AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 26, Number 1 NEWSLETTER January–February 1996

PRESIDENT'S REPORT

The AWM 25th Anniversary Celebration in Orlando

AWM is celebrating its 25th year in 1996, and we kick off the celebration at the January Joint Meetings in Orlando (January 10–13, 1996). I hope to see many of you there.

Here is a listing of the AWM activities:

- Wednesday, 3:20–4:10 P.M.: AWM panel discussion "Affirmative Action, A Look Back and A Look Forward" with panelists Ingrid Daubechies (Princeton University), Robion Kirby (University of California, Berkeley), William Massey (AT&T Bell Laboratories), and Cora Sadosky (Howard University) and moderator Mary Gray (American University)
- Wednesday, 4:20–4:50 P.M.: Business meeting
- Wednesday, 6:00–8:00 P.M.: Dinner in honor of the Noether Lecturer (a sign-up sheet will be available at the AWM table in the exhibit area and at the panel discussion)
- Wednesday, 9:30 P.M.: AWM Reception
- Thursday, 9:00–9:50 A.M.: Noether Lecture presented by Ol'ga Oleinik, Moscow State University, "On some homogenization problems for differential operators"; introduced by Cathleen Morawetz, Courant Institute of Mathematical Sciences, AMS President
- Thursday, 4:25–5:45 P.M.: Joint Prize Session; presentation of the AWM Hay Award
- Friday, 11:10 A.M. to noon: AWM 25th Anniversary Special Lecture presented by Kate Okikiolu, University of California, San Diego, "Determinants of Elliptic Operators"
- Friday, noon to 1 P.M.: AWM 25th Anniversary Luncheon
- Saturday, 9:00 A.M. to 5 P.M.: AWM-ONR Workshop for women graduate students and postdocs; organizer: Carolyn Gordon, Dartmouth College

IN THIS ISSUE

AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

The Association was founded in 1971 at the Joint Meetings in Atlantic City. The purpose of the association is to encourage women to study and to have active careers in the mathematical sciences. Equal opportunity and the equal treatment of women in the mathematical sciences are promoted.
The *Newsletter* is published bi-monthly.
The Editor welcomes articles, letters, and announcements.
Circulation: 4,500.

I would also like to mention that Linda Rothschild (University of California, San Diego, former AWM President) is giving an AMS invited address at 9 A.M. Friday, and Etta Falconer (Spelman College) and Krystyna M. Kuperberg (Auburn University) are both giving MAA invited addresses on Thursday, at 10:05 A.M. and 2:15 P.M., respectively.

Hay Award

The Louise Hay Award was established by the Executive Committee to recognize outstanding achievements in mathematics education in memory of Louise Hay. Professor Hay was widely recognized for her contributions to mathematical logic, her strong leadership as Head of the Department of Mathematics, Statistics and Computer Sciences at the University of Illinois at Chicago, and her devotion to mathematics education. The Hay Award will be presented at the Joint Prize Session (Thursday, 4:25–5:45 P.M.). AWM is proud to be part of this session for the third year in a row, and we greatly appreciate the support of AMS and MAA. I would like to thank the Hay Award Committee Naomi Fisher, Deborah Tepper Haimo and Carolyn Mahoney for their service.

Changes in the AWM Office

AWM Executive Director Joanna Wood Schot has informed me that because of her personal situation, she is resigning as Executive Director on December 15, 1995. She and her husband will spend about six months each year in Florida and the rest of the year in Washington, DC. Before joining AWM in January 1994, Joanna was the Director of Academic Programs in the David Taylor Research Center and before that Head of the Numerical Mechanics Division at the David Taylor Ship Research Center. Her research areas include applied mathematics and naval ship hydrodynamics, the history of mathematics, and the history of music. Joanna said that she would continue to support the goals of AWM and provide help on a voluntary basis. She and her husband plan to finish several book projects and write new articles on mathematics and music. I would like to thank Joanna for her contributions to AWM and to wish her and her husband a happy life in writing and traveling.

I am pleased to announce that Dr. Carol A. Tascione has agreed to be our new Executive Director starting January 1, 1996. Carol taught at Okaloosa-Walton Community College at Niceville, FL for several years before she started her graduate study in mathematics education. She received her PhD degree from American University this year and is currently teaching at American University and Marymount University.

The Executive Committee has voted unanimously to change the job title for Dawn Wheeler to Director of Membership, Meetings & Marketing, and for Angela Beach to Financial & Membership Administrator. Both Dawn and Angie have worked very hard and taken on a lot of responsibility in running the office. I am glad that

the Executive Committee has changed their job titles to be more in line with their actual duties.

Congratulations

Karen Uhlenbeck, the Sid W. Richardson Foundation Regents Chair in Mathematics at the University of Texas at Austin, won the 1995 Common Wealth Award for science and invention for helping solve notoriously difficult geometric equations that explain the fundamental properties of matter in the universe. The following quote is from the award announcement:

> She is considered one of the best mathematicians in the world and one of only two or three mathematicians worldwide who is an acknowledged expert in the geometry of theoretical physics, which she used to help solve the equations. Her studies of new equations attempt to relate Einstein's theory of curved space-time and more modern concepts of particle physics.

Karen believes mathematics still does not attract enough women, so she encourages all students, particularly women, to pursue mathematics, among other intellectual interests.

University of Rochester

You probably have heard about the decision by the University of Rochester to terminate its graduate program immediately, to gradually reduce the full-time faculty from 21 to 10, and to hire adjunct faculty or non-mathematicians to teach service courses. I am deeply disturbed by this and would like to suggest that you ask your department to send a letter to the University of Rochester asking them to reconsider this decision. I am particularly concerned because women usually suffer more under downsizing.

Although I know that many women mathematicians have part-time teaching positions for various reasons (having small children, two-body problems, etc.), I was still surprised by the 1994 AMS-IMS-MAA Survey data that shows 36% of the women mathematicians in academia hold part-time positions (2376 out of 6683), while for men the corresponding statistic is 18%. The percentage of part-time positions (22% of all faculty positions) is already too high. To make it higher will harm our profession and the training of future scientists and engineers.

Mathematics Education

Bonnie Saunders has written an article for us on Mathematicians and Education Reform (MER) [see pages 18–21], and Aurelia Skiba has written an article on the teachers program at the IAS/Park City Mathematics Institute (or PCMI) [see pages 16–17]. I would like to mention that Naomi Fisher, who is on the AWM Executive Committee, is one of the co-directors of MER and the director of the teachers program at PCMI.

Directory of Women Mathematicians

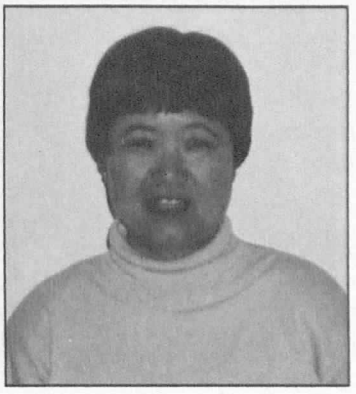
Thanks to a grant from the National Security Agency and hard work by Dawn Wheeler (with help from Angie Beach and Roia Jaseb), AWM just published a *Directory of Women Mathematicians*. It contains 2641 women mathematicians (both members of AWM and non-members) who agreed to be listed. It will be a useful resource for the mathematics community. The *Directory* is available from the AWM office for $10 ($8 for orders of five or more).

Sad News

I am sad to report to you that Olga Taussky Todd passed away in October at the age of 89. She was professor emeritus at California Institute of Technology; her research area was matrix theory. She presented the second Noether lecture in 1981. A remembrance by Chandler Davis appears on pages 7–9.

Talk at the BMS Chairs Colloquium

I was asked to give an AWM report at the Board of Mathematical Sciences 1995 Annual Department Chairs Colloquium last month. My title was "Programs to cut the attrition of women in academia." The text of my talk appears below.



Chuu-Lian Terng
November 25, 1995
Boston, MA

MEMBERSHIP AND NEWSLETTER INFORMATION

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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.* Institutional members receive two free basic job ads as a privilege of membership. For non-members, the rate is $60 for a basic ad (eight lines of type). 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 book review material** to Anne Leggett, Department of Mathematical Sciences, Loyola University, 6525 N. Sheridan Road, Chicago, IL 60626; phone: (312) 508-3554; fax: (312) 508-3514; 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. 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.

BMS ADDRESS

I would like to thank Dr. Tucker for giving me this opportunity to present the AWM report and also to thank Dr. Turner for sharing this session with me.

Since its founding in 1971, AWM has offered activities and programs to encourage women to study and pursue careers in the mathematical sciences. In this report, I would like to talk about some of the current AWM programs and some of my own experiences and also to request your help in achieving the long-term goal that women no longer be a minority in mathematics.

First I will make some comments on the recent AMS-IMS-MAA survey data. About 45% of the bachelor's degrees in mathematics have been awarded to women for many years now; the percentage of PhD's awarded to women has increased slowly from 17% in 1985 to 23% last year. But the percentage of tenured faculty who are women continues to be very low (5% in 1991 and 7% in 1994). For example, out of the 4500 tenured faculty in 170 PhD-granting departments, only 274 were women, i.e., 1.6 tenured women faculty per department. We are far away from that long-term goal! The heavy attrition seems to get more severe for women as they become more advanced in their careers: from undergraduate to graduate to post-PhD. Why is the attrition so high, and what can we do to change this? It is a very complicated issue, and I do not have a simple answer. I will try to share some of my thoughts on this later.

AWM, with many of its volunteers, has worked very hard for the past 25 years to improve the attrition problem. Let me describe some of the current AWM programs that aim at retention of women mathematicians.

1. AWM-ONR Workshops for Women Postdocs and Graduate Students. There are two workshops per year, one at the January Joint Meetings and one at the annual SIAM meeting. Each workshop supports ten graduate students who present posters and ten postdocs who give 20-minute talks and includes a panel discussion on issues of concern to junior women mathematicians. These workshops give junior women more visibility, a chance to form a

Chuu-Lian Terng, Board of Mathematical Science Chairs Colloquium, October 21, 1995

network and to attend a national meeting, and an opportunity to get to know and receive personal mentoring from senior women.

2. AWM-NSF Travel Grants for Women Mathematicians. Three times per year, AWM offers travel grants for women to attend research conferences.

3. Alice T. Schafer Prize. This prize is awarded annually for outstanding undergraduate work by women students.

4. Noether Lecture at the Joint Meetings. This lecture is given by a senior woman who has made fundamental and sustained contributions to mathematics. We have also published a Noether booklet presenting profiles of the women who have presented Noether lectures. This booklet is a source of inspiration for many young women mathematicians.

5. Directory of Women Mathematicians. AWM is publishing this with the support of NSA.

This year all five Schafer prize winners have participated in either an NSF REU (Research Experience for Undergraduates) program or some NSF-supported summer program for undergraduates, and all of them plan to go to graduate school. This has been the case for many years. It is clear that these summer programs for undergraduates are very successful.

When I was preparing this report, I was not sure whether it would be appropriate for me to share with you my own undergraduate experience, because I was trained in Taiwan which has a different cultural background. But I decided it might be of some interest. I graduated in 1971 from National Taiwan University in a class of 34 math majors, among them 10 women and 24 men. This is what I have found out happened to my class:

> The Class of 1971 from National Taiwan University: 10 women: 6 got their PhD's from U.S. departments (3 are full professors in academia, and 3 work in industry), 3 got master's degrees and work in the computer industry, 1 is teaching in high school; 24 men: 16 of them received a PhD.

Statistically, 60% of the women and 66% of the men students went on to obtain their PhD's.

The class of 1970 also had ten women, and 60% went on to get their PhD's. Even more remarkable for that class is that four of these women are now well-known researchers in the U.S.: Alice Chang at UCLA, Fan Chung at U Penn, Winnie Lee at Penn State University and Gloria Wu at the University of Illinois at Champaign-Urbana.

Some of the contributing factors for the success of women from these two classes may be:

1. The very rigorous program with many required courses: two years of theoretical calculus, two years of abstract algebra, and a year each of linear algebra, ODE, complex variables, topology, and differential geometry. So all students who went through this program were well-prepared to enter graduate school. More than half of the PhD's were in applied math, computing, or statistics.

2. All courses had very challenging homework problems with much discussion among the students.

3. Students organized their own seminars each semester.

4. There was a critical mass of women students, and they kept in touch with each other during and after their graduate study.

Although such a system might not be transferable here, I feel that the REU and summer research programs for undergraduate students are very similar in spirit to much of what made the undergraduate program I had in Taiwan so successful.

I believe that women have the same ability in math as men and that the cause for the small number of women who succeed in academia is the atmosphere they have to face: repeatedly being told that women are not as good in analytic thinking as men, being isolated, and lacking role models and peer support.

To end my report, I would like to suggest some concrete actions that might help more young women to succeed in academia.

1. Advise your undergraduate women to take courses that will prepare them for graduate school in the mathematical sciences. In Don Lewis's article "Mathematics and women: The undergraduate school and pipeline," he mentioned that only 30% of those students taking courses that are preparatory for graduate study were women and, of these, 30% did go on to graduate school. As recommended in the Lewis article, to increase the percentage of women graduate students we have to have more undergraduate women who are prepared for future graduate work. My undergraduate experience also confirms the importance of this.

2. Encourage and support your women faculty, graduate and undergraduate students to form women's groups like Berkeley's Noetherian Ring (see descriptions of four such groups in the

September–October AWM *Newsletter*). Having such groups can make women students feel less isolated, give them easy access to advice, and provide mutual support.

3. Join AWM as an Institutional Member to support us in our efforts.

4. Contribute articles to the AWM *Newsletter* to share your success stories or programs so more of us can learn from them.

5. Encourage your women undergraduate students to apply to REU and other summer programs for undergraduates. Here are a partial lists of such programs I know of: 21 NSF REU sites, NSA Director's summer program, Minnesota Geometry Center summer program for undergraduate students, Park City/IAS mentoring program for women undergraduate and graduate students, Park City/IAS summer program for undergraduate students, Bryn Mawr-Spelman summer program for women, SIMS summer program for women undergraduate students, and Carleton College summer program for women as part of the Mills College Consortium.

6. Be supportive to your junior women faculty, and be sure they have senior mentors. Nominate strong women for fellowships and awards, and inform them about the opportunity for fellowships. My first job was a two-year instructorship at U.C. Berkeley from 1976 to 1978. The differential geometry group there was very supportive of their young people. In particular, Chern played the role of my mentor there. He told me that I needed to work very hard and be persistent in my research, but he also was generous in his praise when I made some progress and encouraged me to strive to do even better. Many women who later become tenured professors could tell similar stories.

There has been a real increase in the number of women PhD's in recent years. Young women now are more aware of the importance of helping each other and networking. With your help, we may really start to see the number of tenured women reach a more equitable level.

AFFIRMATIVE ACTION RESOLUTION

The Association for Women in Mathematics regrets the recent action by the Regents of the University of California to end its affirmative action programs. Twenty years ago there were many fewer women and underrepresented minorities among students, faculty, and administrators in the University of California system. Affirmative action has played an important role in increasing the representation of these groups, and in making the higher education community at large aware of the discrimination, blatant or subtle, against underrepresented groups. At the same time, bringing people from these groups has strengthened the universities while maintaining the high quality of faculties and student bodies.

In particular the dramatic change in the representation of women in the mathematical sciences in the past decades would have not have been possible without the changes that affirmative action has brought. Less than 30 years ago the highest ranked mathematics graduate program in the U.S. did not even allow applications from potential women students. Many of the leading colleges and universities either accepted only men or kept the ratio of women students intentionally small. Even among public high schools, some of those most successful in scientific and mathematical training were closed to girls. Some men who received their scientific training in the sixties and earlier, and who are now holding positions with responsibility and power, came to accept the official discrimination against girls and women as the normal status quo.

AWM strongly feels that it is premature to end affirmative action programs at this time and is concerned about the negative effects that such an action will have. The end of affirmative action may well mean a return to more open discrimination and a decrease of awareness about important social problems facing the higher education community at large.

resolution passed by AWM Executive Committee, November 30, 1995

REMEMBERING OLGA TAUSSKY TODD

Olga Taussky is remembered by many for her lectures. One was AWM's Noether Lecture in 1981; this had a special resonance, for she had known Emmy Noether both at Göttingen and at Bryn Mawr. Others remember Olga as author of some beautiful research papers, as teacher, as collaborator, and as someone whose zest for mathematics was deeply felt and contagious.

Born in 1906 in (the Moravian part of) the Austro-Hungarian empire, she felt a powerful call to mathematics early in life. Her first research, at the University of Vienna (DPhil 1930 under Philipp Furtwängler), was on algebraic number theory, and she never stopped regarding that as her primary field. However, she acknowledged as equally important her initiation to functional analysis by Hans Hahn at Vienna and to algebraic systems by Emmy Noether at Göttingen. Their perspectives affected her work lifelong. (A recent paper of hers, perhaps her last paper, was a reminiscence of Hahn.)

The field she is most identified with — which might be called "linear algebra and applications," though "real and complex matrix theory" would be preferred by some — did not exist in the 1930's, despite the textbook by C.C. MacDuffee. Her stature in that field is the very highest, as was palpable in the standing ovation after her survey talk at the second Linear Algebra Society conference in 1983. In tracing her professional development, I will say a little about how the field came together.

Like other Jews in Germany and Austria, Olga Taussky would have had to leave by about 1938. Some delayed as long as they could; some, too long. She left in 1934.

She moved, after a year at Bryn Mawr, to Girton College Cambridge and remained in England until after World War II. It is amusing to hear the story of her job interview, where a member of the committee asked her, with motivation we can imagine, "I see you have written several joint papers. Were you the senior or the junior author?" Another member of the committee was G.H. Hardy, who interjected, "That is a most improper question. Do not answer it!" The questioner went on, "I see you have collaborated with some men, but with no women. Why?" Olga replied that that was why she was applying for a position in a women's college![1] It is less amusing to learn that the then head of Girton College (a woman) insisted that the students not do their theses with Olga, even when male colleagues considered her the most suited to the projected research, because it would be damaging to their career to have a woman supervisor. Olga recalled such an incident even after the War.

In 1938, while both were working at the University of London, Olga Taussky and John Todd married. Jack's scientific background was rather different — classical analysis — and his background was different — non-Jewish Anglo-Irish. But their ensuing collaboration over 57 years was close and extraordinarily fruitful. There were almost no joint papers, but they talked everything over, and everything either did was influenced by the other.

They went into applied work for the Ministry of Aircraft Production during the War. The problems included analysis of aircraft designs for their stability properties. The tools were the localization of eigenvalues, stability analysis (testing whether the real parts of all eigenvalues are < 0, or anyway not too far above 0), and numerical computation. Their work coincided with the start of the great expansion of number-crunching technique; Jack did, but Olga did not, keep always adept at the most powerful computational methods. Don't imagine Olga uttering only abstract notions and Jack only results of machine computations. Her curiosity extended to the details of numerical examples; his encompassed the theory. A good example is the Hilbert matrix, a passion they shared.

At the end of the war they moved to the U.S. National Bureau of Standards, first in Washington and then in Los Angeles. This was the period when, stimulated by the coming of peace and the computer revolution, the new matrix theory was being established as an autonomous field by people such as the Todds, Alston Householder, Magnus Hestenes, Fritz Bauer, Ky Fan, Alexander Ostrowski, Helmut Wielandt.... My friends tell me never to start such a list, because it would be tedious if I tried to make it complete, and it is unpleasantly invidious to mention a few and omit others just as important. My apologies. I have listed enough to make clear that I am talking about an international development. The group at the National Bureau of Standards included a few of the leaders, and the other leaders were not

Chandler Davis, University of Toronto

Olga Taussky Todd

entirely absent. The opening of (many) borders and easing of (many) security restrictions after the War enabled most of the rest to keep in touch.

What now look like fundamental theorems of matrix theory — Gaussian elimination, the Cauchy interlacing theorem, the Cayley-Hamilton theorem, Sylvester's inertia theorem, the Smith and Jordan forms, Perron-Frobenius theory, the variational principle for eigenvalues, and those below — were known and had not been entirely forgotten. They weren't taught much: there is an "introductory linear algebra course" everywhere now, but then nowhere; as a consequence, when I began graduate study in physics in 1946, four different courses I took began with about six weeks on "vectors." What happened in the following decade was the recognition of matrix theory as a body of doctrine and as a necessary tool-kit for the scientist. Simultaneously it recognized itself as a "field" of research; recognition by others took longer ... or should I say will take longer?

It had been several years since the Todds had taught. Olga had grown up in a world where women — even Emmy Noether — might be barred from university professorships. It was most welcome when Caltech invited her and Jack to join the faculty in 1957. The offer was (as was usual at the time) for the husband to become Professor and the wife Research Associate, but their offices were adjacent and the same size, and Olga was welcome to conduct seminars and supervise theses. As she did. They never ceased to appreciate Caltech's hospitality. The anomaly in their status ceased to look ideal when, in 1971, a very young Assistant Professor of English was glorified by the press as the first woman ever on Caltech's faculty. The first, indeed! What about Olga? I saw no sign that Olga held this against the young woman herself, but it did rub her the wrong way; she went straight to the administration and had her rank changed to Professor, and so she remained.

By this time she was already an Elder Statesman of matrix theory. Let me attempt to say briefly why her contributions were so important to the field. I'm sorry she is not here to read my remarks, but if she were, I'm afraid she would be impatient with me for trying to single out two particular clusters of papers, when I know she did much more. There is a reason for my choice: the papers I will talk about cast an influence on the research of hundreds of people over the decades since.

(1) Gershgorin circles. The basic idea is diagonal dominance. Assume a square matrix A has dominant diagonal in the sense that, for each i, the diagonal entry a_{ii} exceeds in absolute value R_i, defined as the sum of the $|a_{ij}|$ for $j \neq i$. Theorem: A is then non-singular. This can also be phrased as a statement about the spectrum of A: it must be contained in the union of the "Gershgorin circles," whose centers are the a_{ii} and whose radii are the R_i. S. Gershgorin didn't invent the idea, but he illustrated its use in numerical estimation of eigenvalues (1931). Olga revived it during the War. She remembered it from student days — but wait: she had not been doing numerical math then, so why did she know this theorem? She had loved it when she heard it as a lemma in algebraic number theory

from her director Furtwängler! Later, her fellow emigré Alfred Brauer and she strengthened the theorem and promoted the method. Olga's 1949 article was especially widely read. In it, she explained the idea and traced it back to L. Lévy (1881), told some of its applications, transmissions, and independent rediscoveries over the decades, and initiated a productive program of research into other kinds of diagonal dominance.[2]

(2) Inertia theorems. A. Lyapunov (1892) had showed the usefulness of what are now called "Lyapunov functions" in stability analysis of linear differential equations. Suppose the vector function x(t) satisfies dx/dt = Ax, for a given (constant) matrix A. We wonder whether all solutions go to zero as $t \to \infty$ — or equivalently, whether all eigenvalues of A have negative real part. It would be enough to find a (constant) positive definite matrix H such that the function L(x) = x*Hx goes to 0. Differentiating, and substituting dx/dt = Ax twice, we find $L(x)' = x^{*\prime}Hx + x^*Hx' = x^*(A^*H + HA)x$. Evidently the wished-for property of H is that the matrix C = A*H + HA be negative definite. Bear in mind that C and H are hermitian, so their definiteness is easy to check, whereas A, the key matrix, is usually very non-normal. Olga in the years 1950–1964 called attention to these ideas and the discrete-time analogue, put them in a wider context, and led in the creation of a general inertia theory. Let me quote a theorem which shows where this development goes; it was contributed to first by Olga, then by A. Ostrowski, H. Schneider, D. Carlson, C.T. Chen, and H. Wimmer. Assume A has no eigenvalues with real part 0. Assume A*H + HA = C is positive[3] semi-definite. Then (i) A has at least as many eigenvalues with negative real part as H does, and at least as many with positive real part; (ii) equality holds if the matrix $[C, CA, CA^2, \ldots]$ has full rank — in particular, if C is non-singular.

In the first few years at Caltech, it was easier to attract students from the physical sciences than from mathematics (but of course the students of the physical sciences at Caltech were very good). As years went by, more thesis students came Olga's way. Her former advisees have had large roles, and some of the starring roles, in the burgeoning of matrix theory since 1960.

Olga Taussky always wished to ease the way of younger women in mathematics and was sorry not to have more of them to work with. She said so, and she showed it in her life. Marjorie Senechal recalls giving a paper at an AMS meeting for the first time in 1962 and feeling quite alone and far from home. Olga turned the whole experience into a pleasant one by coming up to Marjorie, all smiles, introducing herself, and saying, "It's so nice to have another woman here! Welcome to mathematics!"

It's so nice that a leading mathematician was such a lovely human being.

Notes

1. *Mathematical Intelligencer* 16 (1994), no. 2, 34.
2. For more detail, see Hans Schneider, "Olga Taussky-Todd's influence on matrix theory and matrix theorists," *Linear Multilinear Alg.* 5 (1977), 197-224. This article is excellent on inertia theorems, too.
3. It was negative a moment ago, wasn't it? The conventional choice of sign is not the choice that makes sense in the application. Sorry.

SIAM REPORT

Mathematics has played a key role in solving complex problems from many industries — software, electronics, communications, transportation, chemical, financial services — according to a report on the role of mathematics and mathematicians in industry. Nearly 500 engineers, mathematicians, scientists and their managers were surveyed for the *Mathematics in Industry* report released in October by the Society for Industrial and Applied Mathematics (SIAM).

The managers reported that industrial mathematicians are highly valued as problem-solvers and systems thinkers. Recent mathematics graduates working in industry thought that U.S. universities successfully taught many of the technical skills necessary for an industrial environment. However, both graduates and managers called for improvements in education in such areas as computation, modeling, interdisciplinary work, and communication skills.

The MII steering committee offers several sets of recommendations guided by two related purposes: broadening the graduate curriculum and educational programs, and creating mechanisms for actively connecting academic and nonacademic mathematical scientists. These suggestions are intended not only to provide students with increased flexibility in career choices, but also to develop deeper understanding of real-world applications of mathematics.

1996 NOETHER LECTURER: OL'GA OLEINIK

Ol'ga Arsen'evna Oleinik was born on July 2, 1925. She graduated from the Moscow State University in 1947 and continued her graduate work there. She received her master's degree in 1950 and her doctorate in 1954.

She is a member of the Russian Academy of Sciences; a foreign member of the Academia Nazionale dei Lincei (Italy), Sächsische Academie of Sciences (Germany), Italian Academy of Sciences in Palermo, and Italian Academy of Sciences in Milan; an honorary member of the Royal Society of Edinburgh (UK); and an honorary Doctor of the University of Rome. She was awarded a medal of the Collège de France and a medal of the first degree at the Charles University in Prague. She also received the Chebotarëv prize, the State prize, the Lomonosov prize, the Petrowsky prize and the prize of the Russian Academy of Sciences.

Oleinik's main research is concerned with algebraic geometry, partial differential equations, and mathematical physics. Her early research was in algebraic geometry. Jointly with Petrovskii, she obtained the Euler characteristic of an n-1–dimensional algebraic surface of order m in a projective n-space. Her work on partial differential equations is fundamental and extremely broad. For example, she established a result on the coincidence of sets of regular points for second-order linear elliptic equations, constructed a full theory of discontinuous solutions of non-linear hyperbolic equations, developed the theory of second-order linear equations with non-negative characteristic form, gave a solution to the question of hypoellipticity of second-order elliptic equations of general form, and obtained profound results on the analyticity of solutions of linear equations and systems.

Oleinik has always been interested in applied problems. She constructed mathematical theories of non-stationary filtration of liquids and gases in porous media and also for the boundary layer, studied Stefan's problem on the distribution of heat in bodies in different phases, as well as problems in elasticity theory and homogenization.

Oleinik has published over three hundred papers and eight books. Her most recent books are:

1. *Mathematical problems in elasticity and homogenization*, North-Holland, Amsterdam, 1992,
2. *Homogenization of differential operators and integral functionals*, Springer-Verlag, 1994,

and

3. *Some asymptotic problems of the theory of partial differential equations*, Cambridge University Press, 1995.

Oleinik is a very successful teacher, having had fifty-eight thesis students. She is described by her colleagues as a women of great personal charm and is characterized by her sympathy and good nature in her relations with other people.

Ol'ga Arsen'evna Oleinik

SIAM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND POSTDOCTORAL MATHEMATICIANS

supported by the Office of Naval Research and the Association for Women in Mathematics

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

WHEN: The next workshop in the series will be held in conjunction with the Society for Industrial and Applied Mathematics (SIAM) Annual Meeting in Kansas City, Missouri, July 22–26, 1996. This workshop will be held during the first two days of the meeting on Monday, July 22 and Tuesday, July 23, 1996.

WORKSHOP: The workshop will consist of two poster sessions, four minisymposia, a panel on careers, a panel on government funding and an after-dinner keynote speaker. The poster sessions include all areas of research in applied mathematics. Each minisymposium will have a definite focus. The first minisymposium will include four talks by experienced researchers about specific communication skills, written and oral, that are helpful in effective presentation of technical results. The three remaining minisymposia will focus on the research areas of control theory, inverse problems, and dynamical systems.

Graduate student participants will present their research in a poster session. Postdocs (those within five years of their PhD) will speak in one of the three AWM research minisymposia or in one of the other minisymposia or contributed paper sessions at the SIAM meeting. All mathematicians (female and male) are invited to attend the entire program. AWM will offer funding for travel and three days subsistence for approximately 20 graduate students and 20 postdocs. Departments are urged to help graduate students and postdocs obtain some supplementary institutional support to attend the Workshop and the associated meetings.

APPLICATIONS: To be eligible for funding, *graduate students* must have begun work on a thesis problem. Applications should include a cover letter, an abstract of their work, curriculum vitae, and a supporting letter of recommendation from a faculty member or research mathematician. Applications from *postdocs* should include a cover letter, an abstract of their work, and curriculum vitae and may also include a letter of recommendation. Letters of support are encouraged. The word "postdoc" refers to any mathematician who has received her PhD within the last five years, whether or not she currently holds a postdoctoral or other academic position. All funded participants are invited and strongly encouraged to attend the full AWM two-day program. All non-U.S. citizen applicants must have a current U.S. address.

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

Workshop Selection Committee
Association for Women in Mathematics
4114 Computer & Space Sciences Building
University of Maryland
College Park, Maryland 20742-2461
Phone: 301-405-7892 Email: awm@math.umd.edu

(Applications via e-mail or fax will not be accepted.)

APPLICATION DEADLINE: **March 1, 1996**

BOOK REVIEW

Marla Parker, editor, *She Does Math! Real-Life Problems from Women on the Job*, The Mathematical Association of America, Washington, DC, 1995; paper, $24.00 (MAA Member, $18.50), ISBN 0-88385-702-2.

At her ninth grade science fair, structural engineer Linda Lanham won a gift certificate from a drafting supply company which sparked her interest in drafting. Although she studied algebra, geometry, and trigonometry in high school, she did not realize at the time how these skills would benefit her later. Having been awarded a four-year General Electric National Scholarship from the Society of Women Engineers, she chose to attend the Colorado School of Mines. Linda took several years off in the middle of her education to gain experience with the U.S. Forest Service. Today she designs and supervises the construction of bridges for low-volume roads. Her background in math is particularly useful in the design phase to help her determine the minimum dimensions of the support structures given the frequency and weight of the traffic using the bridge.

In *She Does Math! Real-Life Problems from Women on the Job*, Marla Parker brings together the stories of thirty-eight women (like Linda Lanham) from a panoply of technical fields that employ mathematics. From archaeologists to engineers, from software designers to dieticians, from ophthalmologists to fish pathologists, these women give personal accounts of their educational experiences, career histories, and daily uses of mathematics.

Some of the women tell of being actively discouraged from pursuing a career in math or of encountering "chilly climates" after finishing their degrees. One even recalls a senior professor refusing to give her a necessary oral exam on the grounds that "a nice girl" did not belong in mathematics. Others credit supportive parents, all-girl schools, or their own personal drive and love of mathematics among the reasons for their success. All the stories convey to the reader that taking math keeps career options open.

Replete with interesting mathematical problems (154 all told) encountered daily in the lives of the women, this book would serve well as a supplement to any high school mathematics course. All teachers from middle school to master's level should have copies on their desks. The problems are indexed by subject, vary in degree of difficulty, and come complete with solutions. Instead of, or in addition to, a discussion of women's contributions to mathematics, here is a valuable resource to use throughout the year, when students could read the short biographies and try to answer some of the stimulating questions, all the while being exposed to a variety of women role-models in technical fields. Not only do these problems portray women as technical professionals, but they also fortify a teacher's arsenal of answers to "Why do I need to study math?" For example, we learn how:

- an archaeologist conjectures the size of a village from a single sherd of pottery, and how mathematics helps her determine the environment of a 1000-year-old North American village site by studying pollen found in the sediment from that site;
- a civil engineer designs a cable suspension system to haul harvested timber down a steep incline;
- a pilot decides how to situate her passengers and luggage so that the plane remains aloft;
- an aerospace engineer calculates the number of batteries needed for a spacecraft in a geosynchronous orbit; and
- a fish pathologist medicates a large population of fish, and how mathematics can help her alleviate the "bends" in fish.

The clear message of this book is that mathematics is the critical filter in career access: to qualify for majors that lead to careers in the sciences, medicine, engineering, and other technical fields, young people should study at least four years of high school mathematics. *She Does Math!* provides an inexpensive, informative resource for young women and men early in their education showing women at work in technically literate fields and the importance mathematics plays in their careers.

This book grew out of Marla Parker's involvement in the Women and Mathematics program

Reviewer: Deanna Haunsperger, Department of Mathematics and Computer Science, Carleton College, Northfield, MN 55057-4025; dhaunspe@phobos.mathcs.carleton.edu. Book review editor: Margaret Murray, Department of Mathematics, Virginia Tech, Blacksburg, VA 24061-0123; murray@calvin.math.vt.edu; BITNET: murray@vtmath

(WAM) of the Mathematical Association of America. WAM sends female speakers to secondary schools to give interesting math talks to students and to visit with guidance counselors and teachers. All royalties from *She Does Math!* will benefit WAM.

AWM CONFLICT OF INTEREST POLICY

A conflict of interest may exist when the interest (financial or other) or concerns of any member of the Association for Women in Mathematics (AWM), or the member's immediate family, or any group or organization to which the member has an allegiance or duty, may be seen as competing or conflicting with the interests or concerns of AWM.

When any such potential conflict of interest is relevant to a matter requiring participation by the member in any action by AWM or any of its committees to which the member belongs, the interested party shall call it to the attention of AWM or the committee and such person shall not vote on the matter. Moreover, the person having a conflict shall retire from the room in which the organization or its committee is meeting (or from a conference call) and shall not participate in the final deliberation or decision regarding the matter under consideration.

The foregoing requirements shall not be construed as preventing the member from briefly stating her position in the matter, nor from answering pertinent questions of other members, as her knowledge may be of great assistance.

The minutes of the meeting of the organization or committee shall reflect when the conflict of interest was disclosed and when the interested person did not vote. When there is a doubt as to whether a conflict of interest exists, and/or whether a member should refrain from voting, the matter shall be resolved by a vote of the organization (or its committee), excluding the person concerning whose situation the doubt has arisen.

A copy of this conflict of interest statement passed by the AWM Executive Committee, Vancouver, 8/16/93, shall be published once a year in the AWM *Newsletter*, and any member serving as an officer or on a committee shall be advised of the policy upon undertaking her duties.

PROMYS: PREPARING GIRLS AND BOYS TO THRIVE

In 1989 Glenn Stevens and David Fried, with the help of Steve Rosenberg, Ira Gessel, and myself, started PROMYS, a **PRO**gram in **M**athematics for **Y**oung **S**cientists. The five of us had all been students at Arnold Ross' Summer Science Training Program at Ohio State University in the late sixties, participating several years, as students and later as counselors. We had all been profoundly affected by Ross' program and decided it was time to carry on the program in our own way. We applied to the NSF for a grant in the Young Scholars Program, and the program has continued with funding from the NSF for seven years.

For those unfamiliar with Ross' program, let me describe the basic components of PROMYS. We are a national program, with applications from high school students who are talented in mathematics. While we look at grades and teacher comments, the primary component of our application is a set of ten challenging problems which should take the student many days to investigate. We are looking for numerical experiments as well as more or less formal proofs.

The primary subject for the program is Number Theory. We are not looking to accelerate our students through their high school mathematics programs, but to introduce them to mathematics they probably would never see in high school. Students receive their first problem set a few weeks before the program starts; they are expected to turn it in upon their arrival. Every day the students have one hour of number theory lecture. They are then given a problem set of about 15 problems. The rest of the day and night is dedicated to investigating and solving these problems. This continues for six weeks, after which everyone is exhilarated and exhausted.

Built onto this austere framework are a variety of supports. Each student is assigned a counselor, a college student who is responsible for assisting the student through the problems. The students are encouraged to spend some time working with others and some time working by themselves. Each student attends a number theory problem session, run by a mathematician, three times a week for an hour

Marjory J. Baruch, Baruch Hsiang Associates, mjbaruch@mailbox.syr.edu

each. There is a Number Theory Lab for students with less experience who want help with some of the more basic topics.

The faculty in the program strongly believe that women are part of the mathematics community. Women account for more than 1/3 of our counselors, and more than 1/3 of the students are girls. We have two head counselors, a male and a female. We have worked hard with the university to arrange for the male and female students to be housed in the same building, though in different parts of the building. We have also insisted that there be study space in the dorms where the boys and girls can work together well into the night. (Having been the only woman in my college mathematics classes, it was not until the end of my sophomore year that I discovered that my classmates worked together on problems that I could not master alone. Once I made this discovery, I was more than welcome to join these study sessions — all I had to do was negotiate the Chicago midway alone at night to get over to the men's dorm.) Atop each problem set is a quote of some mathematician's wisdom, and women are represented among these wise folk.

In addition to Number Theory, we have outside speakers address the program about once a week. We have had university professors from around the country discussing many problems in mathematics, as well as people from industry who show how mathematics is applied to the development of their products. Every year at least one or two of our outside speakers is a woman. We have benefited from talks by Lenore Blum, Lynne Butler, Helen Grundman, Lisa Koch, Nancy Kopell, Jill Mesirov, Diane Meuser, Alice Silverberg, and Chuu-Lian Terng.

We also have three other courses that meet throughout the summer aimed at returning students and a few very sophisticated first-year students. Each of these is taught by a mathematician, and every year at least one of these professors is a woman. Topics covered have included Galois Theory, Bernoulli Numbers, Zeta Functions, Topology, Dynamical Systems, Combinatorics, and Geometry of Spheres. As active young mathematicians themselves the counselors run their own seminars in such topics as Modular Forms, Several Complex Variables, Zeta Functions of Varieties Over Finite Fields, and Fermat's Last Theorem. In recent years the counselors have also set up individual lectures and courses for themselves and for the students, taught by the counselors, in a variety of mathematical subjects. By making sure these extra courses are not run by just a few, we have had significant participation by both the men and women counselors. Similarly, non-mathematical chores, such as arranging entertaining activities for the students for Friday nights, are shared by all the counselors.

Boston University has been home to many summer programs for professional mathematicians over the years. PROMYS students and counselors are kept informed of these programs, such as the Dynamical Systems Institute and the Fermat's Last Theorem Conference. Students and counselors frequently choose to attend lectures given at these programs, observing the depth of mathematics, seeing mature male and female mathematicians in action.

Each year we have had some program addressing the challenges specific to being a woman in mathematics, with a focus on ways to recognize the obstacles and to surmount them. We call this program Women Of PROMYS (the acronym WOP is the same as that for the Well-Ordering Principle, a cornerstone of our study of the integers.) Some years WOP has been designed only for the females of the program, and sometimes the males have been welcome to participate.

A critical link in our program is our returning students. About a third of our students return for a second or third year as students, and many continue to come back as counselors. PROMYS provides continuing encouragement and challenges for these students, many of whom may not receive these elsewhere. Kids who love mathematics fit in at PROMYS and share information with each other about other opportunities for pursuing this passion.

Our program cannot be accused of favoring or coddling girls. But by being aware of the differences that frequently exist in the environments in which boys and girls grow up, we can sometimes address these differences to make them less of a deterrent for the girls to succeed in mathematics. Many of the women who were counselors in our program are now well on their way toward earning doctorates in mathematics. The girls in our program go on to excellent colleges, often majoring in mathematics or a mathematics-related field. Girls who were students in the early years of the program are just now starting graduate school in mathematics. Word of mouth is a primary way we get new participants. The boys and girls both recognize that girls are part of PROMYS and that women are part of the mathematical community. This helps insure that they will continue to be.

[For information on the 1996 program, see page 26.]

MENTORING PROGRAM

Demonstrations of vibrating strings and plates began The Mentoring Program for Women Mathematicians held at the Institute for Advanced Study in Princeton between May 15 and May 25, 1995. The core of the program was three courses offered in the mornings. Joyce McLaughlin presented eight lectures at the undergraduate level titled "Vibrating strings, beams and membranes: Finding their properties from frequencies, nodes or nodal lines." Demonstration experiments were shown each day to motivate both the mathematics and the mathematical models. Mathematical structure was described for one-dimensional inverse spectral problems and for one- and two-dimensional inverse problems where the data are nodes or nodal line positions. In some lectures, students gave short presentations of solutions to assigned problems.

Eight lectures on Nonlinear Waves were jointly presented at the graduate level. The first four lectures by Barbara Keyfitz, Professor of Mathematics at the University of Houston, "Nonlinear Hyperbolic Partial Differential Equations," focused on four methods in analysis which are widely used in the study of partial differential equations. The second four lectures by Susan Friedlander, Professor of Mathematics at Northwestern University, "Topics in Fluid Dynamics," included, for example, inverse scattering, the KdV equation, and waves and instability in geophysical fluid dynamics. The goal in all cases was to acquaint students with methods, results, and perspective for current research areas.

Two opportunities were provided in the afternoon. The more senior participants including the postdoc mentors presented their own research results at research level. Two guest lectures which specifically targeted the undergraduate students were given by Sara Greenwald, a graduate student and by postdoc Lan Wang. Three senior faculty, namely Karen Uhlenbeck, Fan Chung, and Jane Cronin Scanlon, gave research lectures specifically designed for the participants. The remaining part of the afternoons could be spent by participants on problems suggested by the morning lecturers. Students were assisted in this by the postdoc mentors and faculty at undergraduate colleges. Postdocs and some graduate students could, and did, spend time on their own research, taking advantage of the positive environment for getting work done.

One of the pleasures of the program was that it took place at the Institute for Advanced Study. Participants could take part in the traditional afternoon tea and sit at tables for lunch with senior women mathematicians, participants, and members of the Institute. Discussions included, among other things, the coursework at hand and career development plans. Clearly a plus was the fact that the participants could be in an environment which contained so many women ... both those beginning careers as mathematicians and those in more senior positions.

Thirty women actively participated in the program for women mathematicians. Twenty women mathematics students formally attended the program; another six women postdocs served as mentors, as well as some of the postdocs in residence at the IAS and a number of more senior women faculty, mostly from area colleges. The program is held as part of the upper-level undergraduate and graduate school components of the Park City/ Institute for Advanced Study Mathematics Institute. The main program was held in Park City in July; the focus of the lectures there was Nonlinear Waves. The Mentoring program was organized by Chuu-Lian Terng, Professor at Northeastern University and President of AWM, and by Karen Uhlenbeck, Professor of Mathematics at the University of Texas, Research Director of the Summer Mathematics Program, and a member of the National Academy of Sciences. Funding for the program was provided by the National Science Foundation and the Geraldine R. Dodge Foundation.

In 1996 the program, including the Mentoring Program, will be held at the Institute for Advanced Study. The Mentoring Program will take place on June 10–20. [See page 34 for more information.] This program should be seriously considered by all women students and postdocs who will attend summer programs. The experience is unique, motivating, and, for some, inspiring.

Joyce McLaughlin, the Ford Foundation Professor at Rensselaer Polytechnic Institute, is currently a Visiting Professor at Courant Institute, NYU.

CORRECTION: In "Vivienne Malone-Mayes: In Memoriam" last issue, on page 9, second column, line 3, the date 1983 should have been 1993.

IAS/PARK CITY HIGH SCHOOL TEACHERS PROGRAM

Summer and Mathematics in the mountains of Utah! What a great combination! Galileo has said that "Mathematics is the alphabet with which God has written the universe." And so the Wasatch Range was the perfect setting these last five years for the Institute for Advanced Study/Park City Mathematics Institute (PCMI), a flagship mathematics program which is built on the fundamental theme that interaction among researchers, graduate students, undergraduate students, and high school teachers of mathematics is essential to the optimum functioning of the mathematical enterprise. The PCMI is sponsored by the Institute for Advanced Study in Princeton, New Jersey, and receives major support from the National Science Foundation. The Geraldine R. Dodge Foundation provides additional funding.

Begun in 1991 as the Utah Regional Geometry Institute, the program brings together teachers, university professors, researchers, graduate and undergraduate students for three to four weeks each summer. Approximately two hundred mathematicians met at the summer session each year to collaborate on various projects of interest including minimal surfaces, algebraic geometry, space curvature, and nonlinear waves, to mention just a few. The main focus of the teacher portion was on the revitalization of the geometry curriculum. The summer session is linked to a year-long program in regional university-based sites where participating high school teachers work in collaboration with faculty at sponsoring institutions.

The program was based at the University of Utah's Mathematics Department until 1994 when operations moved to New Jersey under the sponsorship of the Institute for Advanced Study. The first site directors and those who were involved in the early development of the classroom teacher portion of the program were Professors Herb Clemens (University of Utah), Naomi Fisher (University of Illinois at Chicago), John Polking (Rice University), Jim Carlson (University of Utah), John Gilbert (University of Texas at Austin) and Jim King (University of Washington). After the first two years, sites were added in Idaho (Idaho State University) and North Carolina (Duke University). So far two groups of about thirty-five teachers each have embarked on two-year journeys to work toward the enhancement of the mathematics curriculum at the junior- and senior-high levels. A third group of teachers began their first year this past summer representing sites in Georgia (Clark Atlanta University), Indiana (Purdue University), Kentucky (University of Louisville) and Texas (Rice University).

Although the researchers, graduate and undergraduate students and teachers each had individual programs, the PCMI was designed to weave the groups together in various activities, thereby encouraging conversations and project planning. Teachers found researchers willing to come to their schools and present mini-lessons to the students. Graduate and undergraduate students found new mentors with whom they could work. Karen Uhlenbeck (Texas) hosted seminars on women's issues and dealt with the Graduate Summer School. Robert Bryant (Duke) directed many of the All-Institute seminars and was most successful at bringing the various groups together in discussions. In most cases the relationships established continued throughout the next years and became a vital part of growth in the mathematics community.

Model-building played a key role at the teacher portion of the summer session as teachers learned the use of origami to fashion cubes and stellated octahedrons from Philip Mallinson of the Woodrow Wilson Foundation. They gained a facility with bamboo skewers to embed a tetrahedron and a square in a dodecahedron from Robert McDermott of the University of Utah, and constructed the five Platonic solids from Euclidean nets and folded tangents to form the conic sections.

The PCMI summer session has a strong computer element. Jim King has MacIntosh, IBM, IRIS and NEXT computers for participants to use in structured classes and for private research. The teachers primarily used Logo, Sketchpad and Cabri and experienced geometry come alive in the classroom through the software's excellent animation capabilities. They saw how computers can aid their students to investigate star polygons, rotations of symmetry, and the tilings of the Euclidean plane and hyperbolic space.

What made the summer session a huge success? The teachers did not merely study!! They used stereographic projections, canned the sphere, sliced

Aurelia E. Skiba, Resurrection High School, Chicago, Illinois

the cylinder to form the conics, found the area of spherical triangles, utilized determinants to prove Green's theorem, and sectioned a cube into three pyramids to discuss volume. They did not simply listen to class lectures. They drew, assembled, folded, and built — they were involved! In much the same way, by engaging students in exciting mathematical activities, teachers can allow real learning to happen!

In light of each group's adventures during the seven weeks over two summers and periodic regional meetings during the school year, the teachers now view their present school curriculums differently and have a better idea of what topics need to be enhanced and expanded within them. They realize there are many variables that impact on each of us such as textbooks, personal familiarity and confidence with a concept, the type of geometry course we teach, and school expectations, to name a few. But keep in mind that nearly one hundred teachers, following their PCMI encounter, have faith in these ideas and hope to stimulate discussion on the mathematics curriculum.

Their experiences demonstrated that lengthy teacher lecture time should be minimized. This would release time for the discovery of mathematics through the "hands-on" experiences of paper folding, model-building portraying three-dimensional visualization, and the use of computers and software programs allowing students to seek relationships independently. For example, a simple tetrahedron model can quickly be built with six straws and a six foot piece of string. Many definitions and theorems can then be discussed in view of the model.

Although concern with the justification of mathematical concepts is of primary importance, some textbooks seem to overemphasize the instruction of two-column proof. Through reasonable arguments such as paragraph proofs or flowchart proofs, in which writing and attention to correct vocabulary can be emphasized as well, students can learn a variety of ways to substantiate their hypotheses.

Areas where contrived problems do little more than lead to a single answer should be replaced by more open-ended questions. This would foster the growth of inductive reasoning — leading to proper conjecturing and development of suppositions. Ultimately, practical problem-solving is more effective in demonstrating the applications and the usefulness of geometry.

Activities involving investigation are more appealing to the majority of students. Group activities or cooperative learning techniques can help build the student's ability to understand mathematics. For example, a study of transformations including tessellations works very well with groups. When students are involved in the process of learning — they will create geometry. Since their attention is held longer, a solid stage is set for future learning with the teacher functioning as a resource and guide to the students' explorations.

Because our horizons are becoming more global each day, it is necessary that an awareness of non-Euclidean geometry be presented. This can be introduced by drawing triangles on balloons and studying their spherical measurements. Maps from an atlas showing the earth through stereographic and polar projections can aid in the understanding of the properties of the sphere. The historical aspects of both Euclidean and non-Euclidean geometry should not be overlooked. Students can do research reports on the lives of geometers and see how their work has affected physics and other sciences in the study of our universe. There are many books available today well within the scope of a high school student.

Students in upper-level courses can present oral reports to other classes. Peer interaction is extremely well-received. Students tend to isolate geometry as a separate subject area of mathematics and fail to see its co-relationships with other fields such as algebra and trigonometry. Therefore, it is important that geometry be integrated throughout other mathematics courses where topics like vectors and conics can be correlated.

Sharing ideas with teaching peers is vital. We need to discuss with colleagues the rationale used to build a curriculum. Each of us should take an active interest in its development and put genuine excitement into our teaching. By attending conferences and institutes like the PCMI we can benefit from open forums which present ideas leading to well-informed conclusions.

These activities suggested alternate forms of evaluation of students, such as portfolios, projects, and student presentations. We, as educators, must be interested in our students' total development, not just their ability to simply recall and mimic solutions.

The intent here has not been to tell readers where to add or subtract in their curriculum, but rather to express the need to blend these thoughts into an experiential geometry that students can build on in their world!

WHAT IS MER? AN ANSWER VIA ITS HISTORY

The Mathematicians and Education Reform (MER) Forum was the brain child of Harvey Keynes of the University of Minnesota and Phil Wagreich of the University of Illinois at Chicago. Beginning in 1988, the original NSF-sponsored program was designed to encourage and facilitate the involvement of mathematicians in the improvement of precollege education. Over the years and with support from three NSF grants, MER has grown to include mathematicians, mathematics educators, and precollege teachers who are interested in a wide range of educational reform issues.

MER seeks to promote within the mathematics community the continuing discussion of educational issues, dissemination of educational resources, and building of collegial associations to support the successful involvement of mathematicians in education reform. In pursuit of this mission, MER has built a program of interconnected educational activities for mathematicians.

MER means different things to different people, often reflecting their own interests in mathematics education. For example, at the latest MER workshop on Preparation for Teaching Mathematics, many participants proclaimed MER to be the perfect, and much needed, platform for teachers and mathematicians to meet to discuss the rapidly evolving issues of teacher preparation. Others think of MER as a calculus reform group.

The following article attempts to explain MER by giving a brief history of the Forum as it grew through each of the three NSF grants. Most of the information was gathered from the MER *Newsletter*, which has been published since MER began.

The Idea for a Network Takes Shape

When Philip Wagreich and Harvey Keynes first met in 1985, both were already veterans in precollege mathematics education. Their combined experiences totaled 31 years and included working with teachers from elementary schools and high schools and with average as well as talented students, developing curriculum materials, and designing degree programs for teachers. Working in precollege education gradually shifted from a peripheral role to a more central role in each of their professional lives. First, each of them found that precollege educational work was professionally challenging and gratifying. But more than personal satisfaction, they recognized that as mathematicians they had a stake in precollege education and that their contributions were needed.

As research mathematicians, Keynes and Wagreich knew how crucial it is to have the opportunity to talk with other people who are working in the same field. Wagreich recalled that when he first began his research in singularities, the lubricant for doing research was going to conferences and meeting with other mathematicians doing similar research. It didn't really matter if the conference was a relatively small special session at a regional AMS meeting or a large international conference funded by NSF. What was important was to keep at the forefront of the field by having regular contacts with others who were working on similar problems. It is most important that mathematicians who are working in precollege education mutually support one another's efforts. They also need the backing of the general mathematics community.

Through negotiations with NSF the original ideas of workshops for mathematicians involved in precollege education became part of a larger undertaking that would help bring issues in precollege education before the mathematics community, encourage more mathematicians to join the efforts in precollege education, and offer practical assistance to mathematicians who had little experience in working at the precollege level.

The third member of the MER team was Naomi Fisher, who had been involved with MER from the very beginning and was made co-director in 1990. (I've been told by Marty Gartzman of the Institute for Mathematics and Science Education at the University of Illinois, Chicago, that she was added as Associate Director to the first MER proposal in a last minute stroke of genius amid a flurry of activity as the UPS man waited for the proposal.) She came with a background in both mathematics and mathematics education and with experience in establishing a local network of mathematicians and mathematics educators in Illinois. Her strengths were exactly what MER needed: an ability to bridge the gap between the mathematics and the mathematics education communities.

by Bonnie Saunders, Project Associate, MER Forum, University of Illinois at Chicago, saunders@math.uic.edu

The first MER workshop, in July 1988, brought 50 mathematicians and mathematics educators from across the country to the University of Illinois at Chicago to discuss the issues and to hear about exemplary projects like Keynes' University of Minnesota Talented Youth Program (UMTYMP) and Wagreich's Teaching Integrated Math and Science (TIMS). Although the focus of the first MER workshops was precollege mathematics education, already issues of broader scope were being discussed as it was realized that many of the issues at the precollege level applied as well to the undergraduate and even graduate levels: developing minority mathematicians, faculty and institutional support of education projects; using technology in mathematics curricula; encouraging mathematically talented students; and collaboration between industry and universities on educational issues.

MER Broadens Scope of Activities

By the time MER was awarded a second NSF grant in 1991, it had expanded its efforts to encourage and promote deeper involvement by mathematicians in education reform at the precollege and undergraduate levels. MER was now directed to encourage more mathematicians to undertake serious educational work and to support those mathematicians already engaged in educational efforts by building and strengthening the communication bonds within this group and promoting the educational endeavors of mathematicians throughout the mathematics community. This goal is pursued through a variety of activities that still continue.

National Workshops: As in the first stage of MER, the MER workshops are the centerpiece of the activities. Workshops are designed to create a retreat-like environment in which participants can forge ties with one another and engage in intensive discussions of how to successfully pursue their educational interests. While the first workshops were comprehensive and aimed at a cross-section of the mathematics community, drawing participants from all types of institutions and addressing a range of educational interests, MER now proceeded with special topic workshops for targeted audiences. This included two workshops on Changing the Culture, two on Calculus Reform, and two on Preparation for Teaching Mathematics.

Programs at Professional Meetings: Every year since 1990, MER has organized an AMS-MAA Special Session on Mathematics and Education Reform at the Annual Joint Mathematics Meetings. 113 mathematicians, mathematics educators, teachers, and administrators have spoken in these special sessions. They are designed to showcase the educational work that mathematicians are engaged in and to acquaint a larger audience with the range of educational opportunities for mathematicians. Not least, promoting an educational presence at mathematics meetings furthers the legitimacy and feasibility of having mathematicians work in education.

Publications: Through the MER *Newsletter*, MER seeks to inform interested mathematicians of selected educational issues, exemplary educational projects organized and run by mathematicians, and the activities of MER. Interested members of the wider mathematics education community, especially elementary and high school teachers who would like to build ties with mathematicians, are welcome readers. The in-depth documentation of educational projects provided by the publication of volumes in the CBMS series, Issues in Mathematics Education, contributes to the developing educational literature in the mathematics community. This literature not only records what has been accomplished, but contributes to the establishment of standards for evaluating contributions to the field.

In the Fall 1991 issue of the MER *Newsletter* Naomi Fisher wrote:

> The language of popular psychology seems apt for describing changes that we have noted in the mathematics community since we first organized the MER Network. There's a lot of consciousness raising going on. Certainly it is much more acceptable to express interest in educational issues today than three years ago. If the time hasn't quite arrived when mathematicians no longer feel they are jeopardizing their standing within the mathematics community should they decide to become professionally active in educational efforts, the personal risks are decreasing. Gradually, it is being recognized that addressing educational issues should be part of the fabric of the mathematics profession. In the past, educational concerns gained prominence during periods of perceived crisis. Thought and energy would be given to solving the problem at hand. But the momentum generated in response to the crisis would spend itself quickly and initiatives would evolve, for good or ill, or die out without continued direction. Years later a new problem would hit the press. Again, using popular phrasing, we are beginning to see a proactive mentality developing. To meet the needs of the profession for new blood and to

meet the mathematical needs of students with diverse interests, mathematics education has to be responsive to the changes in the field of mathematics — not just the content but the methods, especially the impact of computer technology, the changes in the composition of the student university. This is a job for professionals who are willing to make a long-term commitment.

The MER Department Network

MER entered the third stage of its development in May, 1994, marked by the award of a new NSF grant. As in the past, the MER evolution incorporates and continues present MER activities in the mathematics community: national workshops, special sessions and the annual MER Banquet at the Joint Mathematics Meetings, the MER *Newsletter*, and MER volumes in the CBMS series on Issues in Mathematics Education. But by enlarging to the MER Forum, MER is expanding its purview in response to changes in the mathematics community's perception of educational issues. The first new initiative of the MER Forum is organizing the MER Department Network of thirteen mathematics departments at research-oriented institutions.

In 1993, Jerry Bona became the fourth co-director of MER. He first became involved in MER activities as the SIAM representative at the meeting in Berkeley on Changing the Culture, cosponsored by MER, AMS, MAA, SIAM, MSRI, the University of California at Berkeley Department of Mathematics, and the University of California Office of the President. He has a long history of involvement in educational activities, including development of applied mathematics courses and laboratories at both the University of Chicago and Pennsylvania State University, and many department-wide endeavors as chair at Penn State. So it seemed natural to call on Bona as MER expands its borders to include the organization of a department network, for his expertise both as an applied mathematician and as organizer of departmental education reforms.

The interplay of activities focused on supporting individuals and activities promoting organizational change is critical to MER. Over the years, MER programming has been extended and refined to help individuals become more aware of the need for organizational support. A case in point is the shaping of the application form for MER workshops. Workshop applicants are asked to provide materials similar to those asked of a job applicant: a letter of support, a cv, and a statement of purpose. The setup is designed to encourage applicants to focus their thinking and rally support before they attend the workshop. Another way for applicants to play the system is to seek departmental or institutional funding for the $125 registration fee and travel to the workshop. Reversing an earlier policy, MER welcomes participants from previous workshops as participants in new workshops. Building ties with departmental colleagues or colleagues from other departments is fostered by explicitly inviting applicants to apply as part of a team.

If the workshop application process seems daunting, it's intentional. But MER offers less formidable entry points for joining in educational discussion with mathematicians. The doors are open to all to attend MER special sessions and the MER Banquet at the annual Joint Mathematics Meetings, for example. The curious and newly interested can learn about and mix with mathematicians active in educational reform, encounters that frequently lead to active roles in MER programs. The public functions are also vehicles for MER veterans to strengthen collegial ties and refurbish their ideas.

It seems a natural step to try to provide mathematics departments interested in educational reform with a support structure similar to the structure for individual mathematicians. It's not surprising that faculty from the thirteen members of the MER Department Network have participated in MER workshops, spoken at MER special sessions, published articles in MER volumes, and served on the MER Advisory Committee. Six of the departments have hosted MER workshops.

The official beginning of the MER Department Network was the May 5–8, 1994 workshop at the University of Texas in Austin. The site was particularly apt as it was Michael Starbird, Associate Dean of the College of Natural Sciences, who had given MER the inspiration which eventually led to the formation of the Network. As a member of the MER Advisory Committee, Starbird had suggested that MER organize "Tiger Teams" of educationally expert mathematicians who would be available to visit campuses as consultants to mathematics departments to assess their educational programs and advise them on how to improve their efforts. When the Tiger Teams notion became transformed into the MER Department Network, Starbird and Efraim Armendariz, Chair of the Mathematics Department at UT Austin, offered to host the first meeting of the MER Department Network. The thirteen member departments — the Universities of

Arizona, California at Santa Barbara, Illinois at Chicago, Maryland (College Park), Michigan, Minnesota, Nebraska (Lincoln), Texas at Austin, and Washington; Howard University; Oklahoma State University; Pennsylvania State University; and Rutgers University — each sent teams of two to five faculty members to the workshop. The group included nine of the department chairs.

Set up as a three-year experiment, the purpose of the MER Department Network is to develop models of departments of mathematics in research-oriented universities in which educational goals are integral to the departmental mission and are supported by broadly based faculty participation in educational programs. From its experience in facilitating mathematicians' involvement in educational reform, MER saw the situation at the departmental level as characterized by: educational activities being carried out in isolation from one another; a handful of faculty shouldering the responsibility for educational reform; and education being viewed as a collection of problems that need fixing, i.e., education as so many leaky faucets in need of repair. What's missing is: overall vision, unified purpose, intellectual discourse, and passionate commitment.

While participation in the MER Department Network is by invitation, each department had to sign on to the pre-network agreements: the department would stay in the network for three years, send a faculty team to the annual workshop and cover the team's travel expenses and the workshop registration fee, and collect data and provide documentation as requested. In turn, the departments would have the opportunity to meet with peer departments which shared a strong commitment to mathematics research and were already among the most active departments in educational reform efforts to benefit from their experience, collaborate in experiments and present a common message of conspicuous educational effort and success.

The Future of MER

MER hopes to remain on the stage of mathematical education reform. Having successfully built a broad base of participants, MER continues to seek those interested mathematicians in the front wave of educational reform, to seek interaction with mathematics educators and teaching professionals, to provide forums for the discussion of the issues, and to involve the administrations of our colleges and universities.

MEETING OF WOMEN ANALYSTS AT BERKELEY

A group of women analysts will meet on Friday and Saturday, March 15–16, 1996 at the University of California at Berkeley Math Department to talk mathematics and highlight the presence of women in the field. There will be colloquium-style lectures covering a variety of topics in analysis and some time for informal discussions. A luncheon and a dinner will provide opportunities for furthering personal contacts. Graduate students from universities in the area are encouraged to attend.

This event is sponsored by the National Science Foundation through the Visiting Professorship for Women in Science program, which cosponsored the successful Celebration of Women in Mathematics at MIT in 1995 and several series of women speakers. Cora Sadosky is organizing this meeting at Berkeley as part of her NSF/VPW visit to the UCB Math Department.

CRA SERVICE AWARDS

The Computing Research Association invites nominations for the 1996 CRA Distinguished Service Award, which recognizes outstanding service to the computing research community, and the A. Nico Habermann Award, which recognizes outstanding contributions to aiding underrepresented groups within this community. The awards recognize service in the areas of government affairs, professional societies, publications or conferences, and leadership that has a major impact on computing research or on advancing underrepresented groups, respectively. Nominations should be no longer than two pages and describe the contribution that is the basis of the nomination. Letters in support of the nomination are welcome but not required. Nominations must be received by **February 15, 1996.**

Send nominations for both awards to: CRA Service Awards, Computing Research Association, 1875 Connecticut Ave. NW, Suite 718, Washington, DC 20009; phone: 202-234-2111; fax: 202-667-1066; email: info@cra.org.

NSA WOMEN IN MATHEMATICS SYMPOSIUM: A YEAR OF PROGRESS

The National Security Agency (NSA) sponsored the Women in Mathematics Symposium (WiMS) on November 15 and 16, 1993. This conference gave rise to an ambitious outreach program to women in the mathematics community which continues today. This article summarizes the activities of the WiMS Steering Committee during the first year after the symposium. First, I will describe the origins and format of WiMS, indicating the origins of follow-up activities. Then I will outline recent results of the conference and progress of the committee.

WiMS Background

Early in 1993 the senior women at NSA — reacting to the dearth of competitive employment applications from women mathematicians — recommended that NSA invite women from the academic mathematics community to the Agency to solicit their perspective on NSA as an employer and to discuss ways in which NSA might further encourage young women to pursue careers in mathematics. In return, the guests would learn about the Agency and its outreach programs. This recommendation resulted in the Women in Mathematics Symposium, which was attended by 57 influential women mathematicians from the U.S. academic community and by about 100 NSA mathematicians. The attendees comprised a diverse group, both ethnically and geographically.

WiMS provided an important exchange between mathematicians in the U.S. academic community and at NSA. NSA mathematicians at this conference provided these academic women mathematicians with a clear and factual description of NSA's dual mission. We told them about our signals intelligence (SIGINT) mission which requires us to collect intelligence only for national security purposes. We reminded them that we target only foreign entities, observing the law which prohibits us from spying on any U.S. citizen or U.S. corporation. Mathematics is the core technology that enables us to recover useful information from these complex signals that may be cryptographically protected. Then we described NSA's information security (INFOSEC) mission which requires us to make sure that no one is spying on U.S. citizens. The most significant threat to our information systems is posed by the SIGINT systems of countries who oppose the interest of the United States. To accomplish this, we design secure cryptographies and consider the system in which these are embedded. This background allowed our guests to understand the challenging and diverse problems which NSA mathematicians encounter. NSA is the world's largest employer of mathematicians, and the problems which our mathematicians study run the gamut from the very theoretical to the very applied.

In exchange, NSA employees attending WiMS learned of suggestions which our guests had regarding NSA's recruiting and hiring process. Their most emphatic recommendation reflected how their image of NSA changed for the better over the course of the conference: they said that, in order to get a better applicant pool, NSA must more effectively communicate to mathematicians, women in particular, the nature of its mathematical careers.

The conference also provided a wonderful networking experience for the more than 100 women mathematicians involved. Besides the formal exchanges described above, there were countless informal conversations that were equally valuable. In addition, the process of sponsoring the conference instilled a stronger sense of community among the women mathematicians at NSA.

First Year Activities and Results

WiMS had a tremendous impact on the NSA recruiting and hiring procedures. NSA mathematicians took the suggestions of their guests to heart and produced an addendum to the conventional recruiting literature which highlights those positive aspects of Agency employment which are of special interest to women. The interview process has been personalized, too: most applicants are escorted from one interview to the next by an NSA mathematician, with whom they may maintain contact throughout the processing of their application. And, finally, the Agency had the unexpected bonus of an immediate rise in the number of employment applications (and job acceptances) from well-qualified women, including a few who had attended WiMS.

Dr. Leslie N. Gruis, WiMS Chair, NSA

WiMS was also successful in publicizing NSA grants, sabbaticals, outreach programs and other resources which are administered by the NSA Division of Mathematical Research, the organization that funded WiMS. For example, as a result of attending WiMS, one individual participated in an Agency summer sabbatical in 1994. Other attendees nominated their best students for the NSA Director's Summer Program. And in Fiscal Year 1995, with encouragement from WiMS guests, NSA is continuing to support publishing by the Association for Women in Mathematics and is supporting two Research Experiences for Undergraduates which target women students.

WiMS initiated a conscious effort among NSA women mathematicians to become more involved in the U.S. mathematics community. One NSA mathematician attended the conference "To Increase the Number of Women Entering Professions in the Mathematical Sciences" at Berkeley, in July 1994, helping the group decide to expand the successful Mills Program and then guiding NSA in the creation of its supporting role. Another Agency mathematician — accompanied by her family — attended the Women in Probability Conference at Cornell in October 1994, where she participated in a roundtable discussion as well as many informal technical and career discussions. At the invitation of three WiMS guests, another woman from NSA gave a mathematical talk and an informal career chat to an audience of undergraduates from three schools. Most recently, a WiMS Reunion was held at the Joint Mathematics Meetings in San Francisco in January 1995.

The Steering Committee has been working to maintain the internal and external networks that were established by WiMS. They sent the WiMS *Proceedings*, which contains the addresses of all the guests, to all of the conference participants, and they established a WiMS alias on the Internet to facilitate further communications. Internally, the momentum generated by WiMS has encouraged more Agency mathematicians to become actively involved with our outreach efforts to the U.S. mathematical community: witness the large number of NSA employees at the 1995 Joint Meetings. And the internal awareness that grew out of WiMS — that the women mathematicians at the Agency have an identity as a strong technical and political group — has been kept alive by the activity of the Steering Committee, including work on a plan to provide mentors for the newly hired mathematicians.

Conclusion

The WiMS Steering Committee is responsible for ensuring that the ideas, suggestions, and criticisms made at the 1993 symposium receive careful consideration and that the appropriate changes are effected. The committee strives to strengthen those important connections between the NSA and U.S. academic communities forged by WiMS. The full impact of WiMS will not be known for years to come, but continued feedback from the outside will help to keep the WiMS effort on course.

WOMEN IN TECHNOLOGY

The IEEE Committee on Women in Engineering was established as an Ad Hoc Committee of the Board of Directors in November 1993. The committee has established four scopes of action: gather and disseminate information regarding the status of women and initiatives for, by and on behalf of women in engineering and science; enable mentoring and education programs within IEEE and provide information regarding gender related educational issues which may improve the entry into and the retention of women in engineering programs; increase the participation of women within IEEE; and address ways to improve the climate for women in IEEE and the workplace. Additional information is posted on the World Wide Web at http://www.ieee.org/ieee_women_in_eng/women.html.

Women In Technology International (WITI) was founded six years ago in response to a *Newsweek* article which focused on the glass ceiling phenomenon. The charter of WITI is to acknowledge and support the thousands of women working to advance technology. The slogan of WITI is "mutual support for major impact." WITI holds an annual international conference in Santa Clara, CA in the heart of Silicon Valley. This is mainly an industry group interested in networking women technologists and addressing workplace issues. For further information, WWW: http://www.witi.com; email: info@witi.com.

The participants in the Women In Engineering Programs Advocacy Network (WEPAN) are mainly administrators of college and university programs to recruit and retain women in engineering studies. For further information, email: wiep@ecn.purdue.edu.

EDUCATION COMMITTEE

Mathematics Awareness Week (April 21–27, 1996) will be here before you know it. Have you started to plan? It's time to get ready now.

The theme for 1996 is "Mathematics and Decision Making." The Joint Policy Board for Mathematics selected this all-encompassing theme which includes many exciting sub-themes such as forecasting, prediction, uncertainty, probability, and risk assessment and analysis. Think of all the directions possible for events highlighting this theme.

At the planning meeting for MathConn 96 (the eighth mathematics awareness day for seventh and eighth grade girls and their teachers at Cedar Crest College in Allentown, PA) the advisory board members were inspired and offered many suggestions. Invite a meteorologist from a local TV station to discuss forecasting, prediction, and probability with weather. Students and all of us want to know if it is going to rain or snow, or if there are hurricanes coming. On what basis are weather predictions made?

Consider risk assessment and analysis and think of financial planning, college admissions, insurance companies, and actuaries. Budgeting and investing are important to people of all countries and cultures. Invite a Representative or someone from the Congressional Budget Office. What powerful examples of mathematics in the real world! Invite an actuary, an analyst, or a financial planner to illustrate how their companies make decisions that affect all of us in our daily lives.

Uncertainty leads to fuzzy logic, which is being used in Japan for applications from washing machine design to public transit systems. Students are intrigued by the term "fuzzy logic" and would enjoy learning what it is and how it is used.

In planning MathConn 96, we invited as special presenter Dean Ted Hartz of the College of Business at Kutztown University; he will present a futuristic view into the changes and advances brought about by technology as we enter the twenty-first century. Kirstin Border, Miss Pennsylvania 1994–95, will be the keynote speaker for students. Kirstin uses mathematics to make decisions in the course of her work as an advertising account executive at White, Good and Company where she manages fashion, retail furnishings, and publishing accounts. Carla Schultes, Assistant Professor of Mathematics and Computer Science at Salisbury State University, will present the keynote address for teachers about decision-making related to teaching students. Other presenters include the marketing director of the Lehigh Valley Mall, an investment and retirement planner from Dean Witter Reynolds Inc., a senior engineer from the National Security Agency, the director of the Delaware State Police Crime Lab, and many engineers and statisticians from Air Products and Chemicals, Inc.

At MathConn 95, the special presenter was Doris Schattschneider (Moravian College), First Vice President of the MAA and winner of one of the first MAA Awards for Distinguished Teaching of College or University Mathematics. The 1995 MAW theme was "Mathematics and Symmetry," and the logical choice for speaker on this theme was Doris. She sounded the theme throughout the day, beginning with an enthusiastic presentation on "Symmetry: It's All around Us." This included slides illustrating a variety of symmetries which in turn were also demonstrated by Cedar Crest College Dancers to show isometries in three-dimensional space — truly symmetry in motion. Doris emphasized how symmetry is "a pervasive and powerful mathematical concept that shapes our understanding of all we see and make." Doris then engaged the students in a Symmetry Treasure Hunt to find instances of translation, rotation, glide-rotation, reflection, glide-reflection, and rotary-reflection in the building. At the end of the day, prizes were given to the winning schools in the Symmetry Treasure Hunt. Throughout the day, many presentations included symmetry as a main theme. Some of these were: "Symmetric Construction," "Symmetry around and inside Us," "Architectural Symmetry," and "Statistical Symmetry." But Doris was the symmetry star of the day.

Johanna Miller, a MathConn 89 alumna and senior at Southern Lehigh High School, presented "Beyond Algebra" as a keynote address for students. Dana May Latch, Program Director for the NSF Division of Computer and Computing Research, presented "Opportunities for Junior High School Mathematics and Computer Science

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Teachers Available through NSF," the keynote address for teachers.

We hope that you enjoy the 1996 Mathematics Awareness theme and bring "Mathematics and Decision Making" alive in your area.

FIRST MORGAN PRIZE

Kannan Soundararajan (Sound), a 1995 graduate of the University of Michigan, Ann Arbor, is the first recipient of a prestigious prize for undergraduate mathematics research. Now a graduate student in mathematics at Princeton University, Sound is the winner of the AMS-MAA-SIAM Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student.

The Morgan Prize Committee cited Sound for: "a body of truly exceptional research. As an undergraduate, he has been pursuing a program of research in analytic number theory and has made outstanding contributions to that field. His work has brought him acclaim from accomplished researchers in the field, who have cited him as a superb analytic number theorist." The award will be presented at the Joint Mathematics Meetings in Orlando, FL.

The Committee gave Honorable Mention to Kiran Kedlaya of Harvard University. It cited him for "an impressive portfolio of four professional-level research papers that demonstrate sophistication, depth, and versatility far beyond what might be expected of a student due to graduate in June 1996."

The Morgan Prize, an annual award of $1,000, was endowed by a gift from Mrs. Brennie Morgan of Allentown, PA. Students eligible for the prize are individual undergraduate students or groups of students from any college or university in the U.S. or its possessions, Canada or Mexico.

To apply, undergraduates submit one or more published or unpublished papers that represent their work. Professors can also nominate students. To be eligible for the 1996 award, students must have been undergraduates in December 1995 and must submit their papers no later than June 30, 1996. For more information, see the SIAM Undergraduate Home Page (http://www.siam.org).

Encourage your strong women students to apply, or nominate them yourselves. Many of our Schafer awardees would be strong candidates!

WISE 1996

The annual Women in Science and Engineering Program (WISE) held at the National Academy of Sciences each year will be cosponsored by the Association for Women in Science (AWIS) in 1996 as one of its 25th Anniversary events. This program was initiated by interested staff at the National Research Council and National Academies' complex (NAS/NAE/IOM/NRC) in 1993 as a "sister effort" to existing WISE interest groups in federal agencies. WISE members concentrate on finding ways of increasing the participation and visibility of women in Academy and Research Council activities and in the scientific community as a whole.

Thus far, efforts have been focused on a free annual program — open to the public — and on bimonthly in-house brownbag seminars. The annual programs honor women who embody creativity and excellence in science and stand as models for upcoming generations of scientists and engineers. The 1994 inaugural event featured Dr. Vera Rubin of the Carnegie Institution of Washington, and the 1995 program honored Dr. Mildred Dresselhaus from the Massachusetts Institute of Technology.

The 1996 program is currently being organized and will include a panel discussion with three prominent women scientists, the recognition of several young women from DC-area high schools and colleges for their achievements and steps taken toward careers in science and engineering, an art exhibit depicting successful women in science and engineering, and a reception with speakers, students, and Academy members and staff. The theme for this program explores the Once and Future Action Network formed at the 1995 UN Conference on Women — how scientific research crosses national borders and how international linkages improve the quality of science.

The annual program is free, open to the public, a great educational opportunity for students, and a great networking opportunity for professionals. It is held at the National Academy of Sciences auditorium, 2001 Constitution Avenue, NW, Washington, DC.

It is expected that the program will be held in late March or early April, 1996 pending speaker availability. For further information contact Gaelyn Davidson, 1996 WISE Program Chair via email at GDavids@NAS.Edu, or call Sheila David at 202-334-3422.

SUMMER OPPORTUNITIES

IAS/Park City Mathematics Institute

The IAS/Park City Mathematics Institute (PCMI), sponsored by the Institute for Advanced Study in Princeton, New Jersey, and funded by the National Science Foundation, will hold its 1996 Summer Session at the Institute for Advanced Study. The 1996 topic of the Mentoring Program for Women Mathematicians (held June 10–20) and the Summer School (June 23 through July 13) is probability. The PCMI is a flagship mathematics program which is built on the fundamental theme that interaction among researchers, graduate students, undergraduate students, and high school teachers of mathematics is essential to the optimal functioning of the mathematical enterprise. The Institute runs mathematics education programs that integrate the research and education components of the mathematics community in a unique way and in a supportive setting where education at all levels is the explicit concern. The mentoring program provides a mixture of lectures, seminars, working problem groups, mentoring and networking sessions and the opportunity to meet and interact with leading mathematicians. Application deadlines are **February 15, 1996**. For more information, see the display ads on page 34 and the articles on pages 15–17 of this issue.

Program in Mathematics for Young Scientists

This program will be held at Boston University from June 30 to August 10, 1996. PROMYS offers a lively mathematical environment in which high school students explore the creative world of mathematics. Through their intensive efforts to solve a large assortment of unusually challenging problems in number theory, the participants practice the art of mathematical discovery: numerical exploration, formulation and critique of conjectures, and techniques of proof and generalization. More experienced participants may also study other advanced topics. Problem sets are accompanied by daily lectures given by research mathematicians with extensive experience in Professor Arnold Ross's long-standing Summer Mathematics Program at Ohio State University. In addition, a highly competent staff of 18 college-aged counselors lives in the dormitories and is always available to discuss mathematics with students. Each participant belongs to a problem-solving group which meets with a professional mathematician three times per week. Special lectures by outside speakers offer a broad view of mathematics and its role in the sciences.

PROMYS is a residential program designed for 60 ambitious high school students entering grades 10 through 12. Admission decisions will be based on the following criteria: applicants' solutions to a set of challenging problems included with the application packet, teacher recommendations, high school transcripts, and student essays explaining their interest in the program.

The estimated cost to participants is $1300 for room and board. Books may cost an additional $100. Financial aid is available. PROMYS is dedicated to the principle that no student will be unable to attend because of financial need.

PROMYS is directed by Professor Glenn Stevens. Application materials may be obtained by writing to PROMYS, Department of Mathematics, Boston University, 111 Cummington Street, Boston, MA 02215; phone: 617-353-2563. Applications will be accepted from **March 1** through **June 1, 1996**.

Summer Institute for the Mathematical Sciences at Berkeley

SIMS at Berkeley (formerly the Mills Summer Mathematics Institute) is a six-week summer program (June 15 through July 26, 1996) designed to encourage talented undergraduate women to pursue advanced degrees in the mathematical sciences. The program will take place at the University of California, Berkeley.

Applicants should have completed, with distinction, by June 1996, the equivalent of at least two years of collegiate-level mathematics, including a course in Real Analysis or Modern Algebra. About twenty women will be selected. Each will receive a travel allowance, campus room and board, and a stipend.

SIMS offers intensive seminars designed to give students a deep understanding of concepts in areas of mathematics and to teach them how to do independent work and express mathematical ideas orally and in writing. All faculty are women who are active research mathematicians and excellent teachers. Seminar assistants are women graduate students in the mathematical sciences. In addition to the seminars, there are many colloquium talks given by renowned mathematicians and research projects in

applied mathematics. Students are given information and advice about applying to graduate schools and about careers in the mathematical sciences.

Instructors are urged to bring this announcement to the attention of their students. For information and application materials, write: Project Coordinator, SIMS at Berkeley, 367 Evans Hall #3860, U.C. Berkeley, Berkeley, CA 94720-3860; fax: 510-642-7892; email: sims@stat.berkeley.edu. The SIMS World Wide Web site at http://stat-www.Berkeley.Edu/users/sims also contains application materials and more information about the program in 1996 and in past years.

Center for Discrete Mathematics and Theoretical Computer Science (DIMACS)

The 1996–97 topic of the DIMACS Institute: A New Program for Research and Education is "Geometry, Visualization, and Computing." The Institute will be held from June 23 to July 13, 1996 at Princeton University.

Participants: Researchers at all levels, including graduate students, postdocs, college and university faculty, members of research labs, as well as high school teachers.

Research Program: Organizer Bernard Chazelle, Princeton, Computer Science. Summer plans include three related but independent workshops, bringing together those working on the theory of computational geometry with those implementing or using geometric algorithms: Visualization and Algorithm Animation (June 23–28), organizer Ayellet Tal, ayellet@wisdom.weizmann.ac.il; Computational Geometry Problems in Aerodynamics (July 1–3), organizer Tim Baker, baker@cougarxp.princeton.edu; and Hot Topics in the Theory of Computational Geometry (July 8–13), organizer Bernard Chazelle, chazelle@cs.princeton.edu.

Participation: Most events will be open to interested members of the mathematics and computer science communities (details to be announced). Those wishing to speak, demonstrate software, etc., should contact the appropriate workshop organizer above. Limited travel support may be available.

Some funding is available for graduate students; those needing support should send a brief statement on why they would like to attend the program, along with a letter of recommendation from their advisor, to Bernard Chazelle, Department of Computer Science, Princeton University, Princeton, NJ 08544.

Education Program: Mainly for high school teachers, including Computing and the Internet, organized by David Dobkin (Princeton, Computer Science) and Discrete Mathematics and Algorithms, organized by Deborah Franzblau (Rutgers, DIMACS). Request applications from the address below; the deadline is **March 15, 1996.**

Vertical Integration: A major goal of the DIMACS Institute is to connect the educational and research components and facilitate communication among all participants. For example, there will be opportunities for researchers and teachers to work together on developing classroom materials.

The DIMACS Institute is made possible by funding from the NSF.

For further information: Deborah Franzblau, email: franzbla@dimacs.rutgers.edu; phone: 908-445-4573; fax: 908-445-5932; address: DIMACS, Core, Busch Campus, Rutgers University, Piscataway, NJ 08855; WWW: http://dimacs.rutgers.edu.

DIMACS REU Program for 1996-97

The Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) will offer a Research Experience for Undergraduates (REU) program, pending funding availability from the NSF. DIMACS is one of 25 NSF Science and Technology Centers. The center is located at Rutgers University and is a consortium of Rutgers (Computer Science, Mathematics, and Operations Research), Princeton (Computer Science), AT&T Bell Laboratories, and Bellcore.

The program begins with eight weeks of intensive work during the summer of 1996 and may continue through the academic year 1996–97. Based on interests and background, each student will be assigned a DIMACS faculty member or affiliate as a supervisor. During the summer, supervisors help students choose and begin work on a suitable research problem. Recent research topics have included computational biology (reconstruction of evolutionary trees and DNA sequencing), computational group theory, combinatorics, and discrete geometry. The timing of the eight-week summer work period is to be arranged by the student and supervisor, during May through August, 1996. The program will provide each student with a stipend of $3000, which includes summer living expenses, and will cover roundtrip travel to the Center.

Applicants should be undergraduates with a major in Computer Science, Mathematics, or a

closely related field. They should be current juniors (graduating in 1997), although sophomores with exceptionally strong backgrounds will be considered. We expect that 5–7 students will be selected to participate. Preference will be given to students who will continue their research projects during the academic year, under the direction of either their supervisor or a faculty member from their home institution. DIMACS is particularly interested in increasing the participation of women, underrepresented minorities, and disabled students. Because of NSF rules, funding is limited to U.S. citizens and permanent residents only.

An application and a program announcement can be obtained automatically by email to reuappl@dimacs.rutgers.edu, or via the DIMACS WWW site at http://dimacs.rutgers.edu, or by writing to: Ida Castellano, REU program, DIMACS, Core 406, Busch Campus, Rutgers University, Piscataway, NJ 08855-1179; email: ida@dimacs.rutgers.edu, fax: 908-445-5932, phone: 908-445-5928.

Completed applications are due by **March 1, 1996** (with notification by late March).

For further information, contact the REU coordinator, Deborah Franzblau, phone: 908-445-4573, email: franzbla@dimacs.rutgers.edu.

Institute in the History of Mathematics and Its Use in Teaching

Would you like to teach a course in the history of mathematics? Does your college or university plan to offer such a course soon for prospective teachers to implement the recommendations of the MAA, NCTM, and NCATE? Do you want to learn how the history of mathematics will help you in teaching other mathematics courses?

If you answered "yes" to any of these questions, you are invited to apply to participate in the second MAA Institute in the History of Mathematics and Its Use in Teaching. It will take place at American University, Washington, DC from June 3–21, 1996, with work continuing through an electronic network during academic year 1996–97. Participants will return to Washington for three additional weeks in June, 1997. The teaching staff consists of well-known historians of mathematics, including V. Frederick Rickey, Victor J. Katz, Steven H. Schot, Ronald Calinger, Ubiritan D'Ambrosio, Judy Green, Uta Merzbach, David Pengelley, James Donaldson, and Karen Parshall. Activities at the Institute include survey lectures, reading of original sources, small group projects, field trips to rare book libraries, and discussions of methods of conducting a history of mathematics course. Participants will also have the opportunity to interact with mathematicians who will be returning to the Institute for their second year.

Applications are strongly encouraged from faculty at small institutions, at minority-serving institutions, or at institutions that prepare secondary teachers. Participants will be provided with dormitory rooms and meals.

For more information and application forms, contact V. Frederick Rickey at 419-372-7452, rickey@maa.org or Victor J. Katz at 202-274-5374, vkatz@maa.org. Write to them care of the MAA, 1529 18th Street, NW, Washington, DC 20036. Completed applications are due by **March 15, 1996**. Applicants will be notified of their acceptance or declination by April 15, 1996.

NSF Undergraduate Faculty Enhancement Workshop

Teaching Undergraduate Geometry, a workshop held June 10–15, 1996 at Cornell University, is intended for college and university faculty who teach (or soon will teach) an undergraduate geometry course — such as the courses typically attended by future or inservice teachers.

In the mornings the participants will experience a learning and teaching environment that is innovative both in terms of content and in terms of teaching methods. The content will be the integration of geometries on plane, sphere and other surfaces — presented through problems which emphasize experiencing the meanings in the geometry. Student explorations, small group learning, and writing assignments will be explored.

In the afternoons there will be seminars and presentations on topics related to the workshop theme, including: Using Writing in Mathematics, Including All Students by Encouraging Diverse Ideas, How to Write Good Exploratory Problems, What is in the Eight Undergraduate Geometry Courses at Cornell, Computer Technology in Geometry, Non-test-based Assessments, Curriculum Developments in School Geometry, Using Formal versus Intuitive Knowing in Geometry. In addition, there will be ample free time for informal discussions and enjoyment of the geometry of nature in and around Ithaca.

Most of the housing and food expenses will be covered by the NSF for all participants. There are

also expected to be NSF funds available to support travel costs for participating faculty from institutions with limited resources. The NSF will also support follow-up activities by the participants after the workshop including local workshops, exchange of related classroom materials, and communication of experiences and ideas.

For more information and application procedures contact: WWW http://math.cornell.edu/~dwh or (if you have no WWW access) email: dwh@math.cornell.edu, or write to Geometry Workshop, Department of Mathematics, Cornell University, Ithaca, NY 14853-7901.

CRA Distributed Mentor Project

The Computing Research Association Distributed Mentor Project, now in its third year, is designed to increase the participation of women in computer science. Funding from NSF provides support to female undergraduates for a summer of research under the guidance of a female professor at a research university. Evaluation results from the previous two years show that this program is having a profound impact on the career aspirations of the participating students.

At least 25 student/professor matches will be selected. Both students and professors apply to CRA. The deadline for applications is **February 1, 1996**. A committee will examine the applications and select at least 20 student/professor matches for funding. Notification of matches will be given by March 15, 1996.

Funding consists of approximately $5,000 per match. Some of this money is given directly to the student to pay a stipend and cover lodging. (Lodging costs vary, usually in the range $1,000-1,500.) CRA reimburses travel expenses. A student's funding is intended to cover up to 10 weeks of research in the summer of 1996 but alternative arrangements are possible. Mentors and their universities receive no funding for the summer of research, but limited funds will be available to cover conference travel for selected students and mentors after the summer of research.

To receive hard copies of the brochure, contact Joan Bass, Computing Research Association, 1875 Connecticut Ave. NW, Suite 718, Washington, DC 20009. Tel. 202-234-2111; e-mail: jbass@cra.org. For more information about the program, contact Anne Condon at 608-262-3158 or via email at condon@cs.wisc.edu. The application is available on the World Wide Web at http://www.cs.wisc.edu/~condon/mentor.html.

FINAL NOTICE FOR 1995–96 DUES!

AWM sent out second renewal notices in December to those individual and institutional members who had not yet renewed for the 1995–1996 membership year. Unfortunately, this is the last issue of the *Newsletter* that you will receive if AWM has not received your dues by February 1, 1996. If you did not receive a renewal form, please use the form on page 43.

CALL FOR NOMINATIONS: ALICE T. SCHAFER MATHEMATICS PRIZE

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.

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 letter of nomination should include, but not be limited to, an evaluation of the nominee(s) 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(s). 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. 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.

OTHER RESEARCH OPPORTUNITIES

Fields Institute Algebraic Model Theory Program

In 1996–97 The Fields Institute for Research in Mathematical Sciences will be sponsoring an emphasis year in Algebraic Model Theory. All activities will take place during the period August, 1996 to June, 1997 at the new permanent site of The Fields Institute in Toronto. The program will consist of a mixture of workshops, graduate courses and several lecture series and seminars. The participation of graduate students and postdoctoral fellows will be an integral part of the year's activities.

Both terms, there will be regular research and graduate seminars and lecture series concerning the interaction between model theory and other disciplines. In Fall Term, the following graduate courses will be offered: Geometric Model Theory, The Model Theory of Analytic Functions, and Tame Congruence Theory and its Applications. January 13–17 there will be a Workshop on Geometric Model Theory. March 17–21 there will be a Workshop on The Model Theory of Analytic Functions.

To receive further program information please email: model@fields.utoronto.ca, or mail to: Algebraic Model Theory Program, The Fields Institute for Research in Mathematical Sciences, 222 College Street, Toronto, Ontario, Canada, M5T 3J1.

First SIAM Student Conference

SIAM will sponsor its first conference entirely for students at Clemson University, March 28–29, 1996. The program will focus on starting a career in applied mathematics: research directions; employment in universities, government, and industry; postdoctoral experiences; and the mathematics itself.

There will be student papers and poster sessions to give students an opportunity to present thesis work and to meet other students. Panel discussions will emphasize career development and the preparation that is needed. The first session includes talks by Gilbert Strang and Avner Friedman, and the after-dinner speaker will be SIAM's President Margaret Wright.

On Friday, March 29 the conference will merge into the meeting of SIAM's Southeastern Section, with parallel short courses on key topics in modern applied mathematics. The cost to graduate students (undergraduates are also welcome) will be kept to a minimum.

The purpose of this conference is to bring the new generation of applied mathematicians into contact with each other and with SIAM. For more information, contact SIAM.

New Postdoctoral Award Program in Computational Biology

The Alfred P. Sloan Foundation and the U.S. Department of Energy are initiating a postdoctoral awards program designed to give computationally sophisticated young scientists an intensive postdoctoral opportunity in an appropriate molecular biology laboratory. A goal is to increase the number of scientists possessing the cross-disciplinary skills in both molecular biology and computation that are needed to exploit the exceptional scientific potential emerging between molecular biology and modern computational techniques.

The focus of this program is upon those aspects of computational molecular biology related to data and information resulting from the study of human and other genomes, in order to foster interactions between the mathematical and biological sciences for genome studies and to provide rigorous training for scientists in this new interdisciplinary area.

For more information, send email to either trance@sloan.org or teitelbaum@sloan.org or write: Dr. Michael S. Teitelbaum, Sloan-U.S. Department of Energy Joint Postdoctoral Fellowships in Computational Molecular Biology, c/o Alfred P. Sloan Foundation, 630 Fifth Avenue, Suite 2550, New York, NY 10111-0242.

Naval Research Postdocs

The Office of Naval Research (ONR) and the Naval Research Laboratory (NRL) each sponsor a Postdoctoral Research Program. The programs are designed to significantly increase the involvement of creative and highly trained scientists and engineers from academia and industry in scientific and technical areas of interest and relevance to the Navy.

You must contact the research facility at which you are interested in working in order to develop a suitable research proposal. Selection of Fellows occurs four times per year, with deadlines of

January 1, April 1, July 1, and October 1. For more information, contact: American Society for Engineering Education, 1818 N Street, NW, Suite 600, Washington, DC 20036; phone: 202-331-3525; fax: 202-265-8504; email: projects@asee.org. For more information access the ASEE web site at http://www.asee.org.

NSF-CBMS Regional Research Conferences

Contingent upon funding, three NSF-CBMS regional research conferences will be held this summer. These three will bring to 257 the total number of such conferences held in the twenty-eight year history of this NSF-CBMS Regional Research Conference Series.

Support for about thirty participants is provided for each conference; the organizer invites both established researchers and interested newcomers, including postdoctoral fellows and graduate students, to attend. This summer's topics are: Euler Products and Eisenstein Series, Advances in Inverse Spectral Geometry (with our own Carolyn S. Gordon as lecturer), and Normal Surfaces and Decision Problems in 3-Manifolds.

Proposals for 1997 conferences are requested; the closing date is **April 1, 1996**. Each five-day conference features a distinguished lecturer who delivers ten lectures on a topic of important current research in one sharply focused area of the mathematical sciences. The lecturer subsequently prepares an expository monograph based upon these lectures, which is normally published as a part of a regional conference series.

Information about 1996 conferences may be obtained by contacting the conference organizers (see the AMS *Notices* for more information). Information about the series and guidelines for submitting proposals for future conferences may be obtained from: CBMS, 1529 Eighteenth Street, NW, Washington, DC 20036; 202-293-1170.

AAUW GRANTS

Awarded by the AAUW Educational Foundation, Community Action Grants help stimulate community-level systemic change on education and equity issues for women and girls. Grants provide seed money for new projects and nondegree research and are available to individual women or to AAUW branches and states. Collaborative proposals involving schools or school districts, businesses, community-based organizations, and AAUW branches or states are encouraged.

Examples of past projects include math/science summer camps for girls, mentoring programs for girls and women, and gender equity training workshops for educators and parents. Applicants must be U.S. citizens or permanent residents. The proposed activity must have direct community or public impact and must take place within the United States or its territories; collaborative projects must involve AAUW branches or states in equal partnership with the other organization or business. Awards range from $500 to $5,000.

Community Action Grants are awarded twice yearly. Application postmark deadlines are February 2, 1996 for a grant year of July 1, 1996 through June 30, 1997 and September 2, 1996 for a grant year of December 1996 through June 30, 1997. For information and application request form, contact: AAUW Educational Foundation, Department 55, 2201 N. Dodge St., Iowa City, IA 52243-4030; 319-337-1716, ext. 55.

VOLUNTEERS NEEDED

Jeanne Becker, a middle school science and math teacher in the Chicago metropolitan area, is compiling a unit on "American Women: Scientists, Mathematicians, Inventors" to be taught during March, National Women's History Month.

Becker would like to get in touch with some women members of AWM who would be willing to respond to written interviews from students and to send photographs of themselves on the job. The students will use this material to prepare a poster.

Send your name, mailing address, telephone number, area of specialty, and ethnic background (so that Becker's Hispanic, Afro-American, and Native American students may interview a woman of the same ethnic background, if possible) to Jeanne Becker, 901 Sunset Court, Deerfield, IL 60015-4256; 708-945-8107.

Help Jeanne get her students excited about science and math!

PROJECT DRAGONFLY

A joint initiative between Miami University and the National Science Teachers Association, funded by NSF, Project Dragonfly connects children (grades 3–6), scientists, teachers and parents nationwide in a common alliance to involve children in the creative process of science, to help children see how science and math relate to their lives, to engage at-risk children in science, and to help teachers and parents guide active, experiential learning more confidently.

Dragonfly is an inquiry-driven magazine for children that connects science and language arts. It is devoted to the voices of children and research scientists. By hearing directly from scientists in first-person articles, children will experience science as an imaginative process. Children are also invited to join the scientific community by writing about their own investigations. Resource materials for teachers and parents as well as a computer network are additional resources of the Project.

For submission guidelines or other information, contact: Lynne Born Myers, Coordinator, Project Dragonfly, Western College Program, Oxford, OH 45056; email: Myers_Lynne@msmail.muohio.edu; phone: 513-529-8573.

MATH IS POWER

The National Action Council for Minorities in Engineering (NACME) is sponsoring a national public service advertising campaign called "Math is Power." "The power to learn, the power to earn" is part of the script of television and radio ads featuring comedian Sinbad. The ads targets eight- to thirteen-year-olds and their parents, encouraging them to take high-level school mathematics courses and create pressure on school systems to offer them. The campaign was developed by NACME with support from IBM, DOE, Annenberg/CPB, and NSF, in partnership with the Ad Council. Materials are available to students and teachers at no charge by calling (800)-76NACME.

MARIE CURIE

We hope you have been enjoying the story of Marie Curie in America. We will continue with the third installment in the March–April issue.

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.

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ARIZONA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics at Arizona State University invites applications for tenure track positions at the Assistant Professor level, pending budgetary approval, beginning in the fall semester of 1996. Applicants are required to have a Ph.D. in mathematics, statistics, or closely related area. Applicants must also have excellent teaching and communication skills and be capable of versatile teaching at both the undergraduate and graduate levels. Applicants must have research strength in one or more of the following interdisciplinary areas: **1.)** Partial differential equations, computational and geometric aspects of partial differential equations, dynamical systems. **2.)** Computationally oriented applied mathematics which interfaces with life sciences. **3.)** Applied and theoretical statistics, with strong interests in interdisciplinary applications. Within these three priority areas, preference will be given to candidates who reinforce existing departmental strengths. 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 55 full time faculty members. Departmental computing facilities include a networked cluster of high end workstations as well as several graphics computers. In addition, access is provided to the university's central computing facilities which include a massively parallel super computer. Applicants must send their resume and arrange for at least three letters of recommendation be sent to: **William T. Trotter, Chair, Department of Mathematics, Box 871804, Arizona State University, Tempe, Arizona 85287-1804.** Review of applications will begin February 1, 1996, and will continue weekly until the position is filled. AA/EOE.

BELOIT COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Sabbatical Replacement Position in Mathematics - The mathematics and computer science department invites applications for a sabbatical replacement faculty position with the rank of visiting assistant professor, beginning in August 1996. A commitment to excellence in teaching at a selective liberal arts college and a Ph.D. in mathematics is required. The position will be for one year with a second year contingent on sabbatical replacement funding. Responsibilities will include teaching a variety of undergraduate mathematics courses including calculus and introductory statistics. The teaching load is three courses per semester. Review of applications will begin December 1995 with a deadline of February 15, 1996. Please send a letter of application, vita, and three letter of reference to: **Professor David B. Ellis, Search Committee, Department of Mathematics and Computer Science, Beloit College, Beloit, WI 53511**; e-mail ellis@beloit.edu. We would also welcome a statement of teaching interests and philosophy. Please indicate whether you will be available for preliminary interviews at the annual meeting in Orlando. Beloit College is an AA/EOE. Women and minorities are encouraged to apply.

BOSTON UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics at Boston University invites applications for two positions at the Visiting Assistant Professor level in the area of Dynamical Systems. The position will begin in September 1996, subject to administrative approval. Candidates should demonstrate a strong commitment to teaching and research. Please submit the AMS Application Cover Sheet, available in the Notices or by e-MATH gopher with at least three letters of recommendation to: **Search Committee (Dynamical Systems) Department of Mathematics, Boston University, 111 Cummington Street, Boston, MA 02215.** AA/EOE.

CASE WESTERN RESERVE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Chair - The Department of Mathematics of Case Western Reserve University invites applications for the position of Chair and Professor of Mathematics. The Chair will be expected to provide leadership in maintaining and developing excellence in research and teaching. Candidates should be senior mathematicians with outstanding credentials in both of those areas as well as demonstrated service to the profession. It is expected that several faculty positions will be filled in the period immediately following the Chair's appointment. Case Western Reserve University is a private research university with broadly based strengths in the arts and sciences, engineering, health sciences, including medicine, nursing, and dentistry, and in law, management, and social work. The University enrolls over 9,200 students in undergraduate, graduate and professional programs and annually attracts more than $125 million in research support. The campus is located in University Circle, a beautiful 550 acre cultural and intellectual center on the eastern edge of Cleveland, Ohio. The Department of Mathematics is involved in both undergraduate and graduate instruction and has active research programs in a number of areas of pure and applied mathematics. More information about Case Western Reserve University and the Department of Mathematics is available on the WWW through http://www.cwru.edu/CWRU/Dept/Artsci/math/chair.html. CWRU is an Affirmative Action/Equal Opportunity Employment Opportunity employer. Women and minority group candidates are especially encouraged to apply. Applicants should send a current curriculum vitae with a list of references and are also invited to submit a letter that addresses how their strengths match the requirements of the position as well as what they perceive its challenges and opportunities to be. Applications should be received by January 15, 1996 to receive full consideration although the search will proceed until the position is filled. Applications, nominations, and inquiries should be directed to: **John E. Bassett, Dean, College of Arts and Sciences, Case Western Reserve University, 10900 Euclid Avenue, Cleveland, OH 44106-7068.** Phone: 216 368 4413, Fax: 216 368 3842, E-mail: jeb20@po.cwru.edu

DARTMOUTH COLLEGE - DEPARTMENT OF MATHEMATICS - John Wesley Young Research Instructorship, 2-years, new or recent PhD's whose research overlaps department member's. Teach 4 ten-week courses spread over 2 or 3 quarters. $37,000 for nine months; $8,222 summer research stipend. Send application letter, resume, research/thesis description, graduate transcript, and 3 (prefer 4) references (1 discussing teaching) to: **Betty Harrington, Department of Mathematics, Dartmouth College, 6188 Bradley Hall, Hanover, NH, 03755-3551.** Files completed by January 15, 1996 considered first. Dartmouth is committed to affirmative action and strongly encourages minorities and women to apply.

DARTMOUTH COLLEGE - DEPARTMENT OF MATHEMATICS - Tenure-track Assistant Professor opening for a statistician with strong interests in signal processing, initial appointment in 1996-1997 academic year. Teaching four 10-week courses over 2 or 3 terms. Send letter of application, vita, research interests, four letters of recommendation, at least one on teaching, to: **Betty Harrington, Department of Mathematics, Dartmouth College, 6188 Bradley Hall, Hanover, NH 03755-3551.** Applications completed by February 1, 1996 considered first. Women and minorities are encouraged to apply.

EASTERN ILLINOIS UNIVERSITY- DEPARTMENT OF MATHEMATICS - Anticipated tenure-track position at the Assistant Professor level. Seeking candidates in both Mathematics Education (with emphasis in elementary and junior high) and Applied Mathematics (including, but not limited to, statistics, operations research, and numerical analysis). Duties include teaching a wide spectrum of mathematics courses in the specialty. Doctoral degree in the appropriate discipline is required. Excellence in teaching is expected, as are active research/creative activity and service. Experience as a teacher in K-12 is desirable for Mathematics Education applicants, and experience/interest in actuarial science is a plus for Applied Mathematics applicants. Starting date: Mid-August 1996. Completed application (letter of application, statement of teaching philosophy/research interests, transcripts, three letters of recommendation) should be sent by February 1, 1996 to: **Ira Rosenholtz, Chairperson, Department of Mathematics, Eastern Illinois University, Charleston, IL 61920.** Eastern Illinois University is an equal opportunity, equal access, affirmative action employer committed to achieving a diverse community.

Directory of Women Mathematicians* - 1995-96 edition now available -** This directory includes 2,641 women mathematicians (both AWM members and non-members) who have agreed to be listed in this publication as of August 31, 1995. Single copies of this publication are available from the AWM office for **$10.00 each ($8.00 on orders of 5 or more).** Send orders to: ***Directory of Women Mathematicians, AWM, 4114 CSS Bldg., University of Maryland, College Park, MD 20742-2461. Please allow up to 3 weeks for delivery.

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FAIRFIELD UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Fairfield University's Department of Mathematics and Computer Science invites applications for a tenure-track assistant professorship which begins in September 1996. A doctorate in mathematics or statistics is required. Strong evidence of research potential, demonstrated success in classroom instruction and a solid commitment to teaching are essential. The ability to teach mathematical statistics is preferred, but all applicants will be considered. Experience and interest in the use of technology in instruction are desirable. Fairfield University, The Jesuit University of Southern New England, is a comprehensive university with about 2,900 undergraduates and a strong emphasis on liberal arts education. There are 14 full-time faculty members in the department and approximately 35 majors per year. The picturesque campus is located on Long Island Sound in southwestern Connecticut about 50 miles from New York City. Fairfield is an Affirmative Action/Equal Opportunity Employer. Send a letter of application a curriculum vitae, and three letters of recommendation, which comment on the applicant's experience and promise as a teacher and scholar to: **Joan Weiss, Chair, Department of Mathematics and Computer Science, Fairfield University, Fairfield, CT 06430-5195,** 203-254-4000 ext. 2516, weiss@fair1.fairfield.edu. We plan to participate in the Employment Register at the AMS/MAA Joint Mathematics Meetings in Orlando. Full consideration will be given to complete applications received by February 1, 1996.

GEORGIA SOUTHERN UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Several positions starting September 1, 1996. Salary dependent upon qualifications. Indicated degrees are required by the position starting date. All deadlines are postmark deadlines. Send letter of application indicating position desired, curriculum vitae, unofficial transcripts of all college work, evidence of dedication to outstanding teaching, and name, address, telephone number and e-mail address of three references by the indicated deadline to: **[search chair], [search number], Department of Mathematics and Computer Science, Landrum Box 8093, Georgia Southern University, Statesboro, GA, 30460-8093.** The names of applicants and nominees, resumes and other general non-evaluative information are subject to public inspection under the Georgia Open Records Act. Georgia Southern is an Equal Opportunity/Affirmative Action Institution. Individuals who need reasonable accommodations under the Americans with Disabilities Act in order to participate in the application process should notify the search chair. **Mathematics Education:** One tenure track position. Assistant or associate professor. Doctorate in a mathematical science required; Ph.D. or Ed.D. in mathematics education preferred. Must be broadly trained in mathematics with at least 24 semester hours of graduate level courses in pure or applied mathematics. Must exhibit evidence of a strong commitment to excellence in teaching and continued scholarly activity, and have familiarity with current directions in mathematics education, including the use of technology in the classroom. Primary interest in mathematics education required; experience in working with K-12 mathematics teachers preferred. At least three years teaching experience preferred. Candidates must be able to work effectively with professional and community groups. Duties include teaching undergraduate mathematics courses and undergraduate/graduate mathematics courses for mathematics education majors. Search Chair: Dr. Ron Harshbarger. Search #: 31224. Deadline: February 1, 1996. **Mathematics and Computer Science:** One tenure track position. Instructor or assistant professor. M.A. or M.S. in a mathematical science or computer science required. At least twelve semester hours graduate credit in mathematics as well as in computer science required. Proficiency in the programming language "C" required. Three years college teaching experience required. Duties include teaching freshman-level mathematics and computer science courses. Search Chair: Dr. John A. Rafter. Search #: 31228. Deadline: March 1, 1996. **Mathematics:** One tenure track position. Instructor or assistant professor. Master's degree in a mathematical science required. At least 24 semester hours of graduate level courses in pure or applied mathematics required. Three years college teaching experience preferred. Duties include teaching freshman-level mathematics courses. Fifteen credit hour teaching load per quarter. Search Chair: Dr. John A. Rafter. Search #: 31225. Deadline: March 1, 1996. **Mathematics:** One tenure track position. Instructor, assistant professor, or associate professor. Master's degree in a mathematical science required; Ph.D. preferred. At least 24 semester hours of graduate level courses in pure or applied mathematics required. Three years college teaching experience preferred. Duties include teaching freshman-level mathematics courses. Fifteen credit hour teaching load per quarter. Search Chair: Dr. John A. Rafter. Search #: 31226. Deadline: March 1, 1996. **Temporary mathematics positions.** Pending a funding decision due in April, several temporary positions may be added at the instructor level to teach freshman-level mathematics courses. M.A. or M.S. in a mathematical science required. Three years college teaching experience preferred. Fifteen credit hour teaching load per quarter. Search Chair: Dr. John A. Rafter. Search#: 31227. Deadline: April 15, 1996.

IAS/Park City Mathematics Institute
Institute for Advanced Study, Princeton, New Jersey
June 10-20, 1996

Mentoring Program for Women in Mathematics

Research Topic: Probability ***Program Organizers:*** Karen Uhlenbeck, University of Texas at Austin; Chuu-Lian Terng, Northeastern University.

The IAS/Park City Mathematics Institute (PCMI) is a flagship mathematics program built on the fundamental theme that interaction among researchers, graduate students, undergraduate students, and high school teachers is essential to the optimal functioning of the mathematical enterprise. PCMI is sponsored by the Institute for Advanced Study and receives major funding from the National Science Foundation.

Women undergraduate and graduate students participating in the PCMI Summer Session have the opportunity to attend a preliminary workshop from June 10-20, 1996 at the Institute for Advanced Study in Princeton, New Jersey. This program provides a combination of lectures, seminars, working problem groups, mentoring and networking sessions and the opportunity to meet and interact with leading mathematicians.

The 1996 PCMI Summer Session will be held at the Institute for Advanced Study from June 23-July 13. Program Organizers are Elton Pei Hsu, Northwestern University, and Srinivasa Varadhan, Courant Institute.

All women are welcome to apply, although participants in the PCMI Summer Session will be given preference. Participants in all programs are invited to apply for financial support. Applications and information: IAS/PCMI, Institute for Advanced Study, Olden Lane, Princeton, NJ 08540; phone: 1-800-726-4427; e-mail: pcmi@math.ias.edu; url: http://www.ias.edu/.

Application deadline is 2/15/96

IAS/Park City Mathematics Institute
Institute for Advanced Study, Princeton, New Jersey
June 23-July 13, 1996

Researchers ·Graduate Students ·Undergraduates ·High School Teachers

The IAS/Park City Mathematics Institute (PCMI) is a flagship mathematics program built on the fundamental theme that interaction among researchers, graduate students, undergraduates, and high school teachers is essential to the optimal functioning of the mathematical enterprise.

Research Topic: Probability ***Program Organizers:*** Elton Pei Hsu, Northwestern University, and Srinivasa Varadhan, Courant Institute.

Graduate Summer School Lecturers: Marco Avellaneda, Courant Institute; Jennifer Chayes, University of California, Los Angeles; Richard Durrett, Cornell University; Elton Pei Hsu, Northwestern University; Daniel W. Stroock, Massachusetts Institute of Technology; and Horng-Tzer Yau, Courant Institute. ***Undergraduate Program Lecturers:*** Gregory F. Lawler, Duke University, and Emily E. Puckette, Occidental College. ***High School Teacher Program Lecturers:*** Naomi Fisher, University of Illinois at Chicago; Cynthia Hays, McCallum High School, (Texas); James King, University of Washington; and John Polking, Rice University.

The Summer Session will be held at the Institute for Advanced Study from June 23-July 13. All applicants are invited to apply for financial support.

For applications and information: IAS/PCMI, Institute for Advanced Study, Olden Lane, Princeton, NJ 08540; 1-800-726-4427; e-mail: pcmi@math.ias.edu: url: http://www.ias.edu/.

PCMI is sponsored by the Institute for Advanced Study, Princeton, New Jersey, and receives major funding from the National Science Foundation and additional support from the Geraldine R. Dodge Foundation.

Application deadline is 2/15/96

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GEORGIA STATE UNIVERSITY - DEPARTMENT OF MATH AND COMPUTER SCIENCE - Three anticipated tenure track positions beginning September 1996. Rank and salary commensurate with qualifications and experience. Qualifications: Ph.D. in mathematics, computer science, or statistics with preference for a strong record in publications and funded grants. Preference in mathematics is for associate professor or professor in mathematics education. Preference in computer science is for assistant professor in telecommunications or networking/communications. Preference in statistics is for assistant professor in applied statistics. Send letter of application, vita without birth date but with citizenship status, and 3 letters of reference and transcripts of all undergraduate and graduate work and postmarked by February 29, 1996 to: **Chair, Department of Math and Computer Science, University Plaza, Atlanta, GA 30303-3083.** Georgia State University, a Unit of the University System of Georgia, is an equal opportunity educational institution, and an EEO/AA employer.

GETTYSBURG COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Mathematics - One-Year Sabbatical Replacement - Gettysburg College invites applications for a one-year assistant professor position in mathematics beginning August 1996. A Ph.D. in mathematics, excellence in teaching, and a commitment to continued scholarship are essential. Gettysburg College is a highly selective liberal-arts college of about 2,200 students in a beautiful and historic area of south-central Pennsylvania. It is conveniently located within an hour and a half drive of the Washington-Baltimore area. Additional information about the department can be found at the World Wide Web site http://www.gettysburg.edu/project/mat/link.html. Send letter of application, curriculum vitae, statement of teaching interests in a liberal-arts environment, and three letters of recommendation to: **Search Committee, Department of Mathematics and Computer Science, Gettysburg College, Gettysburg, PA 17325.** At least one letter should address teaching effectiveness. Applications received by March 15, 1996 will receive full consideration. Gettysburg College is an Equal Opportunity/Affirmative Action employer with a Partner Assistance Program. Women and minority candidates are encouraged to apply.

HARVEY MUDD COLLEGE - DEPARTMENT OF MATHEMATICS - Assistant Professor of Mathematics - Harvey Mudd College is hiring one tenure-track Assistant Professor in mathematics. Excellence in teaching is absolutely essential, as is evidence of a strong and ongoing research program. Preference will be given to applicants in the areas of differential geometry, dynamical systems theory, and functional analysis. Applicants should also have wide mathematical interests and be able to teach across the undergraduate mathematics curriculum. Candidates must be willing to supervise undergraduate research, and work with others in the development of departmental programs. Harvey Mudd College is a highly selective undergraduate institution of science and engineering. High school calculus is required for admission to the college. More than one-third of the student body are National Merit Scholarship finalists. The college enrolls about 630 students and is associated with four other undergraduate colleges and the Claremont Graduate School, forming together an academic community of about 5,000 students. There are over 40 mathematicians in Claremont. Harvey Mudd College is an equal opportunity employer and is committed to the recruitment of candidates historically underrepresented on college faculties. Preference will be given to applications received before January 15, 1996. Applicants should send a curriculum vita, a description of their current research, and arrange to have three letters of reference sent directly to the address that appears below. Letters should, as much as possible, assess the quality of the applicant's scholarship, potential as a mathematician, and abilities as a teacher. Address applications to: **Search Committee, Dept. of Mathematics, Harvey Mudd College, Claremont, CA 91711-5990.**

INDIANA UNIVERSITY OF PENNSYLVANIA - DEPARTMENT OF MATHEMATICS - The Department of Mathematics, Indiana University of Pennsylvania invites applications for three tenure-track positions to begin in the Fall of 1996; one in Elementary and/or **Secondary Mathematics Education**, one in **Operations Research**, and one in either Applied Mathematics or Mathematics Education. Any appointment is anticipated at the Assistant Professor level. Appointment at the Associate Professor level is possible in the case of exceptional qualifications. Ph.D./D.Ed. required by September 1996. **Complete job descriptions are available on WWW at http://www.ma.iup.edu/jobad.html or by contacting: Dr. Jacqueline Gorman, Chair of Ed Search Committee or Dr. Rebecca Stoudt, Chair of OR/AM Search Committee, Mathematics Department, Indiana University of Pennsylvania, Indiana, PA 15705.** E-mail: EMWHITE+EDSEARCH@GROVE.IUP.EDU, EMWHITE+ORSEARCH@GROVE.IUP.EDU. Fax: (412)-357-5700. IUP is an affirmative action/equal opportunity employer.

KANSAS STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - NSF funded (GIG #DMS-9510375) two-year postdoctoral position in active and interesting new group with a proven track record in the area of quantum groups, topological and geometric structures in quantum physics, and related PDE's. Primary duties are research and participation in departmental seminars. Teaching load one semester course per year. Applicant should be a recent Ph.D. with a strong record of research in our area, able to interact with a variety of related mathematical specialties. Send letter of application, curriculum vita and three letters of recommendation to: **Dr. Louis Pigno, Department of Mathematics, Cardwell Hall 138, Kansas State University, Manhattan, KS 66506.** Offers may be made in late December, but applications will be accepted until February 1, 1996 or until position is closed. Minority and women applicants are encouraged. KSU is an AA/EOE.

KENT STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Chairperson - Kent State University invites applications and nominations for the position of Chairperson of the Department of Mathematics and Computer Science. Kent is a spacious, residential campus serving more than 22,000 students, situated in a small university town within 30 miles of the Cleveland metropolitan area. The Department of Mathematics and Computer Science is situated in the College of Arts and Sciences and houses programs through doctoral level in Applied Mathematics, Computer Science, Pure Mathematics, and Statistics. It currently consists of 23 faculty in the Mathematical Sciences and 11 in Computer Science at the Kent campus and 20 faculty in the Mathematical Sciences at the regional campuses. The department recently moved to a new building and has an extensive network connecting SIMD and MIMD parallel processors, servers and over 140 workstations, and X-terminals for faculty and student use. Applicants for the position must have an earned doctorate, an international research reputation as evidenced by publications, a successful history of grant activity, and other academic and scholarly achievements. In view of the composition of the department, applicants should have a strong research reputation among both computer scientists and mathematical scientists. They must have the ability and vision to guide the department into the 21st century by developing and maintaining, in both disciplines, a strong program of scholarship, publications and grantsmanship, an effective advising system, and a strong teaching program. In addition, applicants should have the ability to work well within the university community and to foster interdisciplinary research and cooperation with industry. The successful applicant will be encouraged and supported in maintaining an active research program. The salary will be competitive. Screening of applicants will begin February 1, 1996, for a start date of July 1, 1996, and will continue until the position is filled. Please submit a full resume, including a list of publications, a statement of interest regarding the post, and the names, addresses, telephone numbers and e-mail addresses of at least five references, or a letter of nomination to: **Chairperson Search Committee, Department of Mathematics and Computer Science, Kent State University, Kent, Ohio 44242**, USA. FAX: (216) 672-7824. Further information about the Department is available on the World Wide Web at URL http://www.mcs.kent.edu/ . Questions and inquiries can be sent by e-mail to: chair-search@mcs.kent.edu. Kent State University is an Affirmative Action/Equal Opportunity Employer.

NEW ADDRESS?? If you have a new mailing address, a new e-mail address or a new position, please let us know. We want to keep our database up-to-date. Just fill out the changes using the **form on the** BACK COVER or drop us a **postcard** or an **e-mail**, and we'll take care of it. THANKS. ADDRESS: 4114 CSS Bldg., University of Maryland, College Park, MD 20742-2461 E-MAIL: awm@math.umd.edu

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KENT STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Tenure-Track Position - We invite applications for one tenure-track position at the rank of assistant professor effective August 19, 1996 in the areas of applied mathematics, algebra, analysis, numerical analysis, or scientific computation. Salary is negotiable. Candidates are required to have a Ph.D. within the mathematical sciences. The Kent Campus is a spacious, residential campus serving more than 22,000 students, situated in a small university town within 30 miles of the major metropolitan area of Cleveland. The Department of Mathematics and Computer Science is situated in the College of Arts and Sciences and houses programs through the doctoral level in applied mathematics, computer science, pure mathematics, and statistics. It currently consists of 23 faculty in the mathematical sciences and 11 in computer science. The department recently moved to a new building and has an extensive network of computers and workstations, for faculty and student use. Candidates with strong potential for excellence in research and teaching are invited to apply. Such applicants should send a curriculum vitae and dissertation abstract and/or published papers, if any, and have three letters of references sent to: **Assistant Professor Search Committee, Department of Mathematics and Computer Science, Kent State University, Kent, OH 44242.** Applicants are requested to use the AMS standardized application form, available through the American Mathematical Society. Screening of applicants will begin January 22, 1996, and will continue until the position is filled. Kent State University is an Equal Opportunity, Affirmative Action Employer.

KNOX COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Applications are invited for a tenure-track assistant professorship beginning in the fall of 1996. Responsibilities include teaching two courses a term for each of three ten week terms, performing departmental and college service, and maintaining a high level of professional activity. Successful candidates should have a Ph.D. in mathematics. All fields of mathematics will be considered. Some preference is given to candidates with the ability to collaborate with faculty in other disciplines. The application review process will begin December 1, 1995. To guarantee full attention, applications materials should be postmarked by January 15, 1996. Knox College is an AA/EO employer. In keeping with the College's 150 year commitment to equal rights, Knox College particularly invites applications from women and minorities. To apply, please send a letter of interest, curriculum vitae, teaching statement, a copy of graduate transcripts, and arrange to have at least three letters of recommendation sent to: **Kevin J. Hastings, Chair, Department of Mathematics and Computer Science, Knox College - Box 84, Galesburg, IL 61401**, khasting@knox.edu.

LOYOLA MARYMOUNT UNIVERSITY - DEPARTMENT OF MATHEMATICS - POSITION: Assistant Professor of Mathematics beginning Fall 1996. DESCRIPTION: Tenure-track with a typical teaching load of three courses per semester. Ph.D. in mathematics required. There are no restrictions as to area of specialization. A commitment to excellent teaching and continued scholarship is required. Application should be received by January 15, 1996 and must include a cover letter (include a statement of your teaching philosophy, research plans, and why you wish to teach at an undergraduate institution; also indicate if you plan to attend the AMS/MAA meeting in Orlando, FL), curriculum vitae, and three letters of recommendation (at least one on teaching). Address application to: **Dr. Stephen Scarborough, Hiring Committee, Loyola Marymount University, Department of Mathematics, 7101 West 80th Street, Los Angeles, CA 90045.** For general information about LMU, look at our homepage on the internet: www.lmu.edu. Loyola Marymount University, established in 1911, is the only private Catholic university in metropolitan Los Angeles. Over 6,000 students are enrolled in the colleges of Liberal Arts, Business Administration, Science and Engineering, Communication and Fine Arts, and the Law School. The university invites candidates who desire to participate in a mission based on the Jesuit and Marymount traditions of higher education. Loyola Marymount University is an equal opportunity, affirmative action employer.

MARYMOUNT UNIVERSITY, VIRGINIA - DEPARTMENT OF MATHEMATICS - Assistant Professor - Marymount University invites applications for a position at the Assistant Professor level in the Department of Mathematics, beginning in the fall of 1996. Responsibilities include academic advising, curriculum development, research, and scholarship. Ph.D. in Mathematics, excellent teaching skills, and teaching expertise in Analysis or Applied Mathematics required. Experience using technology in the classroom preferred. Research area open. The Department includes five full-time faculty and twenty-three majors. Marymount University is an independent, comprehensive university related to the Catholic Church. The University enrolls 4,100 students in 34 undergraduate majors and 24 master's programs. The University is located in residential Arlington, Virginia, ten minutes from Washington, D.C. Review will begin by a search committee on February 1, 1996 and will continue until the position is closed or filled. **Contact Personnel Services for an official faculty application** by phone **(703) 284-1680**; or by mail: **2807 North Glebe Road, Arlington, VA 22207-4299. TDD 1516.** Official application must include a letter of application, curriculum vitae, and five references. An official application must accompany supplements. Current authorization to work in the U.S.A. required. 24-Hour Employment Opportunities Job Line (703) 284-1518. AA/EEO.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY - DEPARTMENT OF MATHEMATICS - One or two assistant professor or higher levels in applied mathematics will probably become available in fall 1996 for persons typically about two or more years beyond their doctorates. This time we are looking especially for unusual new talent in the area of **dynamical systems.** Applications should be completed by January 15, 1996. Applicants please arrange to have sent (a) a vita; (b) three letters of reference; (c) a description of your most recent research; and (d) the research that you plan for the next three years, to: **Committee of Applied Mathematics, Room 2-345, Department of Mathematics, Massachusetts Institute of Technology, Cambridge, MA 02139-4307.** M.I.T. is an Equal Opportunity, Affirmative Action Employer.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics may make a few appointments at the assistant professor or higher levels in pure mathematics for the year 1996 - 1997. The teaching load will be six hours per week in one semester and three hours per week in the other, or other combinations totaling nine hours. Open to mathematicians with doctorates who show definite promise in research. Applications should be completed by January 15, 1996. Applicants please arrange to have sent (a) a vita; (b) three letters of reference; (c) a description of your most recent research; and (d) the research that you plan for the next few years, to: **Pure Mathematics Committee, Massachusetts Institute of Technology, Room 2-263, Cambridge, MA 02139-4307.** M.I.T. is an Equal Opportunity, Affirmative Action Employer.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY - DEPARTMENT OF MATHEMATICS - C.L.E. Moore Instructorships in Mathematics - Open to mathematicians with doctorates who show definite promise in research. Teaching loads are six hours per week during one semester, and three hours per week during the other. Applications should be completed by January 1, 1996. Please arrange to have sent (a) a vita; (b) three letters of reference (c) a description of the research in your thesis; and (d) the research which you plan for next year to: **Pure Mathematics Committee, Massachusetts Institute of Technology, Room 2-263, Cambridge, MA 02139-4307.** M.I.T. is an Equal Opportunity, Affirmative Action Employer.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY - DEPARTMENT OF MATHEMATICS - A limited number of instructorships in applied mathematics are available for recent Ph.D.'s Appointments will be made mainly on the basis of superior research potential. Applications should be completed by January 15, 1996. Applicants please arrange to have sent (a) a vita; (b) three letters of reference; (c) a description of your most recent research; and (d) the research that you plan for the next few years, to: **Committee of Applied Mathematics, Room 2-345, Department of Mathematics, Massachusetts Institute of Technology, Cambridge, MA 02139-4307.** M.I.T. is an Equal Opportunity, Affirmative Action Employer.

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MIAMI UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - The Department of Mathematics and Statistics invites applications for a tenure track position at the Assistant Professor level starting in Fall 1996. Duties include teaching undergraduate and graduate courses, continuing research, and service. Applicants must have completed a Ph.D. in mathematics by the starting date. All areas of mathematics will be considered; however, strong preference will be given to candidates in the area of analysis or other areas compatible with the research interests of the department. Please send a letter of application that includes a statement about teaching and research, a curriculum vitae, and three letters of reference to: **Mathematics Search, Department of Mathematics and Statistics, Miami University, Oxford, Ohio 45056.** Screening of applications will begin on January 2, 1996. Miami University is an AA/EO employer.

MIAMI UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - The Department of Mathematics and Statistics invites applications for a tenure track Assistant Professor position in Mathematics Education starting in Fall 1996. Successful candidates must have completed a doctorate in mathematics education and a master's degree or equivalent in mathematics or statistics by the starting date. They must also have a demonstrated commitment to teaching and research. Additional desirable qualifications include: pre-college teaching experience; work with inservice teachers; curriculum development; and experience in using educational technology. Please send a letter of application that includes a statement about your teaching and research, along with a curriculum vitae and three letters of reference to: **Dr. Jerry K. Stonewater, Mathematics Education Search, Department of Mathematics and Statistics, Miami University, Oxford, OH 45056.** Phone: (513) 529-5830, e-mail: stonewjk@muohio.edu. Screening of applications will begin on January 2, 1996. Miami University is an AA/EO employer.

MILLERSVILLE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Assistant Professor - Full-time, tenure-track, to begin August 1996 in a department of 20 faculty and 200 majors in mathematics and mathematics education. Area of expertise in **Applied Mathematics.** Duties include a 12 semester-hour teaching load, scholarly activity, student advisement, curriculum development and committee work. Ph.D. Degree (or completion within one year) in mathematics, with expertise in an area of applied mathematics is required. Significant experience in applied mathematics in the context of industry, government or other interdisciplinary program is required. Expertise in optimization or control theory is preferred. Must exhibit evidence of strong commitment to excellence in teaching and continued scholarly activity and be prepared to teach a broad spectrum of undergraduate mathematics courses. Candidate must be interested in connecting undergraduate students with real problems through interaction with industry or government. Salary/benefits are excellent. Send letter of application, curriculum vitae, copies of all transcripts and three letters of reference (at least two of which attest to recent teaching effectiveness) to: **Professor James Fenwick, Search Chair, Department of Mathematics/NWM196, Millersville University, P.O. Box 1002, Millersville, PA 17551-0302.** Full consideration given to applications received by February 1, 1996. An EO/AA Institution.

MONTCLAIR STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - The Department of Mathematics and Computer Science invites applications for three positions. These are full-time tenure-track Assistant Professor positions.[♦] Candidates are expected to be active scholars and participate in professional and grant activities and curriculum development. Applicants must have a strong commitment to quality teaching. Teaching load is 12 credits per semester but may be reduced to 9 credits per semester if actively engaged in scholarship. **Applied Mathematics (V20)** - Expertise in operations research, mathematical modeling, differential equations, and applied mathematics (both discrete and continuous) sufficient to teach courses in those areas at the undergraduate and master's levels. Experience using the computer to model and solve problems in those areas is also expected. Ph.D. required. **Mathematics Education (V-21).** - Content background sufficient to teach undergraduate mathematics courses, expertise in middle and secondary school mathematics curriculum and in classroom applications of technology suitable for teaching graduate level mathematics education courses. Familiarity with current research and related literature in mathematics education suitable for a developing doctoral program for K-12 classroom teachers. [♦] Selected appointment at Associate rank possible. Ph.D. or Ed.D. required. **Statistics/Biostatistics (V-19)** - Expertise in statistics and statistical methods sufficient to teach undergraduate and graduate courses in statistics and biostatistics. In addition to statistics, the successful candidate may teach courses in statistical research methods for doctoral students in other disciplines such as environmental science and mathematics education. Show proficiency in the use of current technology as applied to statistics. Ph.D. required. Submit resumes with appropriate "V" number and names, addresses and phone numbers of three references to: **Dr. Kenneth C. Wolff, Department of Mathematics and Computer Science, Montclair State University, Upper Montclair, NJ 07043.** Screening begins immediately and continues until positions are filled. Starting date is September 1, 1996. Positions subject to available funding. Montclair State University is an Equal Opportunity/Affirmative Action employer.

NORTH DAKOTA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Tenure-track position in Algebra or Discrete Mathematics starting August 15, 1996. Minimum qualifications: Earned doctorate in mathematics, potential for excellence in teaching, demonstrated evidence and potential for excellence in research in algebra or discrete mathematics, effective written and oral communication skills, ability to work well with students and colleagues. Preferred qualifications: established research record in algebra or discrete mathematics, demonstrated capability in teaching mathematics, potential to write successful grant proposals. Rank as Assistant Professor. Teaching load: four semester courses per year. Send a letter of application, the AMS application cover sheet, resume. Have at least three letters of recommendation addressing the candidate's research qualifications sent. At least one of these letters or a separate letter must address the candidate's teaching qualifications. Send application materials to: **Search Committee for Algebra or Discrete Mathematics, Department of Mathematics, North Dakota State University, Fargo, ND 58105.** Final screening will begin January 2, 1996. Applications received after this date may or may not be considered. NDSU is AA/EEO.

NORTHEASTERN UNIVERSITY - MATHEMATICS DEPARTMENT - Assistant Professor of Probability and Statistics - The Department of Mathematics invites applications for a tenure track position, subject to the availability of funds, at the Assistant Professor level in probability and statistics to begin September 1996. Candidates must have a Ph.D. in probability or statistics, a strong research record, demonstrate a commitment to effective teaching and show outstanding promise for future research and for working with others in the Mathematics Department to enhance the Department's graduate and undergraduate programs in probability and statistics. Send a curriculum vitae and at least four letters of recommendation, one of which addresses teaching to: **Ms. Donna Marlowe, Department of Mathematics, Northeastern University, 567 Lake Hall, Boston, MA 02115.** Processing of application will begin January 15, 1996. Northeastern University does not discriminate on the basis of race, color, religion, sex, sexual orientation, age, national origin, veteran or disability status in admission to, access to, treatment in or employment in its programs and activities.

OHIO UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for a tenure-track assistant professorship which will begin September 1, 1996. A Ph.D. in Mathematics in the area of Analysis is required. We seek a person with strong evidence of research potential and a commitment to undergraduate teaching. Preference will be given to applicants whose research interests are compatible with those of present faculty members; in particular, we are looking for people in the areas of sequence spaces and harmonic analysis. The salary is competitive and there is an excellent benefits package. Women and minorities are especially invited to apply. The committee will begin processing applicants after January 31, 1996 and will continue to do so until the position is filled. OU is an Equal Opportunity, Affirmative Action employer. Send a letter of application and a resume and have three letters of recommendation sent to: **Dr. Jeff Connor, Chair, Analysis Position Search Committee, Department of Mathematics, Ohio University, Athens, Ohio 45701.**

RUTGERS UNIVERSITY, NEWARK - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Assistant Professor of Mathematics - The Department of Mathematics and Computer Science invites applications for an anticipated tenure-track Assistant Professor position in pure mathematics, to begin September 1996. Candidates must have a Ph.D., a strong research record, show outstanding promise for future work in mathematics, and demonstrate a commitment to effective teaching. Preference will be given to candidates with research interests similar to those in the department. Applicants should arrange for a curriculum vitae and at least four letters of recommendation, one of which addresses teaching, to be sent to: **Personnel Committee, Department of Mathematics and Computer Science, Rutgers University, Newark, NJ 07102.** Processing of applications will begin in December 1995. Rutgers University is an equal opportunity/affirmative action employer.

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SAN DIEGO STATE UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - Mathematics Education - Applications are invited for a tenure-track position in mathematics education. Rank: open - Assistant Professor preferred. Require doctorate in mathematics education or a closely related field by September 1996. Duties include teaching undergraduates and graduates, interacting with doctoral and masters students, and conducting one's own research. Closing date: February 2, 1996. Applications received after that date will be considered if position is still open. Send vita (including transcripts), and have at least 3 letters of recommendation sent, to: **Mathematics Education Search Committee, Department of Mathematical Sciences, San Diego State University, San Diego, CA 92182-7720.** SDSU is an Affirmative Action/Equal Opportunity Title IX Employer and does not discriminate against persons on the basis of race, religion, national origin, sexual orientation, gender, marital status, age or disability.

SANTA CLARA UNIVERSITY - DEPARTMENT OF MATHEMATICS - Two tenure track positions, Assistant Professor level, beginning September 1996. Ph.D. required. Fields considered: A variety of fields are of interest, but for serious consideration, a candidate must exhibit substantial background in computer science (in particular, software) or probability and statistics. Undergraduate teaching only. The Department is in the College of Arts and Sciences in a comprehensive university and emphasizes excellent teaching and a continuing research commitment from faculty. The course load is seven courses per year on a quarter calendar with adjustments possible for research. The location in Silicon Valley offers many opportunities for contacts with high tech industry. Send to: **G.L. Alexanderson, Chair, Department of Mathematics, Santa Clara, CA 95053.** Santa Clara University, a Jesuit institution, emphasizing education in the liberal arts and sciences, is an equal opportunity/ affirmative action employer - Title IX M/F/H.

SOUTHERN OREGON STATE COLLEGE - DEPARTMENT OF MATHEMATICS - We invite applications for a tenure-track Assistant Professor position beginning Fall 1996 (Ph.D. by September 1, 1996 required). While preference will be given to applicants having expertise in Geometry or Combinatorics, the most important qualifications is a strong commitment to excellence in teaching undergraduate mathematics. Equivalent of one year of collegiate math teaching required. Duties include a 12 hour teaching load, advising, maintaining an active professional development program, and sharing in departmental responsibilities. Starting salary is $31,782. Completed applications received by March 29, 1996 will receive first priority, but position will remain open until filled. Please arrange to have three letters of recommendation, vita, a statement of teaching philosophy, a description of other professional goals, and a short summary of any teaching evaluations sent to: **Dr. Kemble Yates, Search Committee Chair, Dept. of Mathematics, Southern Oregon State College, Ashland, OR 97520.** SOSC is an AA/EOE committed to developing an inclusive multicultural community.

ST. LAWRENCE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Pending budgetary approval, St. Lawrence University invites applications and nominations for a one year visiting position for 1996-97, with the possibility of extension to a second year pending budgetary approval. A Ph.D. in one of the mathematical sciences is strongly preferred; Master's degree or equivalent required. Candidates must be able to teach a range of upper- and lower-level undergraduate courses. Teaching load is three courses per semester. St. Lawrence University, chartered in 1856, is the oldest continuously coeducational institution of higher learning in New York state. An independent, private university firmly committed to undergraduate liberal arts education and cross cultural opportunities, St. Lawrence University offers a unique learning environment. The University's 1,900 students come from most U.S. states and more than two dozen other countries. Canton, the St. Lawrence River Valley, the nearby Adirondack State Park and the cities of Ottawa and Montreal provide the University community many social, cultural and outdoor recreation activities. The search committee will begin to review candidate materials on February 1, 1996. A resume, a statement of teaching philosophy, and three letters of recommendation should be sent to: **Dr. Robin Lock, Chair, Search Committee, Mathematics Department, St. Lawrence University, Canton, NY 13617-1111.** St. Lawrence University is an Affirmative Action/Equal Employment Opportunity employer. Women, minorities, veterans, and persons with disabilities are encouraged to apply.

THE STATE UNIVERSITY OF NEW YORK AT POTSDAM - MATH DEPARTMENT - Assistant Professor - The State University of New York College at Potsdam, the oldest higher education institution in the State University of New York, invites applications for an anticipated full time tenure track position effective September 1, 1996, at the rank of assistant professor. Long recognized as one of the leading public colleges in the United States, SUNY Potsdam preserves a tradition of excellence in the liberal arts, music and teacher education. Responsibilities of the position are to teach twelve hours per semester of undergraduate and first year graduate courses. Required qualifications are a Ph.D. in any area of mathematics with a strong interest and preparation for teaching undergraduate major mathematics courses. In addition some preparation in statistics is desirable though not essential. An application which must include a letter of interest, a statement of the applicant's philosophy of teaching, a vita, three letters of recommendation describing teaching experience and abilities, and a transcript (a copy is acceptable) should be sent to: **Cheryl Chute Miller, millercc@potsdam.edu, Math Department, SUNY Potsdam, Potsdam, NY 13676.** Application review will begin February 15, 1996, and continue until the position is filled. SUNY Potsdam is an equal opportunity affirmative action employer committed to excellence through diversity.

SWARTHMORE COLLEGE - DEPARTMENT OF MATHEMATICS AND STATISTICS - The Department invites applications for a tenure-track position in statistics, to begin Fall 1996, at the rank of Assistant Professor. With this new appointment, we will be a department of ten, two of whom will be statisticians. We seek candidates willing to accept the challenge of teaching statistics, and an occasional mathematics course, in the setting of a liberal arts college. Our statistics offerings include modern introductory and advanced courses. The teaching load will be three courses in one semester, two courses in the other. Candidates must also have a strong commitment to research. A Ph.D. in statistics by the starting date is expected (in exceptional cases, qualified statisticians with degrees in related fields may be considered). Please send a resume, statement of interest, and three letters of recommendation to: **Statistics Search Committee, Department of Mathematics and Statistics, Swarthmore College, 500 College Ave., Swarthmore, PA 19081.** E-mail inquiries may be addressed to msdept@cc.swarthmore.edu. The Department will begin reviewing applications no later than January 1, 1996, although all applications received by January 20, 1996 will receive full consideration. Swarthmore College is an Equal Opportunity employer. Women and minority candidates are encouraged to apply.

SWARTHMORE COLLEGE - DEPARTMENT OF MATHEMATICS AND STATISTICS - The Department invites applications for 2 two-year positions as Visiting Assistant Professor in mathematics, beginning in Fall 1996. The positions are open to applicants in all fields of mathematics. Candidates should possess a commitment to undergraduate education and promise in research. A Ph.D. in mathematics by the starting date is also expected. The annual teaching load will be three courses in one semester, two courses in the other. Please send a resume, statement of interest, and three letters of recommendation to: **Mathematics Search Committee, Department of Mathematics and Statistics, 500 College Avenue, Swarthmore, PA 19081.** E-mail inquiries may be addressed to msdept@cc.swarthmore.edu. The Department will begin reviewing applications no later than January 15, 1996, although all applications received by January 31, 1996 will receive full consideration. Swarthmore College is an Equal Opportunity employer. Women and minority candidates are encouraged to apply.

TRENTON STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Assistant Professor - Two tenure track positions to teach 12 hours per semester, including freshmen level courses. Required: Ph.D. in mathematics, demonstrated commitment to quality teaching; strong research potential. Preference will be given to candidates in any area of pure mathematics and with post-doctoral experience in teaching and research. Send vita and three letters of recommendations, including at least one letter regarding candidate's teaching ability to: **Chair, Search Committee, Department of Mathematics and Statistics, Trenton State College, CN-4700, Hillwood Lakes, Trenton, NJ 08650-4700.** Deadline for application: March 1, 1996; review process will begin February 1, 1996. Non U.S. citizens must include a statement of current visa status. Trenton State College is a highly selective institution located on 200 acres, approximately 8 miles from Princeton and 1 hour from New York and Philadelphia. The department currently enrolls over 250 majors in Mathematics, Mathematics Education, and Statistics. To enrich education through diversity, TSC is an AA/EOE.

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TUFTS UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for a tenure-track Assistant Professorship, starting September 1, 1996. A Ph.D. in mathematics with specialization in applied probability is required. Applications must show promise of outstanding research and excellent teaching. The teaching load will be two courses per semester. Please send a curriculum vitae and have three letters of recommendation sent by February 15, 1996 to: **Christoph Borgers, Search Committee Chair, Department of Mathematics, Tufts University, Medford, MA 02155.** Women and minority candidates are encouraged to apply. Tufts is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF CALIFORNIA, LOS ANGELES - DEPARTMENT OF MATHEMATICS - Regular Positions in Pure and Applied Mathematics - The UCLA Department of Mathematics invite s applications for three or more tenure track positions in pure or applied mathematics. Exceptional promise in research and teaching is required. Positions are initially budgeted at the assistant professor level, but sufficiently outstanding candidates will be considered at higher levels. Specific search areas are: algebra, algebraic geometry, number theory and combinatorics; mathematical developments arising from physics; geometry, topology and dynamical systems; analysis probability, and partial differential equations; logic; and computational and applied mathematics. 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, open "http://www.math.ucla.edu" on the World Wide Web, or write to: John Garnett, Chair, Department of Mathematics, University of California, Los Angeles, CA 90095-1555, Attention: Staff Search.** UCLA is an Equal Opportunity/Affirmative Action Employer.

UNIVERSITY OF CALIFORNIA, LOS ANGELES - DEPARTMENT OF MATHEMATICS - Temporary Positions - Subject to availability of resources and administrative approval: **(1) Three E.R. Hedrick Assistant Professorships**. Applicants must show very strong promise in research and teaching. Salary $41,600. Three year appointment. Teaching load: four quarter courses per year, which may include one advance course in the candidate's field. Preference will be given to applications completed by January 12, 1996. **(2) One or two Research Assistant Professorships in Computational and Applied Mathematics.** Applicants must show very strong promise in research and teaching. Salary $41,600. One year appointment, probably renewable up to two times. Teaching load: at most four quarter courses per year, which may include one advanced course in the candidate's field. Preference will be given to applications completed by January 12, 1996. **(3) Two or more Adjunct Assistant Professorship or Lectureship in the Program in Computing (PIC).** Applicants for the **Adjunct position** must show very strong promise in teaching and research in an area related to computing. Teaching load: four quarter programming courses and a more advance quarter courses per year. One year appointment, probably renewable once. Salary range $44,500 - $48,200. Applicants for the **Lectureship** must show very strong promise in the teaching of programming. An M.S. in Computer Science or equivalent degree is preferred. Teaching load: six quarter programming courses per year. One-year appointment, probably renewable one or more times, depending on the needs of the program. Salary is $37,488 or more, depending on experience. Preference will be given to applications completed by February 1, 1996. **(4) An Adjunct Assistant Professorship.** One year appointment, probably renewable once. Strong research and teaching background required. Salary $38,700 - $40,600. Teaching load five quarter courses per year. **(5) Possibly one or more positions for visitors.** To apply, send electronic mail to: search@math.ucla.edu, open "http://www.math.ucla.edu" on the World Wide Web, **or write to: John B. Garnett, Chair, Department of Mathematics, University of California, Los Angeles, CA 90095-1555, Attention: Staff Search.** UCLA is an Equal Opportunity/Affirmative Action Employer.

UNIVERSITY OF MASSACHUSETTS, LOWELL - COLLEGE OF ARTS AND SCIENCES - Dean of Sciences - The University of Massachusetts Lowell invites applications and nominations for the position of Dean of Sciences in the College of Arts and Sciences. The Dean of Sciences serves with the Dean of Humanities and Social Sciences and reports to the Provost. Screening of applicants will begin February 1, 1996. For additional information about this position, please contact: **Dr. Stanley C. Israel, Co-Chair, Search Committee for Dean of Sciences, College of Arts and Sciences, University of Massachusetts Lowell, One University Avenue, Lowell, MA 01854.** Tel. (508) 934-3690; Fax (508) 934-3013; E-Mail: israels@woods.uml.edu. The University of Massachusetts Lowell is an Equal Opportunity/Affirmative Action, Title IX, H/V, ADA Employer.

UNIVERSITY OF MARYLAND, COLLEGE PARK - DEPARTMENT OF MATHEMATICS - Applications are invited for possible tenure or tenure track positions in all areas of mathematics (pure, applied, and statistics) to begin in August 1996. Rank and salary depend on qualifications. Joint appointments with other units, in particular with the Institute for Physical Sciences and Technology, are possible. An exceptionally strong research record is necessary. Send an AMS Application Cover Sheet, Curriculum Vitae, description of current research, and a self-addressed mailing label or envelope, and arrange for at least three letters of recommendation to be sent to: **the Hiring Committee, Department of Mathematics, University of Maryland, College Park, Maryland 20742.** E-mail: dept@math.umd.edu. Applications should be received by February 1, 1996. The University of Maryland is an equal opportunity, affirmative action employer.

UNIVERSITY OF NEBRASKA, LINCOLN - DEPARTMENT OF MATHEMATICS AND STATISTICS - We invite applications for an Assistant Professor tenure-track position starting in Fall 1996. Candidates must have a Ph.D. in mathematics by August of 1996. Candidates must demonstrate evidence of excellent teaching ability and outstanding research potential in an area that complements existing expertise in the department. Strong preference will be given to candidates with strengths in commutative algebra or algebraic geometry. Send vita and three letters of recommendation to: **Algebra Search Committee, Department of Mathematics and Statistics, University of Nebraska-Lincoln, Lincoln, NE 68588-0323.** The review of applications will begin January 15, 1996, and continue until suitable candidates are selected. Women and minority candidates are particularly encouraged to apply. The University of Nebraska is committed to pluralistic campus community through Affirmative Action and Equal Opportunity, and is responsive to the needs of dual career couples. We assure reasonable accommodation under the Americans with Disabilities Act, please contact Mavis Hettenbaugh at 402-472-3731 for assistance.

UNIVERSITY OF NEBRASKA, LINCOLN - DEPARTMENT OF MATHEMATICS AND STATISTICS - We invite applications for one, and possibly two, Assistant Professor tenure-track positions starting in Fall 1996. Candidates must have a Ph.D. in statistics or a closely related field by August of 1996. Candidates must demonstrate evidence of excellent teaching ability and outstanding research potential in statistics. Send vita and three letters of recommendation to: **Statistics Search Committee, Department of Mathematics and Statistics, University of Nebraska-Lincoln, Lincoln, NE 68588-0323.** The review of applications will begin January 15, 1996, and continue until suitable candidates are selected. Women and minority candidates are particularly encouraged to apply. The University of Nebraska is committed to pluralistic campus community through Affirmative Action and Equal Opportunity, and is responsive to the needs of dual career couples. We assure reasonable accommodation under the Americans with disabilities Act, please contact Mavis Hettenbaugh at 402-472-3731 for assistance.

THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department seeks applications for a tenure-track position as Assistant Professor specializing in Mathematics. Initial appointment is for 4 years, 9 months per year, beginning August 1, 1996. The position requires a Ph.D. in Mathematics by the appointment date and a commitment to high quality research and teaching. Applicants with research specialties in analysis and closely related areas compatible with the research interests of the department are of particular interest. The Department of Mathematics provides a congenial environment for cooperation between mathematicians, statisticians and computer scientists. Current members in the department have active research programs in topology, algebra, logic and theoretical computer science, complexity theory, number theory, statistics, and dynamics. The department presently offers B.S. and M.A. degrees in Mathematics. Further information about the department can be found via the world wide web at http://www.uncg.edu/~matdept. Applicants should send a letter of application that includes a statement about their teaching and research, vita, transcripts, and 3 letters of reference to: **Professor J.E. Vaughan, Mathematics Search Coordinator, Department of Mathematical Sciences, UNCG, Greensboro, NC 27412-5001**. An AMS applicant cover sheet is also encouraged. Applications received by February 8, 1996 are guaranteed full consideration. Later applications will be considered until the position is filled or until the closing date of April 15, 1996. EEO/AA:W/M/V/D.

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MATHEMATICAL SCIENCES DEPARTMENT HEAD

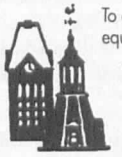
Worcester Polytechnic Institute (WPI) is an innovative university of science, engineering and management with an enrollment of 2,500 undergraduates and 400 full-time graduate students, located in central Massachusetts.

The WPI Mathematical Sciences department, currently with 22 full-time faculty, provides undergraduate and graduate education through the Ph.D. Active areas of faculty research include applied mathematics, optimal control, discrete mathematics, statistics, operations research, scientific computation and pedagogy. Its teaching/research facilities include networked workstation laboratories and offices in addition to well supported campus-wide facilities. For more information see http://www.wpi.edu/Academics/Depts/Math/

The department seeks a dynamic individual who can promote growth in the department's nationally recognized research program by attracting several outstanding faculty to fill anticipated openings. The new department head will be expected to take a leadership role in educational innovation. He/she will have the opportunity to expand and develop new research and educational programs, including an industrial project program for graduate and undergraduate students.

Nominations for and applications from persons holding a Ph.D. should be directed to the **Director of Human Resources, Mathematical Sciences Department Head Search Committee, Dept. A, Office of Human Resources, Worcester Polytechnic Institute, 100 Institute Road, Worcester, MA 01609-2280.** Priority will be given to applications received before February 1, 1996.

To enrich education through diversity, WPI is an affirmative action, equal opportunity employer.



Worcester Polytechnic Institute

Loyola University of Chicago
Department of Mathematical and Computer Sciences

The Department of Mathematical and Computer Sciences of Loyola University of Chicago anticipates at least one tenure-eligible position in both computer science and mathematics commencing Fall 1996. Among the requirements for the positions are a Ph.D. and a commitment to excellence in both research and teaching. For the **computer science position,** the department seeks applications from outstanding candidates in all areas of computer science but is particularly interested in candidates in experimental areas such as (but not limited to) operating systems, networks, security, multimedia, graphics, and distributed and real-time systems. For the **mathematics position,** applications from candidates in all areas will be considered. The current research areas of the mathematics faculty include algebra, analysis, combinatorics and discrete mathematics, logic, partial differential equations and statistics. The department awards B.S. degrees in mathematics, computer science and statistics at the undergraduate level and M.S. degrees in mathematics and computer science at the graduate level. The department has 27 full-time members, over 200 undergraduate majors and over 140 graduate students. The department is located on Loyola's scenic Lake Shore Campus on the far north side of Chicago in the Rogers Park neighborhood on the shores of Lake Michigan. There is plenty of affordable, quality housing close to the campus and in other areas. A number of world-renowned academic institutions and industrial labs in the area make for an outstanding research environment. Interviews will begin in late January 1996 and will continue until the positions are filled. Send a detailed curriculum vitae and arrange to have 3 letters of recommendation sent to: **Chair, CS Search Committee (or Math Search Committee), Department of Mathematical and Computer Sciences, Loyola University of Chicago, Chicago, IL 60626.** All documents should be in paper form. Loyola University of Chicago is an EO/AA employer.

UNIVERSITY OF OKLAHOMA - DEPARTMENT OF MATHEMATICS - Applications are invited for a tenure-track or tenured faculty position in Mathematics Education starting in Fall 1996. Rank and salary will be commensurate with qualifications and experience. Candidates are required to have a Ph.D. in Mathematics or in Education with a Mathematics specialization, and demonstrated commitment to research in Mathematics Education. A strong background in Mathematics beyond the Master's level is also required. Preference will be given to those whose primary research involves collegiate Mathematics Education, or secondary school teacher training. The faculty member is expected to carry a teaching load of two courses per semester. Candidates should be capable of directing doctoral students and contributing leadership to the department's active graduate program in Mathematics Education. Responsibilities will include involvement with undergraduate Mathematics courses, and with both undergraduate and graduate courses in Mathematics Education. The Mathematics Department at the University of Oklahoma offers a Doctoral Degree in Research in Undergraduate Curriculum and Pedagogy. Faculty interests include research in quantitative literacy, undergraduate curriculum and pedagogy, and international comparative Mathematics Education. The Mathematics Department faculty cooperate with the University's College of Education which as an M.Ed. Program in Mathematics Education. As a University service the Department is also responsible for advising and preparation of some undergraduate secondary Mathematics Education majors, and for providing courses for both elementary and secondary preservice teachers (about 250 and 20 per year, respectively). Applicants should send a vita, a statement of professional goals, and three letters of recommendation to: **Math Education Search Committee, Department of Mathematics, University of Oklahoma, 601 Elm Avenue, Phsc 423, Norman, OK 73019-0315.** Initial screening will begin on January 31, 1996 and continue until the position is filled. The University of Oklahoma is an Equal Opportunity Affirmative Action Employer. Women and minorities are encouraged to apply. The University of Oklahoma has a policy of being responsive to the needs of dual career couples.

UNIVERSITY OF PITTSBURGH - DEPARTMENT OF MATHEMATICS - The Department of Mathematics has several tenure-track positions in mathematics available at the assistant professor level. Applicants should have a clear commitment to excellence in teaching and research. Priority will be give to applicants whose credentials reflect an ability to interact with more than one area of mathematics. Applications submitted by January 31, 1996 will be assured of complete consideration for the next academic year. Applicants should submit a current vitae, and arrange to have at least three letters of recommendation sent to: **Chair, Department of Mathematics, University of Pittsburgh, Pittsburgh, PA 15260.** The Department especially encourages applications from minorities and women. The University of Pittsburgh is an Equal Opportunity and Affirmative Action Employer.

UNIVERSITY OF RHODE ISLAND - DEPARTMENT OF MATHEMATICS - The Department of Mathematics, subject to final budgetary approval, expects to make a tenure-track-level appointment at the assistant professor level, effective for the 1996-97 academic year. Applicants must have Ph.D. in Mathematics by the time of appointment, and must have substantial expertise in numerical methods for partial differential equations. The candidate must show, by academic record and/or letters of recommendation, the potential to teach successfully both graduate and undergraduate courses in mathematics, especially applied mathematics. The applicant must demonstrate in the form of publications, research plan, and/or letters of recommendation the potential for a quality research program in applied mathematics. Submit resume, three letters of recommendation, and other relevant information by February 24, 1996 to: **John Montgomery, Search Committee Chair, (Log # 921263), The University of Rhode Island, P.O. Box G, Kingston, RI 02881.** The University of Rhode Island is an AA/EEO employer and is committed to increasing the diversity of its faculty, staff and students. People from under-represented groups are encouraged to apply.

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UNIVERSITY OF TENNESSEE, KNOXVILLE - MATHEMATICS DEPARTMENT - The Mathematics Department of the University of Tennessee seeks to fill a tenure-track assistant professorship with an Outreach Mathematician (OM). The duties of the OM will be to foster close relations between the university and the community colleges and/or high schools across the state. Details on the duties can be found on the WWW through the Mathematics Department's home page (http://www.math.utk.edu/). Other information on the department and university is also available there. A Ph.D. in Mathematics is required together with a clear commitment to outreach activities. Some postdoctoral experience is preferred, but not required. Dedication to teaching is paramount. Employment begins August 1, 1996. We seek a person who will actively pursue grants to conduct workshops for teachers, carry out systematic school visits, become involved in state-wide mathematics education reform, work with the appropriate faculty in the College of Education. Interested applicants should arrange to have a vita, three reference letters, a statement of accomplishments, qualifications, and plans for outreach activities, and evidence of quality teaching sent to: **Professor John B. Conway, OM Search, Mathematics Department, University of Tennessee, Knoxville, TN 37996-1300.** Electronic applications are not acceptable. Use of the recent AMS application form is appreciated (see Notices, October 1995 or the AMS gopher). Review of applications will begin January 1, 1996 and will continue until the position is filled. UTK is an EEO/AA/Title IX/Section 504/ADA employer.

UNIVERSITY OF TEXAS AT ARLINGTON - DEPARTMENT OF MATHEMATICS - Applications are invited for possibly two to three anticipated tenure-track positions beginning with the Fall Semester, 1996. We seek candidates in various areas of mathematics which are complementary to those of the current faculty and would enhance and support the goals of the Department. Application deadline is January 31, 1996, or until positions filled. Salary and rank are commensurate with qualifications which must include the Ph.D. degree (an earned doctorate by August 1996). Assistant Professor candidates must show strong potential for excellence in teaching and research. For an Associate or Full Professorial appointment the candidate must have excellent teaching credentials and a nationally established research record; some success in attracting outside funding is desirable. Please send a resume and three letters of recommendation to: **Chairperson, Faculty Recruiting Committee, University of Texas at Arlington, Department of Mathematics, Box 19408, Arlington, TX 76019-0408.** The University of Texas at Arlington is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF TEXAS AT AUSTIN - DEPARTMENT OF MATHEMATICS - Openings for Fall 1996 include two Instructorships, one of which may have an R.H. Bing Faculty Fellowship attached to it, and two or more positions at the tenure-track/tenure level. Instructorships at The University of Texas at Austin are postdoctoral appointments, renewable for two additional years. It is assumed that applicants for Instructorships will have completed all Ph.D. requirements by August 31, 1996. Preference will be given to those whose doctorates were conferred in 1995 or 1996. Candidates should show superior research ability and have a strong commitment to teaching. Consideration will be given only to persons whose research interests have some overlap with those of the permanent faculty. Duties consist of teaching undergraduate or graduate courses and conducting independent research. The projected salary is $33,000 for the nine-month academic year. Each R.H. Bing Fellow holds an Instructorship in the Mathematics Department, with a teaching load of two courses in one semester and one course in the other. The combined Instructorship-Fellowship stipend for nine-months is $36,000, which is supplemented by a travel allowance of $1,000. Pending satisfactory performance of teaching duties, the Fellowship can be renewed for two additional years. Applicants must show outstanding promise in research. Bing Fellowship applicants will automatically be considered for other departmental openings at the post-doctoral level, so a separate application for such a position is unnecessary. An applicant for a tenure-track or tenured or tenured position must present a record of exceptional achievement in her or his research area and must demonstrate a proficiency at teaching. In addition to the duties indicated above for Instructors, such an appointment will typically entail the supervision of M.A. or Ph.D. students. The salary will be commensurate with the level at which the position is filled and the qualifications of the person who fills it. Those wishing to apply for any of the aforementioned positions are asked to send a vita (including an e-mail address and telephone number, if possible) and a brief research summary to: **Department of Mathematics, The University of Texas at Austin, Austin, Texas 78712, c/o Recruiting Committee.** Transmission of the preceding items via e-mail (address: recruit@math.utexas.edu) is encouraged. Please prepare e-mail materials in plain.tex, *AMSTEX* or *LATEX*, including all macros. Applications must be supported by three or more letters of recommendation, at least one of which speaks to the applicant's teaching credentials. The screening of applications will begin on December 1, 1995. The University of Texas at Austin is an equal opportunity employer. Qualified women and minority group members are urged to apply.

UNIVERSITY OF VERMONT - DEPARTMENT OF MATHEMATICS AND STATISTICS - Applications are now being accepted for a two-year visiting position. Duties include teaching two courses per semester and research. This is a rotating position and the current position is in analysis. A Ph.D. is required. Preference will be given to applicants whose research interests match those of current faculty. Those interests include classical analysis (emphasis on weighted norm inequalities), Fourier analysis (emphasis on trigonometric series and integrals on Euclidean space), and noncommutative harmonic analysis and group representations. Applicants should send vita and have three letters of reference mailed to: **Roger Cooke, Department of Mathematics, University of Vermont, 16 Colchester Avenue, Burlington, Vermont 05401-1455.** Review of applications will begin March 1, 1996; duties begin in the Fall Semester 1996. The University of Vermont is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply for this position.

UNIVERSITY OF WASHINGTON - DEPARTMENT OF APPLIED MATHEMATICS - Assistant or Associate Professor - A tenure-track or tenured appointment is anticipated in the area of MATHEMATICAL BIOLOGY, subject to budgetary approval and funding. Applicants should have the Ph.D. degree and be highly qualified for undergraduate and graduate teaching in APPLIED MATHEMATICS and independent research. Applications, including a curriculum vitae, statement of research and teaching interests, and the names of three references, should be sent to: **Chairman, Hiring Committee. Department of Applied Mathematics, Box 352420, University of Washington, Seattle, WA 98195-2420.** Letters of recommendation SHOULD NOT be sent at this time; the Hiring Committee will contact the applicant regarding letters of recommendation when appropriate. Priority will be given to applications received before February 1, 1996. The University of Washington is building a culturally diverse faculty and strongly encourages applications from women and minority candidates. AA/EOE.

UNIVERSITY OF WASHINGTON - DEPARTMENT OF MATHEMATICS - One or more nontenure-track Acting Assistant Professor positions each for a three year period may be filled subject to budgetary approval and funding. Applicants should have the Ph.D. degree and be highly qualified for undergraduate and graduate teaching and independent research. Applications, including a curriculum vitae, statement of research and teaching interests, and three letters of recommendation, should be sent to: **Chairman, Appointments Committee, Department of Mathematics, Box 354350, University of Washington, Seattle, WA 98195-4350.** Priority will be given to applications received before February 1, 1996. The University of Washington is building a culturally diverse faculty and strongly encourages applications from women and minority candidates. AA/EOE.

UNIVERSITY OF WISCONSIN, EAU CLAIRE - MATHEMATICS DEPARTMENT - Tenure track and possible temporary positions. Starting August 1996. For the tenure-track position, a Ph.D. in Mathematics is required. Preference will be given to applicants with specialties in algebra or combinatorics. Ability to contribute through the use of technology is also desirable. The position responsibilities include teaching undergraduate mathematics courses, scholarly activity, academic advising, and service. Evidence of excellent teaching potential is required. Send AMS Application Cover Sheet, letter of application, vitae, complete transcripts, and 3 letters of recommendation, including an evaluation of teaching effectiveness, to: **Tom Wineinger, Mathematics Department, UW-Eau Claire, Eau Claire, WI 54702.** Deadline for all application materials is January 15, 1996. UW-Eau Claire is an Equal Opportunity/Affirmative Action Employer.

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UTAH STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Applications are invited for two tenure track positions in mathematics at the assistant professor level, to begin September 1996. Requirements include a Ph.D. (by September 1996) in mathematics or mathematical sciences, potential for excellence inresearch and in teaching at both the undergraduate and graduate level, and the legal right to work in the United States. Candidates with research emphasis in the following fields are especially encouraged to apply. **Position A:** In the general area of geometrical methods in differential equations, with expertise in any one or more of the following subjects: group analysis of differential equations, equivalence methods, exterior differential systems, exact solution techniques for nonlinear PDE, geometric aspects of interable systems, geometrical singularity theory, and geometrical aspects of classical and quantum field theories. **Position B:** Any area closely related to nonlinear PDE, including numerical methods or dynamical systems aspects. Applicants should explicitly indicate which position they are seeking. They should send a resume and arrange for three letters of reference to be sent directly to: **Mathematics Search Committee, Department of Mathematics and Statistics, Utah State University, Logan, UT 84322-3900.** The selection process will begin February 1, 1996, and will continue until the positions are filled. Utah State University, with a student body of 20,000, is located in Logan, Utah, in the Wasatch Range of the Rocky Mountains. The University offers competitive salaries and excellent medical, retirement, and professional benefits. Women and minorities are particularly encouraged to apply. Utah State University is an equal opportunity/affirmative action employer.

VANDERBILT UNIVERSITY - DEPARTMENT OF MATHEMATICS - Non-tenure-track positions - We anticipate three or four non-tenure-track openings at the Assistant Professor level beginning Fall 1996. These positions carry an initial two-year appointment and are normally renewable for a third year. They are intended for recent Ph.D. recipients with demonstrated research potential and strong communication skills who would like to spend time in a department with a vigorous research atmosphere. To apply, send the following materials in a single mailing by January 15, 1996: letter of application (including e-mail address and fax number if available), curriculum vitae and brief research summary. Send to: **Professor Constantine Tsinakis, Department of Mathematics, Vanderbilt University, 1326 Stevenson Center, Nashville, TN 37240.** Additional information, including letters of recommendation, will be requested from selected candidates after an initial screening. Only solicited letters of recommendation will be accepted. Vanderbilt University is an affirmative action/equal opportunity employer.

VANDERBILT UNIVERSITY - DEPARTMENT OF MATHEMATICS - Position in Computational Mathematics - We anticipate a tenure-track opening at the Assistant Professor level beginning Fall 1996. This position carries an initial three-year appointment and requires a Ph.D. in mathematics. It is intended for a specialist in approximation theory, computer-aided geometric design, or related field whose primary research involves computing. Outstanding research potential and evidence of effective teaching are required. To apply, send the following materials in a single mailing by January 15, 1996: letter of application (including e-mail address and fax number if available), curriculum vitae and brief research summary. Send to: **Professor Constantine Tsinakis, Department of Mathematics, Vanderbilt University, 1326 Stevenson Center, Nashville, TN 37240.** Additional information, including letters of recommendation, will be requested from selected candidates after an initial screening. Only solicited letters of recommendation will be accepted. Vanderbilt University is an affirmative action/equal opportunity employer.

VANDERBILT UNIVERSITY - DEPARTMENT OF MATHEMATICS - Position in Graph Theory - We anticipate a tenure-track opening at the Assistant Professor level beginning Fall 1996. This position carries an initial three-year appointment and requires a Ph.D. in mathematics. It is intended for a specialist in graph theory, combinatorics, combinatorial algorithms or combinatorial optimization. Outstanding research potential and evidence of effective teaching are required. To apply, send the following materials in a single mailing by January 15, 1996: letter of application (including e-mail address and fax number if available), curriculum vitae and brief research summary. Send to: **Professor Constantine Tsinakis, Department of Mathematics, Vanderbilt University, 1326 Stevenson Center, Nashville, TN 37240.** Additional information, including letters of recommendation, will be requested from selected candidates after an initial screening. Only solicited letters of recommendation will be accepted. Vanderbilt University is an affirmative action/equal opportunity employer.

VANDERBILT UNIVERSITY - DEPARTMENT OF MATHEMATICS - Position in Analysis - We anticipate a tenure-track opening at the Assistant Professor level beginning Fall 1996. This position carries an initial three-year appointment and requires a Ph.D. in mathematics. It is intended for a specialist in operator theory, differential equations, or mathematical biology. Outstanding research potential and evidence of effective teaching are required. To apply, send the following materials in a single mailing by 1/15/96: letter of application (including e-mail address and fax number if available), curriculum vitae and brief research summary. Send to: **Professor Constantine Tsinakis, Department of Mathematics, Vanderbilt University, 1326 Stevenson Center, Nashville, TN 37240.** Additional information, including letters of recommendation, will be requested from selected candidates after an initial screening. Only solicited letters of recommendation will be accepted. Vanderbilt University is an affirmative action/equal opportunity employer.

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Mathematics Education - Tenure track position in the Department of Mathematics at Virginia Polytechnic Institute and State University. The anticipated appointment is expected to be at the assistant professor level. Close collaboration with the Department of Teaching and Learning is expected, including teaching assignments and curriculum development. Date of appointment is August 16, 1996. Requirements include strong research potential, interest and expertise in K-12 education, strong mathematics background, and doctorate in mathematics education. Both K-12 experience and expertise in the use of technology in education are highly desirable. Candidates must demonstrate potential and desire to do quality research, teaching, and service in an area related to mathematics education. Review of applications will begin January 10, 1996 and continue until a suitable candidate is appointed. Send a letter of application, transcripts (undergraduate and graduate), a vita, and three letters of reference to: **Mathematics Education Search Committee, Dept. of Mathematics, Virginia Tech, Blacksburg, VA 24061-0123.** Virginia Tech has a strong commitment to the principle of diversity and, in that spirit, seeks a broad spectrum of candidates including women, minorities, and people with disabilities. Individuals with disabilities desiring accommodations in the application process should notify Dr. Edward Green (e-mail: green@math.vt.edu), Mathematics Dept., 540-231-6536 (TDD/PC 1-800-828-1120 - Voice 1-800-828-1140) by the application deadline.

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY - COLLEGE OF EDUCATION - Mathematics Education - tenure track position in the Department of Teaching and Learning at Virginia Tech. The anticipated appointment is at the assistant professor or associate professor level. Close collaboration with the Department of Mathematics is expected, including teaching assignments and curriculum development. Date of appointment is August 15, 1996. Requirements include interest and expertise in K-12 education, teaching experience at the K-12 level, strong mathematics background, and doctorate in mathematics education. Experience and interest in technology are highly desirable. Candidates must demonstrate potential and desire to do quality research, teaching, and service in an area related to mathematics education. Review of applications will begin January 31, 1996, and continue until a suitable candidate is appointed. Send a letter of application, transcripts (undergraduate and graduate), a vita, and three letters of reference to: **Professor Wayne Worner, Dean, College of Education, Virginia Polytechnic Institute and State University, Blacksburg VA 24061-0317.** Virginia Polytechnic Institute and State University has a strong commitment to the principle of diversity and, in that spirit, seeks a broad spectrum of candidates including women, minorities, and people with disabilities. Individuals with disabilities desiring accommodations in the application process should notify: Dean Wayne Worner, College of Education, (540) 231-6426, by the application deadline.

WAYNE STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for a tenure-track position in computational mathematics at the rank of Assistant/Associate Professor. There is also the possibility of Visiting positions for 1996-97. Ph.D. in mathematics required. Excellence in research and teaching expected. Applications should include a signed, detailed vita, description of current research interests, and four letters of recommendation, including one letter addressing teaching credentials. Send materials to: **William S. Cohn, Chair, Department of Mathematics, Wayne State University, Detroit, MI 48202.** Wayne State University is an equal opportunity/affirmative action employer and applications from female and minority candidates are particularly encouraged.

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ASSOCIATION FOR WOMEN IN MATHEMATICS

1995/1996 MEMBERSHIP FORM

AWM's membership year is from October 1, 1995 to September 30, 1996. 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.**

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Home Phone: **Work Phone:**

E-mail:

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:			
Masters:			
Bachelors:			

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.**

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RETIRED or PART-TIME FACULTY MEMBERSHIP (circle one)..... $ 20 _____

STUDENT or UNEMPLOYED MEMBERSHIP (circle one)..... $ 10 _____

ALL FOREIGN MEMBERSHIPS (INCLUDING CANADA & MEXICO)....**FOR ADDITIONAL POSTAGE ADD** $ 8 _____
All payments must be in U.S. Funds using cash, U.S. Postal orders, or checks drawn on U.S. Banks.

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 RECEIVE TWO FREE JOB ADVERTISEMENTS (up to 8 lines) IN OUR NEWSLETTER PER YEAR. Ad deadlines are the 1st of every EVEN month. All institutions advertising in the *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]

TOTAL DUES ENCLOSED $ _____

J/F96

AWM

Newsletter Volume 26, Number 1, January–February 1996

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):
(Please Print)

Name_____

Address_____

_____

City_____State_____Zip_____-_____

Country (if applicable)_____E-mail Address_____

Position_____Institution/Org._____

Telephone: Home_____Work_____

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

MAIL TO:

Database Corrections
AWM
4114 Computer & Space Sciences Bldg., University of Maryland, College Park
Maryland 20742-2461

or E-MAIL:

awm@math.umd.edu

AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

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