on here a pleasant remark that she made in conversation afterward: one of the theorems that came into the Winnipeg talk but had not been in the earlier talk was new: she had been led to a question by the drafting of her lecture and had been able to answer it. So the CMS lecture not only celebrated her research achievements and communicated them to us, it also helped add to them.

By the way, one sometimes hears worries that a lectureship specially for women will make the existing honorific lectureship a male preserve. In Cathleen Morawetz's case, this question can't arise, because she already gave it several years ago.

*Chandler Davis, University of Toronto*

# PEER REVIEW

**Peer Review? It Helps To Have a Y Chromosome and Connections.**

It used to be said that women have to be twice as good as men to succeed. In Sweden, a more precise number is 2.5 times as good — and Sweden is generally regarded as the world's leader in gender equality. A study of postdoctoral fellowship awards found that reviewers gave women far lower rankings than men with the same publication impact as measured by citation count. "Anyone who is surprised is naive," shrugged Laurie McNeil of the APS Committee on Status of Women in Science. At NSF, funding rates for female PIs have been higher than for males for five of the last seven years, but Luther Williams, Assistant Director for Education and Human Resources, agrees that the figures ignore relative impact. He believes NSF should carry out such a study. The Swedish study, which appeared in *Nature*, found another variable that correlated with high scores: having a colleague on the review committee.

*reprinted from WHAT'S NEW by Robert L. Park, Washington, DC. Park is a past president of the American Physical Society.*

# CAREERS PANEL

Before the meeting, the basic framework for the careers panel at the AWM Workshop for graduate students and postdocs was developed by email discussion. Carolyn Gordon, the workshop leader, and Bettye Anne Case, the panel moderator, encouraged the participants to develop a theme and discussion items. It was felt particularly important to address, for the workshop participants, working in an isolated setting and dealing with the conflicting demands of teaching and research. It is clear that the hiring or postdoctoral institution, especially in the case of temporary jobs, either may not have the career development of the young mathematician as the top priority or simply may not have the resources to address this. Thus, responsibility passes to the individual to determine ways to assure that she does not become mathematically isolated and that she lays a strong foundation for her future career. The theme, of interest to all mathematicians beginning careers, as well as to the senior mathematicians who mentor them, was stated as:

> What the individual can do (herself) to get her career underway in addition to or regardless of what the institutions are doing.

The list of the topics which were proposed in advance as important for discussion are given here as a reminder of some important factors to consider by those beginning careers and those seeking to guide them. Some responses from three of the panelists are indicated by their initials.

Desiree A. Beck (DB): Desiree's answers are clarified by this information she gave the panelists: In June 1993, I began a three-year internship program at the National Security Agency (NSA). During the three years, I took five tours in different offices. Before choosing a tour office, I "interviewed" with technical people from several offices, and they would outline the types of problems that were available for me to work on. Also during the three years, I took various courses related to the types of work that are done at the NSA. I will finish the program in August 1997, and I will then go to a "permanent" office (generally, mathematicians work in several different "permanent" offices during their NSA careers).

Bettye Anne Case (BAC) (moderator and co-organizer): Bettye Anne is a Professor of Mathematics at Florida State University and is on the AWM Executive Committee as Meetings Coordinator.

Carolyn S. Gordon (co-organizer): Carolyn is a Professor of Mathematics at Dartmouth College and was the Workshop Director. She is on the AWM Executive Committee.

Mary W. Gray: The Founding President of AWM, Mary is an attorney as well as a Professor and two-term Chair of the Mathematics and Statistics Department at American University. She is for many of her peers as well as juniors the primary role model of a good mentor.

Linda Preiss Rothschild: Linda presented the AWM Noether Lecture at this meeting. She is a Professor of Mathematics at the University of California at San Diego and is a former President of AWM.

Mary Silber (MS): Mary just finished her fourth year in a tenure-track appointment in the Applied Mathematics Department at Northwestern University.

Jane Rosamund Sangwine-Yager (J S-Y): Jane chairs her small Department of Mathematical Sciences at St. Mary's College, Moraga, CA. (She did not appear with the panel because her airport was fogged in on the morning she was to fly down to San Diego for the panel! She had participated in the earlier discussions and made interesting comments included below.)

## THE DISCUSSION TOPICS

### A. Establishing mentoring relationships

1. Did you have any mentors other than your advisor in the early stages of your career?

DB: Since going to the NSA, I've had different mentors at different times. Typically, they have been my tour supervisors, although I've also sought the advice of other mathematicians whom I haven't necessarily worked with, but who I thought could provide valuable insight into establishing a successful career at the NSA.

*The panel was held at the AWM Workshop, San Diego, January, 1997. Report compiled by Bettye Anne Case, Florida State University*

MS: Yes, I have had two senior mathematicians take an interest in my career. They have been an enormous help to me in getting established on my own.

2. How did the mentoring relationship get established?

DB: In my experience, the people that I've chosen to ask for advice have happily provided it. Identification of the appropriate people has come from attending technical talks and reading internal technical papers.

MS: My primary mentors are people I first met as a graduate student, but got to know better as a postdoc, one during my first postdoc at the IMA, and the other during my third (and last!) postdoc at Caltech. In each case, we have shared research interests so the relationship developed through discussions of mathematics. I was coming from a physics background and had a different way of thinking about problems which they may have found interesting, or at least challenging to translate into their own language. I also had a number of questions for them about their work.

3. Have you found mentoring helpful? (Did you get good advice in establishing your teaching program? Regarding your research program, how have research mentors or collaborators helped you? Were they local, and if not, how do you maintain contact?)

DB: The mentoring that I've received has been very helpful, especially since government/non-academic work was new to me. In particular, my mentors have given me good advice about whom to work with, which offices are the most interesting, and which type of problems deserve the most recognition.

MS: I have found the mentoring invaluable. In addition to providing advice to me on topics ranging from funding sources, to the direction of my research, to how to prepare a good colloquium, my mentors have been good advocates for me professionally (e.g., they have invited me to conferences). I think that one of the most important things that they did for me early on was to have confidence in me, which helped get me through periods of self-doubt.

4. More generally, what is a mentor's role and what makes a good one?

DB: A good mentor for me has been someone who has been able to help me to identify important mathematical problems and perhaps at times has been someone who has been able to give suggestions as to how to approach such a problem. I've also appreciated those people who have taught me various (typically non-technical) things about establishing and positioning one's self for a successful non-academic career.

MS: I think that one of the important traits that my mentors have is a sincere interest in the ideas of young researchers that originates in an inspiring enthusiasm for their subject. I am always confident that any advice they give me is with my best interests in mind; there is no hidden agenda.

J S-Y: At a small school you are often the only person in your field, so it is essential that you have support from colleagues at other institutions. I was very fortunate; many people have helped me.

**B. Starting collaborations**

1. How did your collaborations get started?

DB: When working in a particular office, I easily found people who were doing interesting work and whom I thought I could work with. As an intern, it was usually just a matter of asking whether I could collaborate with them.

MS: Most of my collaborations got started through meeting people at conferences, or by visiting people at their institutions (usually by inviting myself to visit). A couple of my collaborations got started when I was visiting the Fields Institute for a month. For me, the best conferences have lots of dead time so that I can talk to people one-on-one. I also prefer small focused workshops to the really big meetings. Spending an extended period at one of the big institutes like IMA or MSRI is also a great opportunity to start new collaborations.

2. Have you had long-distance collaborations? How have these been maintained?

MS: Most of my collaborations are long-distance. Email is amazing. However, I find that it doesn't match visiting the collaborators or having them visit me, especially at the early stages of a project. The later stages, such as writing up the work, can be done very efficiently with email. If you choose your collaborator in the right part of the

world, you can actually work on a manuscript around the clock while still getting plenty of sleep!

3. What can a recent Ph.D. in an isolated setting do to establish collaborations with individuals at other institutions (whom perhaps she hasn't met)?

4. Have you collaborated with anyone in industry? How did this collaboration get established?

**C. Publicizing your work**

1. How do you circulate your work? (e.g., mailing preprints, electronically)

DB: At the NSA, we attach a distribution page to our papers, listing all of the offices that might be interested in the work; the papers are distributed accordingly. We also have plenty of opportunity to give technical talks.

2. What can you do to bring your work to the attention of senior people in your field whose work is very closely related to yours?

DB: Most mathematicians at the NSA are very approachable and direct correspondence is nearly always possible.

3. Do you discuss your projects openly before you've obtained results (or are you concerned about being pre-empted)?

DB: I've not been concerned with being pre-empted.

4. Do you feel it's worthwhile to talk in contributed paper sessions at AMS meetings, etc?

BAC: If you are not known to the organizers of AMS Special Sessions (or SIAM Minisymposia), you may not be invited to talk at sessions that are appropriate and for which they can make a time for you. Do not be shy about writing them (addresses are provided by the professional societies — AMS has a procedure for this). Organizers are encouraged to include young mathematicians.

5. What, if anything, would you advise a recent Ph.D. to do to encourage speaking invitations?

MS: You should not be timid in wanting to share your results with others! It is not aggressive to let someone know that you have some new results that you'd like to tell them about and that you could even prepare a seminar on the topic. Since money is usually tight for seminar speakers, nearby institutions are undoubtedly looking for local speakers in their series, and this is a good place to start. For example, when I first arrived at Northwestern, I let colleagues and associates at other midwestern universities know that I was now their "neighbor" and that I hoped to visit at some point. I was invited to give seminars at half a dozen midwestern universities during my first year or so at Northwestern. As an organizer of one of our departmental seminars, I am always looking for leads on local or semi-local speakers. If a colleague passes through the area, I am always happy to snag that kind of opportunity to hear from someone new, too. We have had excellent colloquia from people who are in Chicago to visit their parents for Thanksgiving!

It is also a good idea for new faculty members to get involved with their departmental colloquium committee. I have found that my invitation to someone to speak in our colloquium series has sometimes led to a return invitation to speak in their department.

Finally, at the risk of stating the obvious, it is important to give good seminars. A reputation for giving clear, insightful, energetic seminars really goes a long way in obtaining new invitations. We may not all have earth-shattering research to report, but we all can put in the time to make a well-organized, thoughtful presentation which will be appreciated by our audience.

J S-Y: My thesis advisor didn't travel, so I had to do this myself. You must start somewhere. I went to Europe on my own to one meeting and ended up at Oberwolfach.

**D. Resolving the tensions of getting started without your advisor**

1. Research: How do you find new problems to work on? How do you cope with working in an isolated setting?

J S-Y: When we hire, I expect candidates to have a proposal for continuing their research in the San Francisco area. In my experience, new faculty need to become active in a research group if they are going to continue.

2. How do you deal with the conflicting demands of teaching and research (on time, other resources)?

3. Are there any warnings (perhaps things *not* to do) concerning activities prior to tenure?

J S-Y: Re 2&3: At a small school there are all sorts of activities that can distract you — if you're not careful, you'll end up coaching the soccer team. You need to learn to say no.

# COOPERATIVE CHILD CARE IN BALTIMORE

Many mathematicians have small children, and sometimes the best or only option is to bring them to meetings. Due to the high cost of liability insurance, however, none of the organizations sponsoring the joint meetings can provide child care. There is usually an attempt to provide the names of some babysitting services, but often the cost is very high, possibly again due to the cost of bonds and insurance.

In order to help alleviate the child care problem, we would like to facilitate communication among those with this concern by starting a bulletin board for people interested in arranging cooperative babysitting for the Baltimore Joint Meetings.

AWM unfortunately also must consider issues of liability. These arrangements should be away from the meeting site and individually arranged by you; we do not accept responsibility for providing care or for the quality or nature of the care.

If you would like to be listed on the bulletin board for possible exchange or joint arrangements of child care with others coming to the Baltimore meeting, please email Deirdre Haskell (haskell@math.holycross.edu), Sylvia Wiegand (swiegand@math.unl.edu) and AWM (awm@math.unl. edu). Your information will be posted on the AWM web page (http://www.math.unl.edu/~awm/).

Please include the following information and state your willingness to have it posted: your name, institution, phone number, email address, ages and sexes of the children, hotel where you will be staying, and any other information you think is relevant.

If you have older children, even teenagers, who may not need much care or supervision but who would enjoy being with other young people, please feel free to include them also.

# LETTER TO THE EDITOR

Readers of your news item "AMS on Immigration Bill" will have noticed a discrepancy between two of the documents quoted. The Council of the AMS resolved that the Society "deplores the announced intent of the ... Act of 1996 to restrict visits by foreign nationals" and that the officers and staff "work with other professional societies and with U.S. universities and colleges in an effort to change or challenge the provisions of Section 641 of this act." The President of the AMS, on the other hand, said, "We are only concerned about Section 641."

Which shall the reader believe?

The discussion at Council concerned the Act as a whole, for the reasons given in the resolution it passed. The Act as a whole has the announced intent of keeping people out, and the Council opposed this. The application to mathematicians was clearest and most frightening in Section 641, which is why it was singled out in the last paragraph of the Council resolution. President Jaffe to the contrary notwithstanding, a huge majority of the Council is on record against the whole illiberal Act. This Council position deserves our support.

Chandler Davis
Department of Mathematics
University of Toronto

## FOUR DEADLINES!

Four major deadlines are fast approaching; please make note of them: 1) AWM Workshop for Graduate Students and Postdoctoral Mathematicians, Baltimore (January 1998), application deadline **September 1, 1997**; 2) Alice T. Schafer Prize (to be presented at the Joint Prize Session in Baltimore, January 1998), nomination deadline **September 15, 1997**; 3) Louise Hay Award (to be presented at the Joint Prize Session, Baltimore, January, 1998), nomination deadline **October 1, 1997**; 4) AWM Travel Grants for Women in the Mathematical Sciences to attend research conferences in their fields, application deadline **October 1, 1997**.

# AWM PANEL AT THE IAS MENTORING PROGRAM

Karen Uhlenbeck and Chuu-Lian Terng have been running the IAS/Park City mentoring program for women mathematicians for the past four years; this year it was held from May 12 to 22. Usually there is an AWM panel on careers on Saturday. This year's title was "What path did people take to get to where they are?" The panel was organized by Chuu-Lian and moderated by Sarah Greenwald (U. Penn). The panelists were Marsha Berger (NYU), Antonella Grassi (U. Penn), Eleny Ionel (MIT) and Stephanie Singer (Haverford).

## Marsha Berger

It is misleading to talk about the road I took to get here. The road feels more like a random walk, and "here" is not where I thought it would be. I do know that when I was a student it felt like there were lots of roadblocks, some obvious and others subtle. It probably feels like that to many students, and the extra pressure and isolation of being among the few women in the field make these even harder to hurdle. Still, I am pleased with my career and happy in it; mathematics is fun and at least so far, the field is big enough to accommodate people, like me, who don't take the standard path in getting there.

I'd like to tell two stories from what I think of as my early years. Although my early years were quite a long time ago, in retrospect I think these were two formative experiences in my life.

The first experience relates to Hunter College High School, the all-girl school I attended from grades 7 to 12. Hunter College High School was a magnet school for academic achievers, but the crucial thing at that time was that the school was all girls. (Stuyvesant High School was the all-boy "brother" school.) I am certain that the high expectations placed on us in the classroom without having to worry about "what the boys thought" left us better prepared to tackle whatever came next. Unfortunately, nowadays Hunter is a coed school. Though is it still an excellent school, my friends with girls tell me of the math anxiety and subtle early signs of loss of self esteem that happen more frequently, I believe, to girls studying math in coed schools. So my personal view, controversial I know, is that it is time to revisit single sex education and that it may be particularly beneficial to girls interested in math and sciences.

The second formative experience had to do with my mother, naturally enough. My mother, Phyllis Berger, was a mechanical engineer, which was quite unusual for her time (and still is now). Her career had lots of "firsts": first woman to graduate from Cooper Union in mechanical engineering, first woman chairman in the country of an engineering technology department at a community college, first woman on a State Board of Engineers and later first Chairwoman of that Board, founding member of the Society of Women Engineers, and I could go on. As I was growing up, I remember there were always lots of women engineers at our house, particularly during the first International Conference of the Society of Women Engineers, which was practically held in our living room! At the time, I thought that engineering was a woman's work, like nursing and secretarial work, and that men were doctors and lawyers. Looking back now, it is clear that having as a role model a working mother in the sciences was a tremendous help, especially in my expectations for myself. So I was fortunate enough to have had two key ingredients early in my life: high expectations, and a successful female role model to help guide me through the difficulties in becoming a scientist.

To summarize the next few years, I went to SUNY Binghamton, where I majored in math. I next did a student internship at Argonne National Laboratory, which turned into a full-time job as a scientific programmer in the Environmental System Division. It was a great job, but after two years it was clear that I needed to go back to school. Returning to graduate school was not easy, nor was attending a top CS program (at Stanford) with no undergraduate background in CS. There were few women, many of the professors had trouble dealing with women, and there was little support system, which would have been helpful. As if being a graduate student wasn't difficult enough!

An unexpected thing happened at Stanford in those first two years. I had started Stanford thinking I would most likely get a master's degree. However, I checked the Ph.D. box on the application, knowing that only the Ph.D. students were supported. It's that expectation thing again: by the end of my first year there, I too expected myself to get a Ph.D. I confess to thinking that every year was going to be the year I dropped out. Here is where everyone needs to find some source of support, in my case from my parents and my future husband, without which I doubt I would have hung in there.

Skipping ahead 10 years or so, I did survive graduate school, and found life much better on the other side of a Ph.D. I even survived having children before tenure, though the comments I received about ruining my career and other people having the "sense to wait" did make me very nervous.

My point is this. Until there are more women around who take a whole variety of paths into math and the sciences and show us different ways of doing things, making your way will still be a nervewracking and isolating process (even with the advantages I started off with). But I believe that a career in mathematics is a worthwhile path to pursue, it's important, it's fun, and the field is big enough for all different kinds of people, even women.

**Antonella Grassi**

I was born in Italy and lived there until I came to graduate school in the United States. I always liked and enjoyed doing math ever since I can remember. I was not aware, however, that one could make a career in math, not until my early 20's. Until then it was just a personal hobby. I was told that math was behind many things, all of which seemed quite far from what I was taught in school and enjoyed doing.

I envy my colleagues who had the fortune to be exposed to more math earlier, partly because I think I missed out on some good fun, partly because they learned early on about the profession of mathematics.

During eighth grade I had to choose between the various types of high school in the Italian system. I opted for the classical (humanities) high school, instead of the technical (scientific) high school, which offered more math. In fact, I had by that time developed a keen interest for history, art, religions and the social history of women.

During the high school years I studied with great dedication all of the above, and math seemed to be no more than a favorite pastime. I did see one concrete application of math: our math teacher made us build a parabolic mirror out of aluminum foil, and we proceeded to set fire to the janitor's old broom (under the supervision of competent authorities) in the high school garden. That was how Archimedes had set fire to the Roman ships during the siege of Siracusa, someone said; but the Romans eventually got Siracusa, and that trend of math applications was not my cup of tea.

In class, math was not exactly taught: one of us was usually called to the board, asked to draw various lines, maybe other geometric figures and then asked to deduce something from it. While I had fun doing it, I did not see how it could turn into a respected life-long activity for me.

In my history of philosophy textbook I read a sentence of Hume which seemed to summarize my experiences with math and sciences. Hume said that math was different from other sciences because it was analytical, derived from some set rules. That's why I liked math so much, I thought, while I was always unsatisfied with the lack of precision in the other lab-based sciences. But it came with a price: the lack of rigor was traded with the lack of applications, or so it seemed, and math was left as a hobby.

Finally the end of high school approached and I was faced with the dilemma of what to do next. (In Italy one has to choose one area of specialization at enrollment.) I saw that "mathematics" was actually listed among the various schools and also that the school of mathematics started one and one half months earlier then the others. Then the decision was made: I would enroll in math and possibly switch later on. So I did. I was in for a shock, you can imagine, but I was still fascinated by what I was presented with, and I had to learn, quickly, that it was a serious, demanding subject. No more playing around, drawing lines on lazy afternoons.

I also learned that one could study math and teach it for a living. I didn't quite know what research meant (there was quite a gap between what I knew and the talks I was attending); but I also liked teaching and started to think that I could make math my career.

Usually, fellowships were given to people who wanted to continue after graduation, but at that time, a "new" graduate program had started, the old fellowships had been taken away, and no one would tell me anything sure about the new program.

Some of my teachers suggested that I consider coming to the U.S. for a Ph.D. program. I did not want to move, but as time was passing I did not know where else to turn, if I wanted to continue doing math. And then where to go? I figured I would apply where an older student I knew had applied and gone, even though the strength of the department was not in areas I was interested in.

Before I left a professor I greatly respected warned me of two things: first, about going into a program with different strengths than what I had in

mind to study, second, that the women he knew of who had left to pursue a Ph.D., for some reason, had come back without it.

The first warning I chose to ignore (my English was very limited and I felt it was important to be with other Italians in the program) and the second sounded like a challenge I could not pass up. Nevertheless, I felt I was taking a tremendous gamble.

When I arrived at Brown University I noticed that even for the American women the situation did not seem to be much different. Many had started the program, and most of them had left without a Ph.D., with only two exceptions, and both of those women were married to mathematicians in the building. What was that supposed to mean?

I concentrated on my classes and managed to do well, after all. But more difficulties were on the horizon: a large majority of faculty members had decided to leave Brown and to go elsewhere. What was I supposed to do? I was not set up to work with anyone in particular ... so I took another gamble, made arrangements to work in birational geometry (something that appealed to me even though I had just taken my first algebraic geometry class) and moved to Duke University. There I just concentrated on my work. During the last year in graduate school I often thought that doing math had been the easiest thing for me during the graduate school years. This is not to say it was easy, ever.

Then I had post-doc positions at Tufts University and at MSRI, and I have now finished my fourth year as an Assistant Professor at the University of Pennsylvania. I happened to meet again the Italian professor who had given me the two pieces of advice. He greeted me and complimented me on my achievements. I was not about to argue, nor to elaborate on his advice, and thanked him politely.

Do I feel I have reached a safe path? Maybe it seems safer than in the past, by comparison, but I am not sure. I like to think of myself as an applied algebraic geometer, as I work on applications/interactions of algebraic geometry and string theory, and in teaching I make a point of always presenting applications; maybe Hume would find this acceptable.

I feel that my path has been bumpy and also paved with injustices, discrimination and difficulties that I could have done without. I also had several, unexpected "good" turns. Some of the difficulties still remain unsolved.

Of the six women who were at Brown when I started, three finished with a Ph.D. (including myself).

We can recognize many similarities in our setbacks and mistakes, as well as good fortunes and accomplishments. It has been good to know, in a land that seemed full of shining paths and scary crashes, that someone had been through various ups and down and still managed to keep going.

In this spirit I wanted to share my math story.

**Stephanie Frank Singer**

After a brief professional bio, I will recount three crucial moments in my career, all involving women who are at this mentoring conference. The moral of my story is that each woman in mathematics has tremendous power to support the women around her.

I earned my B.S. in mathematics at Yale University, where I focused on set theory and model theory. After a year in the Computer Science department at Stanford University I decided to return to mathematics and the East Coast. I received my Ph.D. from the Courant Institute (NYU) in 1991; my thesis on the full Toda lattice (an integrable system) was directed by Nick Ercolani of the University of Arizona. I went straight from graduate school to a tenure-track job at Haverford College, where I am still on the faculty. In 1994–5 I spent a year visiting the symplectic geometry group headed by Victor Guillemin at MIT. The visit was funded by the marvelous Bunting Institute of Radcliffe College. Currently I am doing research on the symplectic geometry of orbifolds and am learning as much physics as I can.

My first story is of the day I first met a tenured woman in mathematics. I was already in graduate school when I went for a day to UC San Diego. Karen Uhlenbeck was giving a seminar that day, and it was clear that the men all respected her as a peer or better. To my surprise (I didn't think that role models in math were important for me) my reaction was very emotional. I just followed Karen around all day, like a puppy dog! Perhaps the strength of my reaction was due to the relief I felt at having experienced first-hand not only that women can do math but that they can be respected for it. Thanks, Karen!

The second story happened just after I found out that the thesis problem I was working on had been solved. I was devastated and had decided to quit math altogether. Now my copanelist, Marsha Berger, may not know this, but she kept me in graduate school. We both had offices on the 11th

floor, so we ran into each other from time to time in the women's bathroom. On that particular October day she found me sobbing into the sink. She listened to my story and suggested that before packing up and leaving I should take a few weeks off. And, she asked, was there somebody other than my advisor that I had been talking math with? Why not hang around as long as my fellowship lasted and talk to that person? I took her advice and that's how I found my successful thesis advisor. Thanks, Marsha! It strikes me that one disadvantage women face in male-dominated fields is exclusion from that great leveler, that reminder of our common humanity, the bathroom shared with our teachers and elders.

The third story took place in the summer after my second year at Haverford College. I had been trying, without much success, to learn some symplectic geometry on my own. I spent a few days in Cambridge talking with Yael Karshon and Sue Tolman about symplectic geometry and integrable systems. For the first time in my life I was talking about hard and interesting mathematics with a group of women. All of a sudden, I realized what I had been missing. I was free to be myself — funny, aggressive, excitable — without worrying about uncomfortable misinterpretations. I had never noticed how much energy I put into censoring my behavior before that day. And since then I've found it easier to be myself in all sorts of situations. Even better, at a time when I had no one to talk math to and was losing faith in my own abilities, Sue and Yael took me seriously. Thanks Sue! Thanks Yael!

The question set before this panel was, "how did you get to where you are?" I told my three stories to show how effective even "spot mentoring" can be. To be complete, though, I could not have gotten to where I am without extended mentoring from several people, most notably my parents and most recently Janet Talvacchia. And now that I am here, I hope I'll be able to repay my mentoring debts.

## CHATEAUBRIAND FELLOWSHIP

If you are currently working toward your Ph.D. in science or engineering, including biomedical and agricultural sciences, or if you have completed it in the last three years, you may qualify for a fellowship from the French Government to conduct research in France. Some of the fellowships are co-sponsored by French companies. The research will be performed in a French university, a school of engineering or in a public or private laboratory. Candidates must be accepted by a French laboratory in order to be eligible for this fellowship program.

The Laboratoire de Physique Corpusculaire de Clermont-Ferrand supported by the Blaise Pascal

### CALL FOR NOMINATIONS: ALICE T. S CHAFER MATHEMATICS PRIZE
### PLEASE NOTE CHANGE IN DEADLINE!!!

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

The Schafer Prize was established in 1990 by the Executive Committee of the AWM and is named for AWM former president and founding member, Alice T. Schafer, who has contributed a great deal to women in mathematics throughout her career. The eighth annual Schafer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in Baltimore, MD, January 1998.

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. Send *five* complete copies of nominations for this award to: The Alice T. Schafer Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. The nomination deadline is **September 15, 1997**. Early submissions are encouraged.

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

university and CNRS is ready to accept candidates. The activities of the laboratory are in hadronic physics with strong activity at TJNAF (CEBAF) and in elementary particle physics at CERN, where there are teams in ATLAS and ALICE. For further information, please contact Pierre-Yves Bertin at bertin@jlab.org or bertin@clermont.in2p3.fr.

You may use existing contacts with a French research institution, or you may register on the Web at http://www.chateaubriand.amb-wash.fr. In this case, your file will be submitted to directors of various laboratories in France who will be able to contact you directly.

Starting in September 1998, fellowships are available for a six to 12 month period, with a monthly stipend of $1800 for a doctoral fellow and $2200 for a post-doctoral fellow. Health insurance and a round-trip ticket are also provided.

Only completed applications received before **December 1, 1997** will be accepted. Applicants must be U.S. citizens and registered in a university in the U.S. or in a U.S. National Laboratory. Contact: The Embassy of France, Office for Science and Technology, Chateaubriand Fellowship, 4101 Reservoir Road, NW, Washington, DC 20007-2176; phone: 202-944-6246; fax: 202-944-6244; email: chateaubriand@amb-wash.fr; url: http://www.chateaubriand.amb-wash.fr.

# SAMSA ADDRESS

... Firstly, I would like to thank the organizers of this meeting for the warm welcome they have accorded us all since our arrival in Pretoria.... [It] will go a long way in building a good first impression of the peoples of the Southern African region and their hospitality. It is my sincere hope that this impression will be a long-lasting one.

I would also like to thank the organizers ... for conceiving the idea to hold a joint conference of mathematics associations from different continents. [This] conference underlines the universality of mathematics as the language of science.... The immense richness of mathematical ideas arising from such transcontinental interaction cannot be overemphasized. In fact, I would like to suggest that, as a natural sequel, ... such a conference [be] held periodically in future at suitably selected intervals and places ... [to] ensure the sustenance of the momentum of cooperation ... generated during the symposium.

As a regional association, SAMSA cannot afford to ignore the realities of our community. The SADC region is being deprived of vital contributions to its economic development because of the gross under-representation of women in all areas of science and technology. The small number of women in science and technology at leadership and research levels deprives the region of substantial input. Women in SADC constitute about 51% of the population. This deprivation amounts to a neglect of 51% of human potential, which our region can ill afford, especially at this critical time. In fact, the region can benefit socially and economically by investing in educating girls in mathematics and science. Ways have to be found for encouraging girls to do mathematics and science at secondary school level.

Traditionally African women's roles of sustenance of families and communities not only ensured societal survival and stability, but also constituted a potential strength which would enable women scientists to make a major impact by influencing the scientific agenda to include social concerns.

It is interesting to note that our women tend to choose scientific areas of study that are of direct relevance to the overwhelming problems of Africa — finding ways to increase food production, manage natural resources and the environment, and improve nutrition, health and education — the very areas where women have traditionally found their functions.

Science, among its other attributes, is an economic force that together with land, labor, capital and managerial capacity significantly contributes to the social and economic growth and development of nations. So the SADC countries can only implement whatever economic and social development programs they develop if they have properly qualified personnel. There is an urgent need for the entire SADC region to seriously address the key subjects of regional manpower planning and human resource development....

*address by the SAMSA representative Dumisani Vuma (treasurer of SAMSA and head of the mathematics department, University of Zimbabwe) to the Joint Conference of the American Mathematical Society, South African Mathematics Society, and the Southern Africa Mathematical Sciences Association, June 25, 1997, Pretoria, South Africa*

# EDUCATION COLUMN

## Teaching Math for America

*Teach for America* is the national teacher corps of recent college graduates from all academic majors and cultural backgrounds who commit two years to teach in urban and rural public schools. Every year many apply, and five hundred are selected to participate in the program. In the schools where we work there is a particular need for individuals with backgrounds in math and the sciences. An unfulfilled need for these individuals results in over-crowded classrooms, fewer course offerings, and instructors with limited preparation in these subject areas. Recognizing the tremendous needs of school districts in these subject areas, *Teach for America* launched the Math and Science Initiative in an effort to enhance the recruitment, training, and support of corps members with degrees in math, the sciences, and engineering. Corps members receive pre-service training, participate in institutes and internships, and maintain connections with corporations and research facilities.

Greta Powell is a corps member who did not become a middle school math teacher in the traditional way. After graduation from Western Maryland College with a degree in math, she earned a master's degree in math from Bowling Green State University. Powell's interest in teaching was sparked by her experiences during her second year of graduate school. At the beginning of the year, she traded her graduate assistantship for a position with BRITE (Building Relationships in Technology in Education), a partnership between Bowling Green and a middle school in Toledo. There, she was responsible for creating a school technology plan, providing teachers with a course and workshops to strengthen their math skills, and teaching students in math classes six hours a week. The experience was powerful: "The kids just grab you ... I knew I wanted to teach, and I wanted to teach at the pre-college level."

While Powell was successful academically in her graduate program, she found research and coursework isolating. "I would come home at night and take a step back from what I was doing at school to really wonder what kind of contribution I was making. I knew that I needed a stronger connection to other colleagues and children. I needed to use my love of math and knowledge in a different manner." Powell became interested in *Teach for America* and was accepted into the program in the spring of 1996. She was initially attracted to the program because it afforded her the opportunity to teach a subject she is passionate about, math, to students in schools that desperately need people with her experiences and expertise. She has found this to be especially true at Fonville Middle School in Houston, Texas, where Powell recently completed her first year as an eighth-grade math teacher. "It's an incredibly challenging job, but I can think of nothing more rewarding or more important for me to be doing with my degrees."

In the middle of the academic year, Powell realized that a number of Fonville students, especially those who were behind in their skills and coursework and close to expulsion, were being tracked into a study hall type of classroom where they would lose instructional time. Supported by the department head, Powell took on this group of students, using her planning and lunch periods to inaugurate the first chess program at Fonville. She taught the students how to play and began to teach them the strategies and the mathematics that underlie the game. Meeting every other day for an hour and a half, the team has found initial success, winning a Houston Chess Association tournament this past spring.

Powell's work with students and mathematics does not stop at the end of the school day. Every Wednesday, she and another *Teach for America* corps member teaching math at Fonville bring together sixty-five eighth graders after school to do math. The students voluntarily stay after school to participate in "Math Whiz Wednesday," a partnership program with students at a neighboring high school for tutoring and mentoring, in an effort to smooth the transition from middle school to high school. Already student grades have increased and, according to Powell, "It's a great way to get more people involved in developing math literacy amongst our students. Everyone is becoming involved, parents are volunteering, other teachers at Fonville are helping out, and we've received a

*Anne Mahle, Math and Science Initiative Director, TEACH FOR AMERICA, 20 Exchange Place, 8th Floor, New York, NY 10005; phone: 212.425.9039; fax: 212.425.9347; http://www.teachforamerica.org. Column Editor: Sally I. Lipsey, 70 E. 10th Street, #3A, New York, NY 10003-5106.*

couple of grants from the community to ensure that the program continues next year."

This fall, Powell returns to Fonville to complete her two-year commitment with *Teach for America.* She plans not only to continue her work with the Chess Club and "Math Whiz Wednesday," but to expand both programs to reach even more students. Teachers like Powell help to ensure that all students have an opportunity to excel in math and have the skills and experiences to do so.

# IMA WORKSHOPS

The Institute For Mathematics and Its Applications (IMA) will hold several tutorials and workshops in its Emerging Applications of Dynamical Systems Program, September 1997 – August 1998. They are [date, type, title, organizer(s)]: September 4–9, 1997, tutorial, "Numerical Methods for Bifurcation Problems," John Guckenheimer; September 15–19, 1997, workshop, "Numerical Methods for Bifurcation Problems," Eusebius Doedel, B. Fiedler, Yannis Kevrekidis, Wolf-Juergen Beyn, Jens Lorenz; September 29–October 3, 1997, workshop, "Large Scale Dynamical Systems," Laurette Tuckerman, E. Titi, H.B. Keller, Don Aronson; October 23–24, 1997, tutorial, "Multiple-Time-Scale Dynamical Systems," Christopher Jones; October 27–31, 1997, workshop, "Multiple-Time-Scale Dynamical Systems," Christopher Jones, S. Wiggins, Alexander Khibnik, F. Dumortier, David Terman; November 17–21, 1997, workshop, "Dynamics of Algorithms," Rafael de la Llave, Linda Petzold, Jens Lorenz; January 14–23, 1998, workshop, "Computational Neuroscience," John Rinzel, Nancy Kopell, Larry Abbott; February 5–6, 1998, tutorial, "Calcium Dynamics in Cells," Joel Keizer; February 9–13, 1998, workshop, "Calcium Dynamics in Cells," Joel Keizer, John Rinzel, A. Goldbeter; March 9–14, 1998, short course and workshop, "Cardiac Rhythms," Jim Collins, James Keener, Charles Peskin, Rai Winslow; April 27–May 1, 1998, workshop, "Nonlinear Identification and Control," Yannis Kevrekidis, Eric Yolstie, P.S. Krishnapasad; May 11–15, 1998, workshop, "Pattern Formation in Continuous and Coupled Systems," Martin Golubitsky, Dan Luss, Steve Strogatz; June 1–5, 1998, workshop, "Animal Locomotion and Robotics," James Collins, Martin Golubitsky, Daniel Koditschek.

The summer program, "Coding and Cryptography," July 7–17, 1998 will be organized by Rob Calderbank, Andrew Odlyzko, and Vera Pless.

For more information, contact: Institute for Mathematics and its Applications, University of Minnesota, 206 Church St. SE, Minneapolis, MN 55455.

# SKHS DAYS

**Cleveland State University**

The Fifth Greater Cleveland Sonia Kovalevsky High School Mathematics Day was held on Saturday, April 26, 1997 under joint sponsorship of the Association for Women in Mathematics and Cleveland State University's College of Arts and Sciences and the Office of Minority Affairs. It was attended by 75 students, 17 teachers and seven parents representing 18 area high schools. The schools represented ranged from parochial to suburban to inner-city schools. A promising trend is reflected in the increasingly larger number of minority students, from suburban schools such as Shaker Heights High School and inner-city ones like Collinwood.

The day began with a warm welcome by Professor Karen Steckol, Dean of Arts and Sciences and by Dr. Njeri Nuru, the Vice-President for Minority Affairs. The opening remarks centered on the relevance of mathematics to scientific investigation as well as problems in daily life. This was followed by a brief biographical sketch of Sonia Kovalevsky's life by Pratibha Ghatage. The participants were divided into three groups to participate in a panel discussion of math-related careers. The panels were staffed by women who had achieved success as public accountants, electrical, metallurgical or aerospace engineers, environmental scientists, computer scientists, architects, project manager of a construction department, research statisticians and professional mathematicians. Judging from the evaluations, the panels were well-received.

*Pratibha Ghatage, Ieda Rodrigues, Sally Shao, Barbara Margolius, Carol P-Bey*

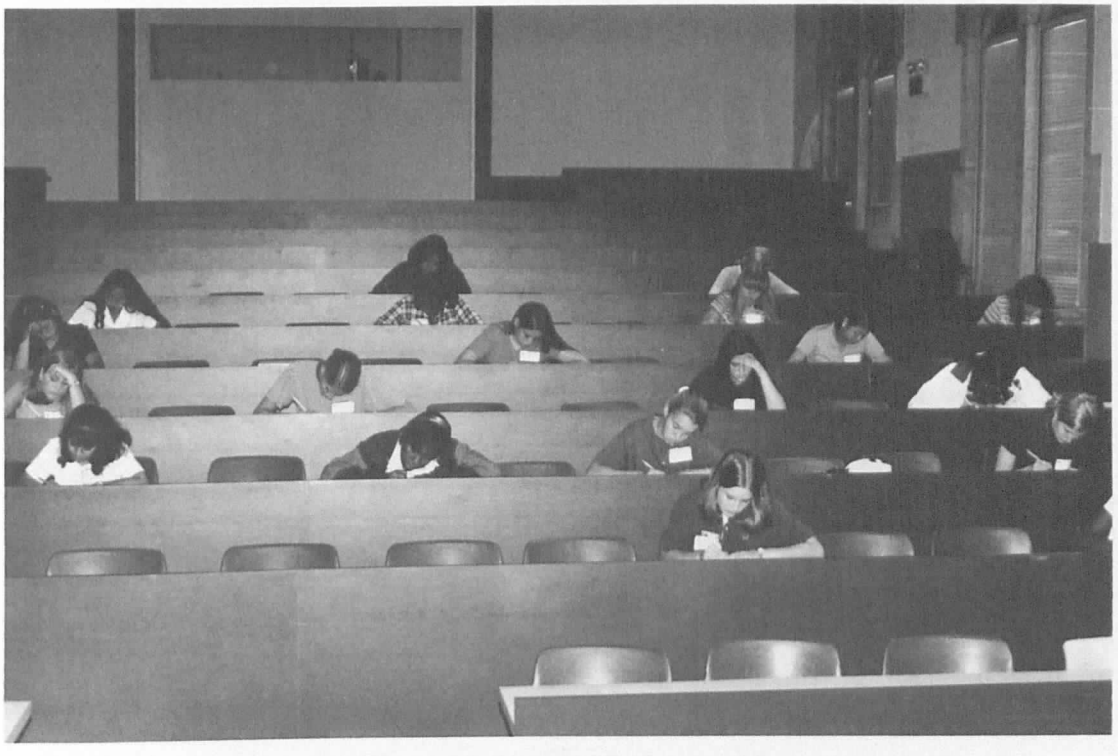
Valdosta student volunteers set up for registration

However, the young women would like to see even more variations of career paths. This is particularly true of students who attended our event more than once during their high-school years.

The students also participated in two different mathematical activities. The following are the topics covered in the six concurrent sessions: a graphic demonstration of chemistry, the mathematics of saran wrap and soap-films (minimal surfaces), an application of queueing theory to dispatching of emergency vehicles, and a hands-on demonstration of a new software package illustrating geometrical concepts. Every attempt was made to bring students to the forefront of current mathematical theories and their applications. Most participants lingered over lunch, talking about common experiences. The teachers participated in a session demonstrating "Math Resources on the Internet." Most of the panelists and mathematical application presenters participated in lunch, providing the students and teachers with the opportunity to ask additional questions and focus on personal concerns.

Due to announcements in the *Plain Dealer*'s Everywoman section there was some last-minute interest in the event in the local community. It brought in participation by a small but enthusiastic body of parents who enrolled their daughters and participated fully. Our principal method for reaching students is still through dedicated teachers and counselors, but this time we received far greater media exposure than ever before. The Greater Cleveland community has a real need for such an event and has embraced it warmly.

As an offshoot of the interest generated among some of the participants we intend to hold a week-long workshop starting July 7. It will involve female students and teachers who will work with a faculty member on a different activity each day. The activities will include simulations involving the Monte-Carlo method, the use of animation in geometry and practical everyday applications of probability, among others. Depending upon the success of this, we intend to offer such an enrichment workshop annually.



The Math Competition at Valdosta SK Day

**Valdosta State University**

The first Sonia Kovalevsky High School Mathematics Day (SK Day) at Valdosta State University (VSU) in Valdosta, Georgia was held on Friday, May 16, 1997. It was supported by a grant from the Association for Women in Mathematics and the National Security Agency (NSA). The event took place in Powell Hall Auditorium. Twenty-eight students and seven teachers from seven local schools attended. The students were mostly sophomores and juniors. Many had never previously attended a math day of any kind.

The participants had a full day of activities. There were two workshops, one on problem solving and one on fractals. The problem solving workshop was led by Dr. David Boyd from VSU. The fractal workshop was led by Dr. Kathy Simons, also from VSU. The evaluations completed by the participants clearly indicated that the workshops were a success. They enjoyed the hands-on activities and the interaction among the participants. Two speakers came to talk with the students. Dr. Mary Fares (VSU) talked about engineering. After she spoke, she showed the girls a video on women in engineering and entertained questions. The second speaker was Dr. Deborah McDonald, a local optometrist. The students enjoyed getting to hear about an aspect of the medical field. Also included in the activities for the day was a mathematics competition.

Juice, donuts, and muffins were available when the participants arrived. During this time, the participants registered and mingled. Later a buffet lunch was served. During lunch the speakers and participants got a chance to interact.

Door prizes were given to both students and teachers at the opening and closing of the day's events. There were a total of six student prizes and two teacher prizes. At the closing, the winners of the mathematics competition were announced. The first prize was a TI-92 calculator; the second and third prizes were gift certificates to Books-A-Million.

*Kathy Simons and Denise Taunton, Valdosta State*

Participants from Fitzgerald High; Julie Whidden (2nd from left) won the Math Competition

Other people in attendance for the day included Dr. Ashok Kumar, Department Head for the Department of Mathematics and Computer Science; Ms. Jasmine Bryant of the NSA; and Dr. Mary Kay Corbitt, Assistant Dean of the College of Arts and Sciences at VSU. Dr. Corbitt gave the opening remarks of the day, which included a biography of Sonia Kovalevsky. Several VSU students enrolled in upper level mathematics courses served as volunteers to help with the day.

The local newspaper and television station showed up for the event. The students were very excited about getting to be on the local television news.

The day appeared to be a success. We had the participants fill out questionnaires at the end of the day. The responses were very positive. They appreciated the opportunity to be included in such an event. The favorite events of the day were clearly the workshops. Both teachers and students expressed an interest in attending another SK Day. We have already started planning our second SK Day for fall quarter 1997 and are looking forward to it. These two days would not be possible without the grant from AWM. We truly appreciate the opportunity to show these young girls how exciting and rewarding mathematics can be.

# INTERNATIONAL WOMEN'S MAGAZINE

The first issue of *WIN* (*Women's International Net*), a new electronically published international women's magazine to be distributed free, will appear this September. Its purpose is to provide information and share experiences of women worldwide by using the Internet as a fast, inexpensive medium. We have already received an enthusiastic response from some 1,000 women in 23 countries with more joining daily. WIN will be a general interest, non-partisan publication covering

*Judith Colp Rubin and Janice Wasser*

Participants from Lowndes County High

the full spectrum of opinion. We are not affiliated with any organization. Articles will be on a broad range of subjects: culture, politics, health, mothering, career and finance.

The magazine will be sent no charge to an international email list and will also be available through a web site. *WIN* will likely come out once a month, but electronic publishing is flexible, so special issues or more frequent publication is easy.

The use of the Internet gives us an unprecedented ability to communicate internationally. This unique vehicle can unite women worldwide without financial constraints or time delays.

WIN is interested in soliciting contributions worldwide on the following subjects: women's rights, book reviews, travelogues, profiles/interviews, mothering, health, fiction, culture, and finance.

Please help us by sending back a letter to our temporary e-mail address rubinb@ashur.cc.biu.ac.il. Include the following information: email addresses of potential readers/contributors, topics you would be interested in writing on, and topics you would be interested in reading articles on.

# A CELEBRATION OF WOMEN

A two-day Celebration of Women in the Mathematical, Statistical and Computer Sciences will be held May 22–23, 1998 at the University of Waterloo to recognize accomplishments in these areas. Each day will start with a plenary speaker, followed by high-level technical sessions in which Canadian women mathematicians (a term we use loosely) will talk about their work and the problems that interest them, and will end with a panel discussion on a more general topic (e.g., academic careers, how to prepare for an interview). The invited speakers are Leah Keshet (Mathematics, UBC), Nancy Reid (Statistics, University of Toronto), and Maria Klawe (Computer Science, UBC).

The goal is to provide a forum for faculty, postdocs and students to come together, make connections with scholars who have similar interests, share experiences, and to mentor the next generation of mathematicians. More details and up to date information may be found at http://se.uwaterloo.ca/~jmatlee/CWIM/cwim.html.

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**ARIZONA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS** - The Department of Mathematics at Arizona State University invites applications for several tenure-track and visiting positions at the Assistant and Associate Professor levels, pending budgetary approval, commencing Fall 1998. All candidates must have a Ph.D. in mathematics, statistics or a closely related area and demonstrated potential for excellence in research and teaching at the undergraduate level. For candidates at the Associate Professor level, additional requirements include an outstanding research record and proven commitment to excellence and innovation in teaching at all levels. Tenure-track candidates must have research strengths in one or more of the following areas: **i)** applied and theoretical statistics, **ii)** computationally oriented applied mathematics, **iii)** differential equations (ordinary and/or stochastic), or **iv)** operator algebras. Candidates in the first three areas should also have experience in modeling and computation, encompassing applications from industry, the life sciences or engineering, and expect to participate fully in a cross-disciplinary environment. Applications for visiting positions are invited from candidates who must have research strengths in applied mathematics or discrete mathematics, and interests in modeling, computation and participation in multidisciplinary activities. The main campus of Arizona State University has approximately 43,000 students and is located in the rapidly growing metropolitan Phoenix area, which provides a wide variety of recreational and cultural opportunities. The Department of Mathematics currently has 58 full time faculty members, 27 Lecturers and over 70 supported Graduate Students. Departmental computing facilities include networked clusters of high-end workstations as well as several graphics computers and access to the University's central computing facilities. Applicants must send **i)** their resume, **ii)** an *AMS Cover Sheet*, **iii)** a letter stating for which position they wish to be considered and addressing their research agenda, **iv)** a statement of teaching philosophy, and **v)** arrange for at least three letters of recommendation to be sent by the deadline to: **R.A. Renaut, Chair, Department of Mathematics, P.O. Box 871804, Arizona State University, Tempe, AZ 85287-1804.** Review of the applications will begin on November 30, 1997, and will continue weekly until the positions are filled.

**BROWN UNIVERSITY - MATHEMATICS DEPARTMENT - J.D. Tamarkin Assistant Professorship.** Three-year non-tenure non-renewable appointment, beginning July 1, 1998. Teaching load: two courses per semester (6 hours per week). Ph.D. degree must be received before start of appointment, but we will not consider applicants who will have held an academic or postdoctoral position for more than two years after their Ph.D. by June 1998. Applicants should have strong research potential and a commitment to teaching. Field of research should be consonant with the current research interests of the department. A curriculum vitae, a completed application form, and three letters of recommendation should be received by December 1, 1997. Requests for application forms and all other inquiries should be addressed to: **Tamarkin Search Committee, Department of Mathematics, Brown University, Providence, RI 02912.** Brown University is an Equal Opportunity/Affirmative Action Employer and encourages applications from women and minorities.

**CALIFORNIA POLYTECHNIC STATE UNIVERSITY - MATHEMATICS DEPARTMENT** - Tenure-track in Mathematics, beginning Fall '98. Assistant Professor ($37,140 to $46,812). Duties include teaching (normal load, 12 hours per quarter), scholarship, advising committee service. Doctorate in mathematics is required. Applicants are expected to present evidence of excellent teaching and an active research program. **Computational Mathematics (Recruitment Code: 83001):** Areas of interest include dynamical systems, numerical analysis, topology, applied mathematics or more generally any area that uses computational mathematics in a significant way. **Operator Theory (Recruitment Code: 83002):** Areas of interest include applications of operator theory to control theory, mathematical physics, and traditional topics in operator theory. **Combinatorial Mathematics (Recruitment Code: 83003):** Areas of interest include enumerative and algebraic combinatorics, Polya theory, theory of partitions, formal series, q-series, permutations statistics, and symmetric polynomials. Send letter of application, resume, brief statement of professional goals, three letters of reference (at least one of which discusses teaching ability), and transcripts (unofficial okay initially) to: **Chair, Screening Committee, Mathematics Department, Cal Poly, San Luis Obispo, CA 93407. Indicate specific recruitment code on all correspondence.** Closing date: November 1, 1997. Cal Poly is strongly committed to achieving excellence through cultural diversity. The university actively encourages applications and nominations of women, persons of color, applicants with disabilities, and members of other under-represented groups. AA/EEO.

**CALIFORNIA POLYTECHNIC STATE UNIVERSITY - MATHEMATICS DEPARTMENT - Math Education** - Tenure-track position beginning Fall '98. Assistant Professor ($37,140 to $46,812). Responsibilities include teaching methods courses for prospective K-12 teachers, supervising student teachers and senior projects, and teaching mathematics courses. Doctorate in mathematics education with the equivalent of a master's degree in mathematics, or doctorate in mathematics with significant experience in teacher education, is required. Pre-college teaching experience and a background in educational technology and assessment is desired. Send letter of application, resume, professional goals, three letters of reference, and transcripts (unofficial okay initially) to: **Chair, Math Ed Screening Committee, Mathematics Department, Cal Poly, San Luis Obispo, CA 93407.** Indicate **Recruitment Code 83004** on all correspondence. Closing date: 11/17/97. Cal Poly is strongly committed to achieving excellence through cultural diversity. The university actively encourages applications and nominations of women, persons of color, applicants with disabilities, and members of other under-represented groups. AA/EEO.

**COLORADO STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Head** - Colorado State University is a land-grant institution with a tradition of strength in the sciences and engineering. The student body of 22,000 is almost a quarter of the population of Fort Collins, located at the base of the Rocky Mountains, an hour north of Denver. The Department of Mathematics has 28 full-time and 3 half-time (transitional) faculty, 8 staff, 50 M.S. and students, and 175 undergraduate majors. Areas of research emphasis include applied/computational mathematics and geometric/combinatorial algebra. Undergraduate concentrations are Actuarial Mathematics, Applied Mathematics, General Mathematics, and Mathematics Education. For more information see http://www.math.colostate.edu/. We seek a dynamic, visionary leader who can foster excellence in research, teaching and service within the department. As the chief administrative officer of the department, the head will also be expected to manage budgetary and personnel matters, promote curriculum development and educational innovation, and effectively communicate the accomplishments of the department to the university and the broader community. Outstanding research, educational, and leadership credentials are required. Candidates must be eligible for appointment at the rank of Professor in the Department of Mathematics. Anticipated starting date is July 1, 1998. Screening of applications will begin October 15, 1997, and continue until the position is filled. Only applications postmarked by January 15, 1998, will be given consideration. Applicants should send a vita and names, addresses, telephone numbers, and e-mail addresses of five references to: **Prof. S. B. Seidman, Chair, Search Committee, College of Natural Sciences, 117 Statistics, Colorado State University, Fort Collins, Colorado 80523.** FAX (970) 491-6639. Colorado State University is an EEO/AA employer. Office of Equal Opportunity. 101 Student Services.

**DO YOU HAVE A NEW ADDRESS?** Please inform us of any changes, so we can keep our database up-to-date. Just fill out the changes using the **form on the BACK COVER** or drop us an **e-mail**. THANKS. E-MAIL: awm@math.umd.edu

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**INSTITUTE FOR MATHEMATICS AND ITS APPLICATIONS - UNIVERSITY OF MINNESOTA** - IMA announces a program on **Mathematics in Biology (1998-99)** - ORGANIZING COMMITTEE: Lisa Fauci, Simon A. Levin, James D. Murray, Alan Perelson (Chair), Michael J. Reed. A ONE-YEAR PROGRAM WITH THREE PARTS: **(1.) Fall:** September - December 1998, ***Theoretical Problems in Developmental Biology and Immunology*** **(2.) Winter:** January - March 1999, ***Mathematical Problems in Physiology*** **(3.) Spring:** April - June 1999, ***Dynamic Models of Ecosystems and Epidemics.*** TWO-YEAR POSTDOCTORAL MEMBERSHIPS: The 1999-2000 ***annual program will be reactive flow and transport phenomena.*** During the 1999-2000 year, postdocs will have a 50% teaching assignment in the School of Mathematics at the University of Minnesota. All requirements for a doctorate should be completed by September 1, 1998. Applicants must show evidence of mathematical excellence, but they do not need to be specialists in the field. The following materials must be submitted (all materials should arrive by January 15, 1998): **(1)** Personal statement of scientific interests, research plans, and reasons for wishing to participate in the Mathematics In Biology Program. **(2)** Curriculum vitae and a list of publications. **(3)** Three letters of recommendation, to be sent directly to the IMA. SENIOR MEMBERSHIPS: Preference will be given to supplementary support for persons with sabbatical leaves, fellowships, or other stipends. POSTDOCTORATES IN INDUSTRIAL MATHEMATICS: IMA announces two-year positions in Industrial Mathematics, effective September 1, 1998. These appointments are in addition to the regular program and are funded jointly by the NSF and participating industries. They are designed to prepare mathematicians for research careers involving industrial interaction. Applicants should have fulfilled all requirements for a Ph.D. in Mathematics, Applied Mathematics or Statistics by September 1, 1998. Postdoctorates will spend 50% effort working with industrial scientists and 50% effort in the regular IMA program. Requirements and **application procedures are the same as for the postdoctoral memberships** listed above. The University of Minnesota is an equal opportunity educator and employer. The application forms are available via staff@ima.umn.edu, gopher.ima.edu, http://www.ima.umn.edu or call (612) 624-6066. All correspondence should be sent to either POSTDOC/VISITING MEMBERSHIP COMMITTEE or INDUSTRIAL MATHEMATICS POSDOCTORATE MEMBERSHIP COMMITTEE, **Institute for Mathematics and its Applications, University of Minnesota, 514 Vincent Hall, 206 Church St. S.E., Minneapolis, MN 55455-0436.**

**MICHIGAN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS** - The Department is seeking applicants for tenure track positions to begin in the Fall 1998, pending approval. The positions are expected to be at the Assistant Professor level, but exceptional applicants for a higher rank may be considered. Excellence in research and teaching is essential, and two or more years beyond the Ph.D. is expected. An applicant must submit a vita as well as a brief statement of research interests, and arrange for at least four letters of recommendation to be sent, one of which must specifically address the applicant's ability to teach. Application via email is strongly encouraged. Contact: **jobs@math.msu.edu** with a message containing **"send application-info"**. Application materials can also be addressed to: **The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027.** Application should be made as soon as possible since candidate screening will begin in early November. Completed applications received by November 17, 1997 are assured of consideration. Women and minorities are strongly encouraged to apply. MSU is an Affirmative Action/Equal Opportunity Employer Institution.

**MICHIGAN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS** - Pending funding, several two-year positions will be available beginning Fall 1998, for new or recent Ph.D.'s. The teaching load is four semester courses per year and participation in the research activities of the department is expected. An applicant should send a vita as well as a brief statement of research interests, and arrange for at least four letters of recommendation to be sent, one of which must specifically comment on the applicant's ability to teach. Application via email is strongly encouraged. Contact: **jobs@math.msu.edu** with a message containing **"send application-info"**. Application materials can also be mailed to: **The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027.** Application should be made as soon as possible since candidate screening will begin in November. Completed applications received by December 1, 1997 are assured of consideration. Women and minorities are encouraged to apply. MSU is an Affirmative Action/Equal Opportunity Institution.

**NORTH CAROLINA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS** - The Department of Mathematics invites applications for a tenure track position at the assistant or associate professor level in **Representation Theory and Combinatorics**, beginning in the Fall of 1998. Candidates must have a doctoral degree in Mathematics, a strong ongoing research program in representation theory and/or algebraic combinatorics and a commitment to effective teaching at the undergraduate and graduate levels. Preference will given to candidates with post doctoral experience. Applicants should send a vita and at least three letters of recommendation to: **Algebra Search Committee, Department of Mathematics, North Carolina State University, Raleigh, NC 27695-8205.** Review of completed applications will begin immediately. Applications will continue to be accepted until the position is filled. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, veteran status, or disability.

**NORTHWESTERN UNIVERSITY - DEPARTMENT OF MATHEMATICS** - The Mathematics Department is soliciting applications for two Ralph Boas assistant professorships of three years each starting in September 1998. These positions are part of the Emphasis Year in Algebraic Geometry which the department will be sponsoring in 1998/99. We seek applicants in the areas of algebraic geometry, algebraic K-theory, complex geometry, and allied areas. Applications should be sent to: **Emphasis Year Personnel Committee, Department of Mathematics, Northwestern University, 2033 Sheridan Road, Evanston, Illinois 60208-2730** and include: (1) the American Mathematical Society's Application Cover Sheet for Academic Employment in Mathematics, (2) a curriculum vitae, and (3) three letters of recommendation. Inquiries may be sent via e-mail to hiring@math.nwu.edu. In order to ensure full consideration, applications should be received by December 15, 1997. Northwestern University is an affirmative action, equal opportunity employer committed to fostering a diverse faculty; women and minority candidates are especially encouraged to apply.

**PURDUE UNIVERSITY - DEPARTMENT OF MATHEMATICS** - Several tenure-track or two-year research assistant professorships beginning August 1998. Ph.D. by August 1998, exceptional research promise, and excellence in teaching required. Possible positions at the Associate Professor/Professor level beginning August 1998. Ph.D. and excellent research and teaching credentials required, Applicants should have research interests in common with Purdue faculty. Preference will be given to completed applications received by December 15, 1997. Send curriculum vitae arrange to have three letters of recommendation (at least one letter should discuss teaching) sent to: **Carl Cowen, Head, Department of Mathematics, Purdue University, West Lafayette, IN 47907-1395.** Affirmative Action/Equal Opportunity Employer.

**RENSSELAER POLYTECHNIC INSTITUTE - DEPARTMENT OF MATHEMATICAL SCIENCES** - Applications are invited for a tenure-track assistant professor position in applied mathematics, to begin in August 1998. Applicants are expected to have demonstrated outstanding research potential, and to have a strong interest and ability in teaching. Of particular interest are candidates with a commitment to interdisciplinary research and who are knowledgeable in scientific computation. Applicants should submit a letter of application, a curriculum vita, a description of research interests, and arrange to have three letters of recommendation sent directly to: **Search Committee Chair, Department of Mathematical Sciences, Rensselaer Polytechnic Institute, Troy, NY 12180.** Evaluation of applications will begin October 15, 1997, and will continue until a candidate is selected. Rensselaer is an equal opportunity/affirmative action employer and strongly encourages applications from women and underrepresented minorities.

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# ADVERTISEMENTS

**SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE - DEPARTMENT OF MATHEMATICS - Continuing Position** - Applications are invited from qualified candidates for a tenure track position in algebra at the assistant professor level beginning on August 16, 1998. Applicants must have a research program in algebra or a closely related field and hold a Ph.D. in mathematics at the time of appointment. If all requirements for the doctorate are not completed by the effective date of employment, appointment will be as an Instructor on a term contract. Candidates must show evidence of, or strong potential for, excellence in research. All applicants must also provide evidence of excellence in teaching and of the ability to teach effectively in English. Postdoctoral experience is preferred. Send letter of application, resume, and three letters of recommendation to: **Continuing Position, c/o Andrew G. Earnest, Chair, Department of Mathematics, Southern Illinois University at Carbondale, Carbondale, Illinois 62901-4408.** Closing date is December 1, 1997 or until position is filled. SIUC is an equal opportunity affirmative action employer. Women and minorities are particularly encouraged to apply.

**STATE UNIVERSITY OF NEW YORK AT BUFFALO - DEPARTMENT OF MATHEMATICS** - The Department of Mathematics anticipates the appointment of tenure-track assistant professors beginning September 1, 1998. Salary will be competitive. We seek applicants in the fields of applied mathematics, geometric analysis and geometric topology, who have excellent research accomplishments/potential and a strong commitment to teaching. Applicants should send supporting information, including a c.v. with a list of research interests, and have four letters of recommendation sent to: **Search Committee Chairman, Department of Mathematics, SUNY/Buffalo, 106 Diefendorf Hall, 3435 Main Street, Buffalo, New York 14214-3093.** No electronic applications will be accepted. The deadline for applications is November 1, 1997. Late applications will be considered until positions are filled. SUNY/Buffalo is an Equal Opportunity/Affirmative Action Employer. We are interested in identifying prospective minority and women candidates. No person, in whatever relationship with the State University of New York at Buffalo shall be subject to discrimination on the basis of age, creed, color, handicap, national origin, race, religion, sex, marital or veteran status.

**UNIVERSITY OF ARIZONA - DEPARTMENT OF MATHEMATICS - Academic Year 1998-99** - The Mathematics Department at the University of Arizona may have tenure-track and postdoctoral positions, including the Hanno Rund Visiting Assistant Professorship, subject to availability of funding beginning Fall 1998. **TENURE TRACK POSITIONS:** Ph.D. and excellent research record or potential, and strong commitment to teaching required. Fields should complement but not duplicate existing department research strengths in algebraic and differential geometry, computational science, dynamical systems, mathematical physics, probability and statistics, nonlinear science and number theory. **POSTDOCTORAL FELLOWSHIPS (Research Associates).** Applicants with strengths in all areas compatible with department interests are encouraged to respond. In addition, special Center of Excellence Awards in nonlinear optics and fluid mechanics are available. The Mathematics Department may also have several **VISITING POSITIONS** for next year, Ph.D. required. We encourage early application. Application review begin November l, 1997, with applications accepted until December 15, 1997, or as long as positions remain unfilled. Send application, a letter of interest **(you must include Job Code #9777 in your letter)**, curriculum vitae with a list of publications, and a minimum of three (3) letters of recommendation (enclose or arrange to be sent), to: **Personnel Committee, Department of Mathematics, University of Arizona, 617 N. Santa Rita, P.O. Box 210089, Tucson, Arizona 85721-0089.** The application and affirmative action form can be downloaded from our web site at: http://www.math.arizona.edu. The University of Arizona is an Affirmative Action/Equal Opportunity/ADA Employer. M/W/D/V

**UNIVERSITY OF CALIFORNIA AT BERKELEY - DEPARTMENT OF MATHEMATICS - Charles B. Morrey Jr. Assistant Professorships** - We invite applications for these special (nontenure-track) positions effective July 1, 1998. The terms of these appointments may range from two to three years. Applicants should have a recent Ph.D., or the equivalent in an area of pure or applied mathematics. Applicants should send a resume, reprints, preprints and/or dissertation abstract, and ask three people to send letters of evaluation to: **The Vice Chair for Faculty Affairs, Department of Mathematics, University of California at Berkeley, Berkeley, CA 94720.** All letters of evaluation are subject to Berkeley campus policies on confidentiality of letters of evaluation, a summary of which can be found on our home page (http://math.berkeley.edu by clicking on People, and then Faculty Positions at Berkeley). We request that applicants use the AMS standardized application form and indicate their subject area using the AMS subject classification numbers. The form is the *Academic Employment in Mathematics, Application Cover Sheet,* it is available courtesy of the American Mathematical Society. We should receive this material no later than December 1, 1997. Applications postmarked after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

**UNIVERSITY OF CALIFORNIA AT BERKELEY - DEPARTMENT OF MATHEMATICS - Temporary Postdoctoral Positions** - Several temporary positions beginning in Fall 1998 are anticipated for new and recent Ph.D.'s of any age, in any area of pure or applied mathematics. The terms of these appointments may range from one to three years. Applicants for NSF or other postdoctoral fellowships are encouraged to apply for these positions; combined teaching/research appointments may be made for up to three years. Mathematicians whose research interests am close to those of regular department members will be given some preference. Applicants should send a resume and reprints, preprints, and/or dissertation abstract, and ask three people to send letters of evaluation to **The Vice Chair for Faculty Affairs, Department of Mathematics, University of California at Berkeley, Berkeley, CA 94720.** All letters of evaluation are subject to Berkeley campus policies on confidentiality of letters of evaluation, a summary of which can be found on our home page (http://math.berkeley.edu by clicking on People, and then Faculty Positions at Berkeley). We request that applicants use the AMS standardized application form and indicate their subject area using the AMS subject classification numbers. The form is the *Academic Employment in Mathematics Application Cover Sheet,* it is available courtesy of the American Mathematical Society. We should receive this material no later than December 1, 1997. The University of California is an Equal Opportunity, Affirmative Action Employer.

**UNIVERSITY OF CALIFORNIA AT BERKELEY - DEPARTMENT OF MATHEMATICS - Tenured or Tenured Track Position** - Pending budget approval, we invite applications for one or more positions effective July 1, 1998 at either the tenure-track (Assistant Professor) or tenured (Associate or Full Professor) level, in the general areas of pure or applied Mathematics. **Tenure track** applicants are expected to have demonstrated outstanding research potential, normally including major contributions beyond the doctoral dissertation. Such applicants should send a resume, and reprint or preprints, and/or dissertation abstract, and ask three people to send letters of evaluation to: **The Vice Chair for Faculty Affairs, Department of Mathematics, University of California at Berkeley, Berkeley, CA 94720.** It is the responsibility of the tenure track applicants to make sure that letters of evaluation are sent. All letters of evaluation are subject to Berkeley campus policies on confidentiality of letters of evaluation, a summary of which can be found on our home page (http://math.berkeley.edu by clicking on People, and then Faculty Positions at Berkeley). **Tenure** applicants are expected to demonstrate leadership in research and should send a curriculum vitae, list of publications, a few selected reprints or preprints, and the names and addresses of three references to: **The Vice Chair for Faculty Affairs at the above address**. The applicant should indicate whether they are applying for an **Associate Professor** or a **Full Professor** position. The department will assume responsibility to solicit letters of evaluation and will provide evaluators with a copy of the summary of policies on confidentiality of letters of evaluation. All applicants are requested to use the AMS standardized application form and to indicate their subject area using the AMS subject classification numbers. The form is the *Academic Employment in Mathematics, Application Cover Sheet,* it is available courtesy of the American Mathematical Society. We should receive material for both Tenure track and Tenure applications no later than November 1, 1997. Applications postmarked after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

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## ADVERTISEMENTS

**UNIVERSITY OF CALIFORNIA, LOS ANGELES - DEPARTMENT OF MATHEMATICS - Regular Position in Pure and Applied Mathematics** - The UCLA Department of Mathematics invites applications for three or more tenure track positions in mathematics. Exceptional promise in research and teaching is required. Positions are generally budgeted at the Assistant Professor level, but sufficiently outstanding candidates will be considered at higher levels. Teaching load is an average of 4.5 quarter courses per year. Positions subject to availability of resources and administrative approval. To apply, send electronic mail to **search@math.ucla.edu** or open "http://www.math.ucla.edu/~search" on the World Wide Web, or write to: **Tony Chan, Chair, Department of Mathematics, University of California, Los Angeles, CA 90095-1555. Attn: Staff Search.** UCLA is an equal opportunity/affirmative action employer.

**UNIVERSITY OF DELAWARE - DEPARTMENT OF MATHEMATICS** - The Department of Mathematical Sciences at the University of Delaware invites applications for a tenure-track position in scientific computation to begin September 1, 1998. The successful candidate will show excellent promise in research with a strong potential for external funding. An interest in establishing and mentoring links with industry and other academic disciplines will weigh heavily in the candidate's favor. Expertise in any of the areas of Wave Propagation, Fluid Dynamics, Computational Electromagnetism, Material Science, Inverse Problems is a plus. Evidence of effective teaching is essential. Applicants should send a curriculum vitae (including funding history), reprints and/or preprints and arrange to have 3 letters of recommendation sent to: **Scientific Computing Search Committee, Department of Mathematical Sciences, University of Delaware, Newark, DE 19716.** Applications must be received by January 9, 1998. The University of Delaware is an equal opportunity employer which encourages applications from qualified minority group members and women.

**UNIVERSITY OF ILLINOIS AT CHICAGO - DEPARTMENT OF MATHEMATICS, STATISTICS, AND COMPUTER SCIENCE** - The Department has active research programs in all areas of pure mathematics, computational and applied mathematics, combinatorics and computer science, statistics, and mathematics education. See **http://www.math.uic.edu** for more information. Applications are invited for the following positions, effective August 21, 1998. First, a **TENURE TRACK** or **TENURED POSITION**. Candidates in all areas of interest to the Department will be considered. The position is initially budgeted at the Assistant Professor level, but candidates with a sufficiently outstanding research record may be considered at higher levels. Applicants must have a Ph.D. or equivalent degree in mathematics, computer science, statistics, mathematics education or related field, an outstanding research record, and evidence of strong teaching ability. Salary negotiable. Second, a **RESEARCH ASSISTANT PROFESSORSHIP**. This is a non-tenure track position normally renewable annually to a maximum of three years. The position carries a teaching load of one course per semester, with the requirement that the incumbent play a significant role in the research life of the Department. The salary for AY 98-99 for this position is expected to be $40,000. Applicants must have a Ph.D. or equivalent degree in mathematics, computer science, statistics, mathematics education or related field, and evidence of outstanding research potential. We encourage applicants to submit an electronic cover sheet. The electronic cover sheets may be filled out on the web at **www.phds.org** or may be obtained by sending an e-mail to the address **coversheet@phds.org.** However, for this search we still require that an original paper application must also be submitted. Send vita and direct 3 letters of recommendation, indicating the position being applied for, to: **Henri Gillet, Head; Dept. of Mathematics, Statistics, and Computer Science; University of Illinois at Chicago; 851 S. Morgan (M/C 249); Chicago, IL 60607.** To ensure full consideration, materials must be received by **December 22, 1997**. Minorities, persons with disabilities, and women are particularly encouraged to apply. UIC is an AA/EEO employer.

**UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN - DEPARTMENT OF MATHEMATICS - Postdoctoral positions - J.L. Doob Research Assistant Professor** - The Department of Mathematics of the University of Illinois at Urbana-Champaign is soliciting applications for postdoctoral positions. Two appointments will be made starting August 21, 1998; each appointment is for 3 years and is not renewable. These positions are for recent Ph.D. recipients (with a strong preference for those not more than one year past the Ph.D. degree). The Department of Mathematics will provide an excellent scientific environment to pursue research in pure and applied mathematics. The position carries a salary of $39,000 per year. Applications should include a curriculum vitae and a brief statement of research interests and activities. The use of the *AMS cover sheet* will be appreciated. Applications should be sent by regular mail to: **Postdoctoral Search Committee, Department of Mathematics, University of Illinois at Urbana-Champaign, 1409 W. Green Street, Urbana, Illinois 61801-2975.** Applicants should arrange for at least three letters of recommendation to be sent to the same address. For more information, visit our web page at http://www.math.uiuc.edu/. Inquiries may be sent to: postdocs@math.uiuc.edu. For full consideration, the application must be received by December 7, 1997. The University of Illinois is an equal opportunity employer. Women and minorities are strongly encouraged to apply.

**UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN - DEPARTMENT OF MATHEMATICS - Tenured Position** - Applications are invited for one or more full time tenured faculty positions to commence August 21, 1998. Those faculty will be expected to pursue an outstanding research program, and teach graduate students as well as undergraduate students. The department will consider applicants in all fields of mathematics, but we intend to show preference in applied mathematics, differential equations, number theory, algebraic geometry, combinatorics, computational mathematics, and probability theory. Salary and teaching load are competitive. Tenure applicants are expected to have a Ph.D. and a documented record of leadership in research as well as of excellence in teaching. They should send a curriculum vitae, a list of publications, a few selected reprints or preprints, and the names and addresses of three references to: **Philippe Tondeur, Chair, Department of Mathematics, University of Illinois at Urbana-Champaign, 1409 West Green Street, Urbana, IL 61801.** tel (217) 333-3352 email: tenure@math.uiuc.edu. The department will solicit letters for the finalists for the tenured positions. To insure full consideration, all materials should be received by October 3, 1997. We encourage use of the application *cover sheet* provided by the American Mathematical Society and the indication of the subject area using the AMS subject classification numbers. Applications from women and minority candidates are especially encouraged. The University of Illinois is an Affirmative Action/Equal Opportunity Employer.

**UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN - DEPARTMENT OF MATHEMATICS - Tenure-Track Position** - Applications are invited for one or more full time faculty positions to commence August 21, 1998, at the tenure-track (assistant professor) level. Those faculty will be expected to pursue a vigorous research program, and teach graduate as well as undergraduate students. The department will consider applicants in all fields of mathematics, but we intend to show preference in applied mathematics, differential equations, number theory, algebraic geometry, combinatorics, computational mathematics, and probability theory. Salary and teaching load are competitive. Tenure-track applicants must have completed the Ph.D. (or equivalent) by the time the appointment begins and are expected to present evidence of excellence In research and teaching. Applicants should send a letter of application, a curriculum vitae and publication list, and arrange to have three letters of reference sent directly to: **Philippe Tondeur, Chair, Department of Mathematics, University of Illinois at Urbana-Champaign, 1409 West Green Street, Urbana, IL 61801.** tel (217) 333-3352 email: search@math.uiuc.edu. It is the responsibility of the tenure-track applicants to make sure that letters of recommendation are sent. To insure full consideration, all materials, including letters of reference, should be received by December 7, 1997. We encourage use of the application *cover sheet* provided by the American Mathematical Society and the indication of the subject area using the AMS subject classification numbers. Applications from women and minority candidates are especially encouraged. The University of Illinois is an Affirmative Action/Equal Opportunity Employer.

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## ADVERTISEMENTS

**UNIVERSITY OF MARYLAND AT COLLEGE PARK - DEPARTMENT OF MATHEMATICS** - Applications are invited for tenured and tenure-track positions in the Department of Mathematics from researchers with strong interests in at least one of the following three fields: applied analysis, numerical analysis and scientific computation. Exceptional research and teaching required. Successful candidates will integrate their research with our educational program. Candidates at all levels will be considered. Priority will be given to applications received by November 1, 1997. The appointments will commence in the Fall of 1998. The University of Maryland is an Equal Opportunity and Affirmative Action employer that strongly encourages applications from female and minority candidates. Please send a curriculum vitae and AMS Standard Cover Sheet, and arrange for three letters of recommendation to be sent to: **The Hiring Committee, Department of Mathematics, University of Maryland, College Park, MD 20742.**

**UNIVERSITY OF MARYLAND, BALTIMORE COUNTY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Chairperson** - The University of Maryland Baltimore County (UMBC) invites applications for the position of the Chair of the Department of Mathematics and Statistics. Candidates should have an earned doctorate in mathematics, statistics, or a closely related field, a strong research record, a commitment to excellence in undergraduate and graduate education, and demonstrated leadership skills. The candidate should be qualified for the rank of tenured full professor and is expected to maintain a strong research program. Founded in 1966, UMBC, the youngest campus of the University of Maryland System, is a medium-sized research university with a faculty of over 400 and 10,500 students. Its sponsored research stands at over $43 million and the campus is a growing and dynamic institution. UMBC is conveniently located in the Baltimore-Washington corridor near major industries, federal labs, and sponsoring agencies. The Department of Mathematics and Statistics offers programs leading to BA, BS, MS, and Ph.D. degrees in Applied Mathematics and Statistics. The department's 22 full-time faculty members maintain active research in areas of applied mathematics and statistics and supervises approximately 25 full-time and 30 part-time graduate students. See the department's web site at http://www.math.umbc.edu for further details. Interested candidates should submit a CV, statement of goals, and names of four references to **Math/Stat Chair Search Committee, Office of the Dean, College of Arts and Sciences, 1000 Hilltop Circle, Baltimore, MD 21250.** Screening of candidates will begin in November 1997 and will continue until the position is filled. UMBC is an EOE/AA employer.

**UNIVERSITY OF MICHIGAN - DEPARTMENT OF MATHEMATICS** - The Department expects to have several tenure eligible or tenured positions available, to begin in September 1998. Several are part of an interdisciplinary/applied initiative, including numerical analysis and actuarial science. Besides this initiative, the Department is searching broadly for individuals who would significantly broaden and strengthen areas currently represented and who cut across areas. Some preference will be given to candidates in algebraic number theory and topology. Exceptional research and teaching experience required. Rank and salary negotiable. Applicants should send a curriculum vitae, description of research and teaching and have three letters of recommendation sent to: **J.B. Rauch, Chair, Department of Mathematics, University of Michigan, Ann Arbor, MI 48109-1109.** Applications received by December 31, 1997 will be assured full consideration. Additional information is available on the departmental home page at http://www.math.lsa.umich.edu. The University of Michigan is a nondiscriminatory affirmative action employer.

**UNIVERSITY OF MICHIGAN - DEPARTMENT OF MATHEMATICS - Description:** Designed to provide mathematicians with favorable circumstances for academic career development including research and teaching. The teaching load is two courses per term for Assistant Professorships and one and one-half courses per term for the Hildebrandt Professorships. Appointments are for three years. NSF postdoctoral fellowships may be held simultaneously, providing a reduction in teaching load. Applicants should submit a completed application form, a research plan, a statement describing their teaching experience, and an indication of senior faculty at Michigan with whom they have a common research interest and who might mentor them. They should also arrange to have at least three letters of recommendation sent to the department. Letters should address the applicant's mathematical promise, teaching ability, and collegiality. One letter should specifically address the applicant's teaching capability and experience. **Eligibility:** Preference is given to persons of any age having their Ph.D. less than two years. **Salary:** The salary for the academic year 1998-99 will be at least $38,500. There is a good possibility of additional income during the summer. Deadline: First preference will be given to applications completed before December 17, 1997. **Application information:** Applications should be made to: **Professor Jeffrey Rauch, Chair, Department of Mathematics, University of Michigan, Ann Arbor, MI 48109-1109.** Affirmative Action Employer. Application forms and information also available on the departmental web page, http://www.math.isa.umich.edu

**UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS** - Several temporary or visiting positions at all levels from Assistant to Full Professor may be available for terms ranging from one quarter to two years beginning September 1998. Ph.D. in mathematics by beginning date of appointment, strong research and teaching abilities are required. Preference will be given to applicants whose research interests are compatible with those of the School. Salary competitive. Consideration of applications will begin December 1, 1997 and continue until available positions are filled. Send letter of application, current curriculum vitae, at least 3 letters of recommendation, and description of research to: **Naresh Jain, Head, School of Mathematics, University of Minnesota, 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

**UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - Tenured or Tenure Track Positions starting Fall 1998** - The School of Mathematics may have available one or more tenure track Assistant Professor or tenured Associate or Full Professor positions starting Fall 1998. Ph.D. or equivalent degree in mathematics by the beginning date of appointment, outstanding research and teaching abilities are required. Applications at all levels are invited; preference will be given to candidates whose research interests are compatible with those of the School. Consideration of applications will begin October 27, 1997. Send letter of application, current curriculum vitae, at least 3 letters of recommendation, and description of research to: **Naresh Jain, Head, School of Mathematics, University of Minnesota, 127 Vincent Hall, 206 Church Street S.E., Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

**UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - Post-doctoral Associate** - Depending on availability of funds, positions may be available to conduct grant supported research in all areas of mathematics. Starting dates and duration of appointments may vary. Applications will remain active for twelve months. Next round of evaluations will begin December 1, 1997. Ph.D. by beginning date of appointment required. Submit letter of application, current curriculum vitae, description of research, and list of references to: **Naresh Jain, Head, School of Mathematics, University of Minnesota, 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

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

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# ADVERTISEMENTS

**UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL - DEPARTMENT OF MATHEMATICS** - Applications are invited for one tenure track assistant or associate professor position in applied mathematics effective Fall 1998, contingent upon administrative approval. An associate professor position would be available for an exceptional candidate in applied scientific computation. A strong research record and doctorate in mathematics, applied mathematics or a closely related field are required. Preference is given to candidates with a commitment to interdisciplinary university research, collaborations with industry or government, and teaching including development of applied math curricula at undergraduate and graduate levels. This position contributes toward a five-year plan to build strong applied and computational mathematics group interacting with existing strengths at UNC in mathematics and in materials, marine, biomedical, and environmental sciences. A copy of this ad may be found in our World Wide Web page at http://www.math.unc.edu/General/Job.announcements. Send curriculum vitae, abstract of current research and four letters of recommendation to: **Professor M. Gregory Forest, Chair, Applied Mathematics Search Committee, Dept. of Mathematics, CB #3250, Phillips Hall, UNC-Chapel Hill, NC 27599-3250.** EO/AA Employer. Women and minorities are encouraged to apply and to identify themselves. Applicants are encouraged to submit a statement of teaching interests and goals. Completed applications received by January 1, 1998 are assured of full consideration.

**UNIVERSITY OF SOUTHERN CALIFORNIA - DEPARTMENT OF MATHEMATICS** - The Department of Mathematics expects two tenure-track positions at the assistant or associate professor level. One position will be in a traditional area of core mathematics, with a preference in geometry, and the second will be in stochastic PDEs/stochastic numerics or computational biology/statistical genetics. In addition there will be several visiting and postdoctoral positions. Applicants must show exceptional promise in research and teaching. To apply, please submit the following materials in a single package: letter of application (including your email address, fax number, and position applied for), the *AMS Cover Sheet*, and a curriculum vitae. Candidates for assistant professor, visiting and/or postdoctoral positions should also arrange for three letters of recommendation to be sent. Mail all materials to: **Chair of Appointments Committee, Department of Mathematics - DRB 155, University of Southern California, Los Angeles, CA 90089-1113.** Review of applications will begin December 1, 1997. Additional information about USC can be found on the Web at http://www.usc.edu/. USC is an Equal Opportunity/Affirmative Action employer.

**UNIVERSITY OF WISCONSIN, MADISON - DEPARTMENT OF MATHEMATICS** - The Department of Mathematics invites applications for one or more tenure-track positions to begin August 24, 1998. The Department has identified its areas of priority as partial differential equations, real and harmonic analysis, algebra, and probability. Truly outstanding candidates in other areas will also be considered. Candidates should exhibit evidence of outstanding research potential, normally including significant contributions beyond the doctoral dissertation. A strong commitment to excellence in instruction is also expected. Additional information is available on the departmental WWW site, http://www.math.wisc.edu. Applicants should send a completed *AMS standard cover sheet*, a curriculum vita which includes a publication list, and a brief statement of research plans to: **Hiring Committee, Department of Mathematics, Van Vleck Hall, University of Wisconsin, Madison, 480 Lincoln Drive, Madison, WI 53706-1388.** Applicants should also arrange to have sent to the above address, three to four letters of recommendation, at least one of which must discuss the applicant's teaching experiences and capabilities. Other evidence of good teaching will be helpful. The deadline for completed applications is December 15, 1997, although applications will continue to be considered until positions are filled. The University of Wisconsin is an Affirmative Action, Equal Opportunity Employer and encourages applications from women and minorities. Unless confidentiality is requested in writing, information regarding the applicants must be released upon request. Finalists cannot be guaranteed confidentiality.

**UNIVERSITY OF WISCONSIN, MADISON - DEPARTMENT OF MATHEMATICS** - The Department of Mathematics invites applications for possible Van Vleck Assistant Professorships to begin August 24, 1998. Appointments are for a fixed term of two or three years. The usual teaching load is two courses per semester. Ordinarily only those applicants who have received their doctorate since 1995 will be considered. Promise of excellence in research and teaching is important. Preference will be given to candidates who are likely to interact well with other members of the Department. The Department of Mathematics also invites applications for possible Lectureship openings to begin August 24, 1998. Appointments are for a fixed term of two years. The teaching load for these positions is five courses per academic year involving a coherent sequence of courses using novel pedagogical practices. These will primarily be courses at the elementary level aimed at improving the mathematical education of non-majors. Training and guidance will be provided. A Ph.D. in Mathematics or related area is required. Ordinarily only those applicants who have received their doctorate since 1996 will be considered. Promise of excellence in both teaching and research is important. Some involvement with the department research program is expected. Applicants should send a completed *AMS standard cover sheet*, a curriculum vita which includes a publication list, and a brief statement of research plans to: **Hiring Committee, Department of Mathematics, Van Vleck Hall, University of Wisconsin, Madison, 480 Lincoln Drive, Madison, WI 53706-1388.** Applicants for the lecturer positions should also send a brief statement of educational activities and interests. Applicants should also arrange to have sent to the above address, three to four letters of recommendation. At least one of these letters, preferably two for the lecturer positions, must discuss the applicant's teaching experiences and capabilities. Other evidence of good teaching will be helpful. The deadline for completed applications is January 15, 1998, although applications will continue to be considered until all available positions are filled. The University of Wisconsin is an Affirmative Action, Equal Opportunity Employer and encourages applications from women and minorities. Unless confidentiality is requested in writing, information regarding the applicants must be released upon request. Finalists cannot be guaranteed confidentiality.

**WAYNE STATE UNIVERSITY - DEPARTMENT OF COMPUTER SCIENCE** - The department anticipates several tenure-track faculty positions at the assistant/associate professor level. The candidate's education should be in the areas of networking, operating systems, distributed computing, intelligent systems or multimedia. Candidates should have a Ph.D. in computer science, engineering or a closely related field, a strong interest in and commitment to both research and teaching, a publication record in their area and show potential for obtaining external research funding. Applications from minority and women candidates are especially encouraged. Applicants should send a letter of intent, a statement of research and teaching interests, a resume and the names of at least three references including the reference's address, email, telephone and fax number. Please send this information to: **Dr. William I. Grosky, Chair, Wayne State University, Computer Science, 431 State Hall, Detroit, MI 48202**, 313-577-6868 (fax), grosky@cs.wayne.edu (email). For full consideration, applications should be submitted by November 21, 1997. However, applications will be accepted until the positions are filled. Wayne State University is an equal opportunity/affirmative action employer Wayne State University - People working together to provide quality service. All buildings, structures and vehicles at WSU are smoke-free.

**WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS** - Anticipated tenure-eligible position in statistics, beginning Fall 1998, probably at the rank of assistant professor; in exceptional cases, however, more advanced appointments may be considered. Excellence in teaching and statistics, including scholarship and consulting, and Ph.D. required. Please have a vita and three letters of recommendation on teaching and research sent to: **Hiring Committee, Williams College, Department of Mathematics, Williamstown, MA 01267**. Evaluation of applications will begin November 15, 1997 and continue until the position is filled. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

**WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS** - Anticipated visiting position(s) in mathematics or statistics for the 1998-99 year, probably full-time, probably at the rank of assistant professor; in exceptional cases, however, more advanced appointments may be considered. Excellence in teaching and research, and Ph.D. required. Please have a vita and three letters of recommendation on teaching and research sent to: **Visitor Hiring Committee, Williams College, Department of Mathematics, Williamstown, MA 01267**. Evaluation of applications will begin November 15, 1997 and continue until the position is filled. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

A W M

# ASSOCIATION FOR WOMEN IN MATHEMATICS

## 1997/1998 MEMBERSHIP FORM

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

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

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

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

**ADDRESS**

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

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

**PROFESSIONAL INFORMATION:**

If student, GRADUATE or UNDERGRADUATE? (circle one)

Position:
Institution/Company:
City, State, Zip:

**DEGREES EARNED:**

| | Degree(s) | Institution(s) | Year(s) |
|---|---|---|---|
| Doctorate: | | | |
| Master's: | | | |
| Bachelor's: | | | |

### INDIVIDUAL DUES SCHEDULE

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

| | | |
|---|---|---|
| REGULAR INDIVIDUAL MEMBERSHIP | $ 40 | _____ |
| 2ND FAMILY MEMBERSHIP (NO newsletter) Please indicate regular family member: _____ | $ 30 | _____ |
| CONTRIBUTING MEMBERSHIP Indicate if you wish for this contribution to remain anonymous: _____ | $100 | _____ |
| RETIRED or PART-TIME EMPLOYED MEMBERSHIP (circle one) | $ 20 | _____ |
| STUDENT or UNEMPLOYED MEMBERSHIP (circle one) | $ 10 | _____ |
| ALL FOREIGN MEMBERSHIPS (INCLUDING CANADA & MEXICO)....**FOR ADDITIONAL POSTAGE ADD** **All payments must be in U.S. Funds** using cash, U.S. Postal orders, or checks drawn on U.S. Banks. | $ 8 | _____ |
| ❑ I am enclosing a DONATION to the **"AWM GENERAL FUND"** | $ | _____ |
| ❑ I am also enclosing a DONATION to the **"AWM ANNIVERSARY ENDOWMENT FUND"** | $ | _____ |

### INSTITUTIONAL DUES SCHEDULE

| | U.S. | FOREIGN | |
|---|---|---|---|
| _____ Sponsoring CATEGORY I (may nominate 10 students for membership) | $120 | $200 | _____ |
| _____ Sponsoring CATEGORY II (may nominate 3 students for membership) | $ 80 | $105 | _____ |

INSTITUTIONAL MEMBERS WILL RECEIVE **ONE** FREE JOB ADVERTISEMENTS (*up to* **four** *lines*) IN OUR NEWSLETTER PER YEAR. Advertising deadlines are the 1st of every EVEN month. All institutions advertising in the AWM Newsletter are Affirmative Action/Equal Opportunity Employers. Also, Institutions have the option to nominate students to receive the newsletter as part of their membership. NOTE: List names and addresses of student nominees on opposite side or attach separate page. [ADD $10 ($18 for foreign members) for each additional student add-on over initial 10 students for Category I; over initial 3 students for Category II]

S/O97

**TOTAL ENCLOSED** $ _____

AWM

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## ADDRESS CORRECTION FORM

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

Database Corrections
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