AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

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PRESIDENT'S REPORT

The International Congress of Mathematicians at Zürich

The ICM was a great success for women mathematicians. Women were natural participants, with the first and the last days' mathematical proceedings opened by plenary lectures by Marina Ratner and Ingrid Daubechies, respectively. And what memorable jobs they did! Anyone still giving credence to the sexist slander that women's participation "lowers standards" saw it die then and there.

And there were eight more invited women speakers, outstanding mathematicians from different continents, not only talking about important results, but delivering some of the best talks of the Congress. And even some of the contributed papers by women were on results as remarkable as those of Krystyna Kuperberg (Auburn University) on aperiodic flows in 3-manifolds, whose poster attracted many internationally renowned topologists.

The Welcome Address at the Opening Ceremony by Henri Carnal, Chair of the Organizing Committee, included this quote on the long way we have come to reach ICM'94:

> [A] historical survey on the International Mathematical Congresses concerning the [Zürich] meeting of 1932 [says]: "In a country which at that time didn't allow women to vote, it was distinguished by the inclusion of a woman mathematician — Emmy Noether.... But the number of women who have been invited to speak at an international congress since Noether does not differ much from 0!" I am therefore happy to observe, not only that the number of plenary lectures by women will be this time greater than 0, and even greater than 1, but also that the highest federal and cantonal authorities are both represented here by women.

Women's representation was anything but mere protocol. In fact, the highlight of the non-mathematical program was the speech of Bundesrätin Ruth Dreifuss, who is, among other things, the Minister of Science in Switzerland's collective government. Imagine a top government officer talking about substantive science policy issues on which she has an informed opinion! [A slightly abridged version of her address appears on p. 15.]

IN THIS ISSUE

AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

The Association was founded in 1971 in Boston, MA. 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: 4,000.

There were many interesting mathematical events at ICM'94, starting with the awarding of four Field Medals and a Nevanlinna Prize. They went to Jean Bourgain (IAS, Princeton, and IHES, Bures-sur-Yvette) for his work in analysis, to Pierre-Louis Lions (Paris-Dauphine) for his in PDE, to Jean-Christophe Yoccoz (Paris-Sud) for his in dynamical systems, to Efim Zelmanov (University of Wisconsin and University of Chicago) for his in algebra, and to Avi Wigderson (Hebrew University of Jerusalem) for his on the mathematical foundations of computer science.

I am not going to engage here in a superficial description of the awardees' work when soon you will be able to read better summaries elsewhere. Let me just add that — being young by definition — at least two of the Field Medalists shared a problem with some other young couples at ICM'94: lack of available childcare. As a consequence, their mathematician wives were not able to attend the award ceremony!

There were many exciting lectures, many good moments, and, foremost, a large crowd of friends and colleagues from around the world. It was good to see how varied the faces and the minds of mathematicians really are.

AWM Activities at ICM'94: The Special Noether Lecture

This was the first time AWM participated mathematically in an International Congress, and we came in through the front door. It was achieved through joint effort with the CWM (Committee on Women of the Canadian Mathematical Society) and the EWM (European Women in Mathematics). This accomplishment points to the advantage international cooperation offers to us all.

The Special Noether Lecture was held at a large auditorium in the main building of ETH and, under the rubric "Women in Mathematics," appeared in the official ICM'94 program. But what made it an historical occasion was the lecture itself. It was a great honor for us, and a great satisfaction to all mathematicians present, to have the occasion to hear Ol'ga Ladyzhenskaya (Steklov Institute, St. Petersburg), one of the most eminent analysts alive, introduced by Jürgen Moser (ETH Zürich).

After a long, hot day of lectures from 9 A.M. to 6 P.M., Ladyzhenskaya drew an impressive crowd at 6:30 P.M. Many were curious to see such a legendary figure for the first time. Now there is little wonder why she is legendary. A small woman who commands instant respect and admiration, she happens to be as lovable as she is forceful. But her most outstanding trait is that she is a great mathematician.

We had asked her to present a "general lecture" addressed to a wide mathematical audience, and she complied beautifully. But at the end she sneaked in some of her latest results — obtained recently, after a long bout of poor health. What an example of endurance, of love of mathematics, of intellectual strength and of undisputable talent she gave to all!

And what a good way to remind so many people of the loss of so many years, of so many wasted opportunities to hear

mathematicians of the caliber of a Julia Robinson, just because they were of the "wrong" gender!

We have many people to thank for the extraordinary success of the Special Noether Lecture at ICM'94. First of all, Ladyzhenskaya herself, for her beautiful mathematics, for giving us the chance of meeting her in person and learning about her radiance first hand. But mostly for converting by her presence our invitation into a major event in the history of women's participation in the public life of our science.

We are deeply appreciative of the support received from Cathleen Morawetz (CIMS and President-Elect of AMS), who suggested the event and gave considerable help, from Jürgen Moser, who made it possible in more ways than one, from Henri Carnal (University of Bern), who, as Chair of the Congress's Organizing Committee, gave "Women in Mathematics" a place — both in print and in space. We thank Lev Kapitanski (Kansas State), who wrote the biography of Ladyzhenskaya that accompanied the abstract of the lecture and Viviane Baladi (ETH Zürich), who lent us her office to pile AWM boxes. The efficient assistance of Liselotte Karrer (ETH Zürich) is also gratefully acknowledged. Several AWM members were there to give a hand when it was much needed — thanks to them all.

The International Mathematical Union (IMU) is contemplating including non-IMU events during the evenings of subsequent Congresses. This Special Noether Lecture of ours serves as a model for such events. Together with our sister organizations, we will consider a lectures series featuring eminent women mathematicians from all over the world.

AWM Activities at ICM'94: The Panel

At Ladyzhenskaya's lecture the auditorium was crowded. I expected many people to leave during the break preceding the second part of the "Women in Mathematics" program — and some did. But others came in, and for the Panel Discussion with Women Mathematicians cosponsored by AWM, CWM and EWM we had an audience of more than 300 women and men. Among them were the first three presidents of AWM: Mary Gray, Alice Schafer and Lenore Blum.

Representatives of the inviting organizations opened the forum: Mary Gray (American University, U.S.A.) for AWM, Asia Ivić Weiss (York University, Canada) for CWM, and Marjatta Naatanen (Helsinki, Finland) for EWM. Marjatta presented striking statistics on the distribution of women mathematics professors in different European countries, raising the question of why women are so much better represented in academia in the Southern countries (including France) than in the Scandinavian and German-speaking countries. The rest of the panelists were Christine Bessenrodt (Magdeburg, Germany), Verena Huber-Dyson (retired philosophy, Calgary, Canada), Krystyna Kuperberg (Auburn University, U.S.A.), Lucy Moser-Jauslin (Bourgogne, France), Raman Parimala (Tata Institute, India), and Ana Maria Porto da Silva (Porto, Portugal). Cutting across generations and languages, some working far from their native countries, with wide-ranging personal experiences, their voices had originality and force. Their contributions will appear in this and subsequent issues of the *Newsletter*.

In particular, Lucy Moser pointed out the importance of childcare availability in explaining the large number of French women who engage in mathematics as a profession. That prompted a discussion on childcare and a suggestion from the floor on the need for childcare at long meetings like the ICM's.

There were several other interventions from the audience, including one from a man who identified himself as coming from Croatia and embarked into an impassioned attack against women seeking special privileges, such as "30% quotas in journal editorial boards." Many hands were raised, and Ingrid Daubechies got to answer him. As usual, she was as brilliant as she was sincere. So the Croatian man's intervention allowed more people to recognize that her brainpower is accompanied by a clear tongue.

For its part, EWM organized, jointly with the Committee on Women of the European Mathematical Society, a discussion on "Countries with very few women mathematicians (Germany, Switzerland, Scandinavian countries ...): What are the perspectives?" I was especially impressed by the expositions on the different ways the Federal government of Switzerland and some local German administrations are devising to support women's participation in science and mathematics. Sandra Hayes (American Technical University, Munich, Germany), Margrit Gaulhoffer (St. Gallen, Switzerland) and Sylvia Wyler (Law, ETH Zürich), gave interesting accounts from the perspectives of (mandated) women representatives at their faculties (Hayes and Gaulhoffer) and of a current delegate of

MEMBERSHIP AND NEWSLETTER INFORMATION

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All members except family members receive a subscription to the newsletter as a privilege of membership. Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for $40/year ($48 foreign). Back orders are $6/issue plus shipping/handling ($5 minimum per order).

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 Association Administrator, 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 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; email: leggett@math.luc.edu; FAX: (312) 508-3514. Send all material regarding **book reviews** to Cathy Kessel, 2520 Etna, Berkeley, CA 94704; email: kessel@soe.berkeley.edu. Send everything else, **including ads and address changes**, to Dawn V. Wheeler, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461; phone: (301) 405-7892; email: awm@math.umd.edu.

the Federal Equal Rights Office at ETHZ (Wyler). There is much variety in experimentation. A few experiences are appalling (some of the resorting to quotas could inspire the Croatian critic!). Others are original and viable (such as those similar to the project from the American Physical Society to increase the number of women colloquium speakers in this country). From the good to the bad, Americans and Canadians have a lot to learn from these European endeavors. And we are starting at it.

Again, none of what we did during the hot Zürich summer would have happened without the close collaboration with CWM and EWM. This was not a joint venture only by name. Eva Bayer (Dijon), our EWM counterpart, worked very closely with Asia Weiss and me. And, by being *there*, she became pivotal to the whole endeavor. It was her tact that made the local arrangements possible, her savvy that turned a project into a success. For all women in mathematics. Thank you again, Eva.

The U.S. Mathematical Community and Math International Affairs

This picks up from one of the sections in my July/August report. The story continues with an episode at the General Assembly of the International Mathematical Union (IMU) in Lucerne, immediately before the ICM at Zürich.

You remember what went before. In April 1993, the U.S. National Committee on Mathematics (USNCM) was dissolved, unilaterally and without consultation, by the BMS (a board dependent on the National Academy of Sciences). Discussions are still reverberating, the AMS has yet to produce suggestions for an alternative model of USNCM — and in the meantime the BMS, having constituted itself as the USNCM, selected the U.S. Delegation to the IMU General Assembly and undertook to give it administrative support for its appearance in Lucerne at the end of July. The kind of support it gave, if we were living in the so-called Corporate World, would be enough to get BMS fired from the assignment.

First, there were the deadlines. The U.S. Delegation considered the need to bring important issues to the international forum, including the need for enhanced participation of women and non-White men in ICM activities, and a greater focus on applications of mathematics as well as on mathematics' role in society. Unfortunately, the issues the U.S. Delegation deemed relevant did not make the agenda of IMU General Assembly. They were not

submitted in time, apparently due to personnel changes at the USNCM (= BMS).

Then, there was the wording of the proposed resolutions. The intent was to introduce a resolution on including women and non-Whites, but the phrase "ethnic groups" was used for the latter. This did not sit well with the European and African delegates.

The reference to "ethnic groups" was dropped. Still the U.S. Delegation had an important proposal for consideration by the General Assembly. It called for increased representation of women in the planning committee as well as among invited speakers for ICM'98. No minor matter, as Carnal remarked so pointedly at the opening ceremony of ICM'94!

The problem then was that the U.S. Delegation had not discussed the matter with the other fifty plus national delegations. No lobbying, no support. And still a vote was needed just to get the resolution considered. In the midst of all this, a senior woman mathematician (one of the few women among the 150 present counting delegates and observers) stood up to oppose "discrimination in favor of women." The unprepared delegates did not respond. Quickly, the group voted not to vote on the issue. In view of the history, this is a serious setback.

Let me remind you of the facts. There had been no plenary speakers for almost fifty years, since Emmy Noether went to Zürich in 1932, and no invited speakers, once again, at ICM'78 in Helsinki. So, then and there a group of more than 500 women and men met to publicly protest such systematic exclusion of women. This protest produced results: there were women invited speakers at the next Congress, in Warsaw. But, as that ICM met a year later than normal, due to the imposition of martial law in Poland, attendance was sparse and there was no reminder to IMU about women. And *no women were on the original list of speakers invited to talk at Berkeley in 1986*! Protests abounded there, including Marina Ratner's refusal to attend such an exclusionary Congress. Protests being good reminders, the ICM'90 at Kyoto had the second woman plenary speaker in IMU's history, Karen Uhlenbeck. *And* the IMU General Assembly meeting at Kobe passed a resolution to take into account that many qualified women were available as speakers for ICM'94. Which brought us the unprecedented number of ten invited speakers, two of them plenary!

At every International Congress which was not preceded by an explicit reminder, women have been excluded.

But time has not passed in vain, and AWM, together with our sister associations, will remind IMU of the existence of women mathematicians on this earth. We will seek, and surely obtain, the support of American professional organizations to secure the presence of women not only in the speaker lists but in the selecting committees (and to lift the "less than or equal one woman per section" quota of ICM'94!). So, there will be no excuses for bad memory in the preparation of ICM'98 in Berlin.

Still, there are lessons to be learned. The Chair of the U.S. Delegation had a rough time at Lucerne and learned from it. Back in the States he wrote to IMU, asking its Executive Committee to bring the Kobe resolution to the attention of the new Program Committee. We are happy he did that. Not only does it blend with what we plan to do ourselves, it shows he cares about the issues and feels responsible. *That* is important. The rest of the community has to feel responsible too.

To be real participants in international mathematics, we have to do more than prove our theorems and show up at meetings. For starters, we should be in touch with the American IMU officers. [David Mumford (Harvard) was elected IMU President at Lucerne.] Then, we should be able to establish a constructive dialogue with mathematicians from around the world, to understand them and to make ourselves understood. A U.S. delegation capable of real dialogue must consist of mathematicians genuinely interested in international activities, open to learning something new from the dialogue — *and* accepting accountability to its U.S. constituency.

Together, we should build on the positive experiences of ICM'94. We should continue to accept nothing less than the full participation of *all* mathematicians in the public life of mathematics.

AWM at the Mathfest

Our participation at the August Mathfest was somewhat curtailed because it was held so soon after the ICM. As decided the previous Summer in Vancouver, we had neither Executive Committee nor Membership meetings in Minneapolis. Nonetheless we held some of our regular events.

There was an exceptional panel session, "Celebrating women's achievements in algebra, analysis, combinatorics and geometry: Past, present, future." Organized by Joan Hutchison, it was well attended and well received (see page 11 for her report).

Since the Schafer Prize alternates between the Mathfest and SIAM's Summer Meeting, this year we did not present an award of our own at the Mathfest opening banquet. So we just enjoyed ourselves. No excruciating selection process, but the celebration of Joan Hutchinson's receipt of MAA's Allendoerfer Award "for exceptional expository excellence in *Mathematics Magazine*." Congratulations, Joan!

Marian Pour-El graciously hosted our party, the traditional gathering of AWM members and supporters. We thank her for being AWM's presence among our friends.

Dawn Wheeler held down the fort at the AWM table in the exhibit area. And continued to make friends — for herself and for AWM — as she does everywhere she goes.

Remembering the beautiful experiences at Vancouver in 1993, it was my loss not to have been able to attend the 1994 Mathfest. We all hope to be there with full AWM participation in Burlington next Summer!

Birthday Celebrations for Dirk Struik!

Professor Dirk Struik (emeritus MIT), well-known even to younger generations of mathematicians through his books on geometry and on history of mathematics, turns 100 years on 30 September. His vitality is a joy. Through his lectures (he spoke at the AMS celebration of its 100th meeting last January) and his writings (he just completed a biography of his wife, the mathematician Ruth Ramler Struik), Struik continues to inspire us all.

His birthday will be celebrated with several parties and conferences, both in his native Netherlands and in the U.S. AWM will happily attend some of the celebrations, including the one taking place on his actual birthday at Brown University, where Professor Struik's library on history of mathematics will be located.

We wish our admired and respected friend all the best in the new century of his life!

AWM: Why Do We Need It Now?

This will be the title of the panel we are organizing for the first day of the Joint Mathematics Meeting in San Francisco. Panelists will be asked to address some of the problems currently faced by women in mathematics. They include disparity in the academic workplace — in tenure and promotion, in biased teaching evaluations, in extra loads of committee work, in routine assignations of work carrying heavy commitment and little reward — and disparity in professional activities — scarcity of women among editors of journals, among principal investigators on research grants, among invited speakers at meetings and special sessions, among conference organizers.

And there is an "infrastructure" question that is raised time and again: the need for childcare provisions — for special events like summer courses and conferences, as well as for academic year facilities on campuses.

Some people believe that the gains made by women in the past twenty years are so important as to make the need for especial attention unnecessary. The gains are real, and we are collectively proud of them. And aware of the struggle it took to get to where we are now. But the story of women's participation — from International Congresses of Mathematicians down — supports the impression that much is to be done to secure even these gains, let alone to reach for more.

We invite your ideas for this discussion. In person, if you can be in San Francisco on Wednesday, January 4, 1995. In writing, before and after the event. We need to build AWM's agenda for the next few years.

What is to be done next? This cannot be decided by one person or by a small group of people. To be effective the answer has to be formulated collectively, as a consensus on our needs. Only in this way will we reach together the equality we seek for women in mathematics.

Cora Sadosky
Washington, DC
26 September, 1994

HAVE YOU PAID YOUR DUES??

AMS ELECTION

Joseph B. Keller, Stanford University

Two major problems facing the mathematical community are the shortage of jobs and the shortage of research funds. Both of them can be solved in part by going outside the traditional sources of jobs and funds. New sources may be found in the private sector of the economy where mathematics is used. An example is the field of finance, which now employs many mathematicians with Ph.D.'s and which abounds with difficult problems. The AMS should encourage and help the mathematical community to develop contacts in other areas. Only the successful applications of mathematics will make jobs and funds become available.

IN MEMORIAM

Cecylia (Inka) Rauszer, Professor of Mathematics at Warsaw University, died on May 13, 1994, after a long illness. Rauszer worked at Warsaw University for 30 years, starting as an Assistant in 1964. She obtained her Ph.D. in 1971 under the supervision of Helena Rasiowa and her D.Sc. (*habilitation*) in 1977, both in Warsaw. She contributed to algebraic logic, modal logic, constructive logic, and mathematical foundations of computer science. Rauszer was active in the Polish Mathematical Society, as a Secretary and as the President of its Warsaw chapter. She was on the editorial board of *Studia Logica* and the *Journal of Non-Classical Logic*.

Helena Rasiowa died on August 9, 1994. Born on June 20, 1917, she studied at the University of Warsaw and received her Ph.D. degree under the supervision of Andrzej Mostowski in 1950. She held academic positions at the University of Warsaw from 1945 until 1992, including three terms of service as Dean of the Faculty of Mathematics. She authored more than 100 papers in mathematical logic as well as several books, including *The Mathematics of Metamathematics* (written with Roman Sikorski). She received numerous honors and awards, including the Sierpinski medal, the title of Honorary Member of the Polish Mathematical Society, the Stefan Mazurkiewicz Award of the Polish Mathematical Society, and the First Class State Science Award in Mathematics. She served as President of the Warsaw Division of the Polish Mathematical Society and as Assessor of the Division of Logic, Methodology, and Philosophy of Science of the International Union of History and Philosophy of Science. She served the Association for Symbolic Logic as a member of its Committee on Logic in Europe and as a member of the Council.

AWARDS AND HONORS

CONGRATULATIONS to the women listed below for their meritorious achievements.

ANNE PENFOLD STREET (University of Queensland) and MARTA SVED (University of Adelaide) received 1994 Bernhard H. Neumann Awards for Excellence in Mathematics Enrichment.

AAUW awards 50 dissertation fellowships of $14,500 annually to women graduate students who are completing the writing of their doctoral dissertations. Among the award winners this year are two women in the mathematical sciences: HEATHER JOHNSTON, working on a doctorate in mathematics at the University of Chicago, and KAREN BELL, working on a doctorate in mathematics education at Boston College.

LJLJANA BRANKOVIC was awarded the B.H. Neumann Prize for the best student paper delivered at the 30th Annual Conference of the Australian Mathematical Society at the University of New England, Armidale, New South Wales, July 1994.

BELINDA BARNES was awarded the T.M. Cherry Prize for the best student paper delivered at the ANZIAM (Applied Mathematics) Conference at Pokolbin, New South Wales, February 1994.

A colloquium in honor the 60th birthday of Professor SYBILLA PRIESS-KRAMPE will be held at the Faculty of Mathematics of the Ludwig-Maximilians-Universität, Munich, November 1994.

reprinted from the Association for Symbolic Logic Newsletter

SUSAN APPLEBY was awarded one of three prizes donated by Springer-Verlag for the best postgraduate student lectures at the British Applied Mathematics Colloquium at Strathclyde University, April 1993, for her lecture "Variational principles applied to porous solids." REBECCA HOYLE also received one of the prizes for her lecture "Long wavelength phase instabilities of standing square and alternating rolls."

BARBARA ANN BAILAR received the 1993 Julius Shiskin Award for outstanding achievement in economic statistics.

EILEEN POIANI was honored for her outstanding contributions to Pi Mu Epsilon at its national meeting in Vancouver, British Columbia on August 18, 1993. At the Pi Mu Epsilon banquet Dr. Poiani was presented a plaque by Robert Eslinger, president of Pi Mu Epsilon, who read the following citation:

> It is with great appreciation and admiration that we recognize Eileen Poiani for her outstanding service to Pi Mu Epsilon. Eileen has served on the Pi Mu Epsilon Council for twenty-one years. After having been elected for an unprecedented four consecutive three-year terms as Councilor beginning in 1972, Eileen was elected President-Elect in 1984. While serving as Pi Mu Epsilon's first woman president from 1987 to 1990, she led the society through the celebration of its 75th anniversary. During her tenure on the Council she personally installed over twenty chapters of Pi Mu Epsilon on college and university campuses across the United States.
>
> Eileen Poiani's service to the mathematical community extends far beyond Pi Mu Epsilon. Having been on the faculty at St. Peter's College since 1967, she currently holds the rank of Professor of Mathematics and serves as Assistant to the President for Planning. She is active in the Mathematical Association of America, having served as Governor of the New Jersey Section in addition to leadership roles on numerous committees. She has a passionate interest in promoting the status of women and minorities in mathematics.
>
> On July 1, 1993, Eileen retired as Past President of Pi Mu Epsilon. Although she will continue to promote Pi Mu Epsilon's goal of mathematical scholarship among undergraduate and beginning graduate students, her presence and leadership on the Council will be sorely missed. So we honor her today with this plaque as a small token of our appreciation for her dedicated service to Pi Mu Epsilon.

PATRICIA E. BAUMAN was awarded an AMS Centennial Fellowship for 1994–1995.

MARINA RATNER received a 1993 Ostrowski Prize in Basel, Switzerland, July 1994.

ELIZABETH ALISON THOMPSON delivered the R.A. Fisher Lecture at the Joint Statistics Meetings in Toronto, Ontario, on "Likelihood in genetic linkage analysis: from Fisher to Future," August 1994.

CHERYL ELISABETH PRAEGER received the degree of Doctor of Science (Mathematics) *honoris causa* of the Prince of Songkla University from HM King Bhumipol Adulyadej of Thailand, September 1993.

MAUREEN EDWARDS was awarded the B.H. Neumann Prize for the best student paper delivered at the Annual Conference of the Australian Mathematical Society at the University of Wollongong, July 1993.

SUSAN PITTS was awarded the 1993 Research Prize of the Royal Statistical Society.

ROBBIN NICOLE CHAPMAN, computer science; FRANCES YVONNE JACKSON, mathematics; and MARIA CRISTINA VILLALOBOS, applied mathematics, have received Ford Foundation Pre-Doctoral Fellowships for Minorities for study at MIT, Cal Tech and Rice, respectively. The fellowships will provide funds for stipends and tuition for three years. The program, administered by the National Research Council, seeks to increase the presence of underrepresented minority groups on the nation's college and university faculties.

POSTDOCS FOR MINORITIES

The National Research Council plans to award about twenty Ford Foundation Postdoctoral Fellowships for Minorities in a program designed to provide opportunities for continued education and experience in research for Native American Indians, Alaskan Natives (Eskimo or Aleut), Black/African Americans, Mexican Americans/Chicanas, Native Pacific Islanders (Micronesians or Polynesians), and Puerto Ricans. Fellows will be selected from among scientists, engineers, and scholars in the

humanities who show greatest promise of future achievement in academic research and scholarship in higher education. The Ford Foundation wishes to help the Fellows achieve greater recognition in their respective fields and develop the professional associations that will make them more effective and productive in academic employment.

U.S. citizens who are members of one of the designated minority groups, who are preparing for or are already engaged in college or university teaching, and who have held the Ph.D. or Sc.D. degree for not more than seven years may apply for a fellowship of one year's duration. Tenure of a fellowship provides postdoctoral research experience at an appropriate not-for-profit institution of higher education or research of the Fellow's choice. Appropriate institutions include universities, museums, libraries, government or national laboratories, privately sponsored not-for-profit institutes, government chartered not-for-profit research organizations, and centers for advanced study.

The deadline for submission of applications is **January 6, 1995**. For more information, contact: Fellowship Office, National Research Council, 2101 Constitution Avenue, Washington, DC 20418; (202) 334-2860; infofell@nas.edu.

AMS SPECIAL SESSIONS

In the best of all possible worlds, the percentage of women and minority speakers in AMS Special Sessions would be much higher than it is at most meetings. Sessions organized by women have a much higher percentage of women speakers, by and large. We would like to encourage you to help increase this percentage. New sessions are announced in each issue of the AMS *Notices* in the section "Invited Addresses, Special Sessions, and Contributed Papers." This section also has information about all upcoming meetings, including deadlines both for proposals for sessions and for consideration as speakers. The January 1994 issue contains general information for organizers and proposers.

We cannot be shy about putting this information to use. You do not have to be mighty and powerful to organize a special session for a sectional or national meeting. I have known untenured assistant professors who have run highly successful special sessions. What you need is a good idea and some thoughts on who to invite. Writing a proposal for a special session is not an arduous task. "Rules for Special Sessions," available from the meetings department or any associate secretary, will give you the details.

Many of the speakers in special sessions have been invited by the organizers, but any member of the AMS is free to submit an abstract for consideration. We encourage you to do so. The organizers may have overlooked you or may not be aware of your work; bring yourself to their attention!

Anne Leggett, Newsletter Editor

CHANGES IN AP CALCULUS EXAMS

It has been announced that graphing calculators will be required for Advanced Placement exams in calculus. This requirement raises both gender and equity issues. Young women may be placed at a disadvantage if they are less at ease with the technology than the young men. Also, although some promise of providing free calculators to schools has been made, students from poorer school districts or homes may not have as much chance to become comfortable with these calculators. Furthermore, as of September, high school teachers had been given no suggestions on how to integrate the use of graphing calculators into the curriculum.

We hope to present some reactions from high school teachers to this change in a future issue of the *Newsletter*, so please send them to us.

CORRECTIONS

Last issue on page two, Mt. Holyoke was omitted from the list of sister campuses of the Mills Consortium.

On page three, Rebekka Struik's mother's birth name should be Ramler, not Ramier.

MENTORING PROJECT

The Mentoring Program for Women Mathematicians took place at the Institute for Advanced Study in Princeton between May 16 and May 26. Sixteen young women mathematics students formally attended the program; however, many area mathematicians, mathematics students and a few physicists participated in various events. 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. This year the main program will be held in Park City from July 10 to July 30, and the subject of the graduate school courses will be "Gauge Theory and the Topology of Four Manifolds." The program was organized by Chuu-Lian Terng, Professor at Northeastern University and President-Elect of AWM and Karen Uhlenbeck, Professor of Mathematics at the University of Texas and Research Director of the Summer Mathematics Program.

The core of the program consisted of two courses of eight lectures each given in the morning. Chuu-Lian Terng, with the help of Nancy Hingston, gave a course on constant mean curvature surfaces which was designed to introduce basic concepts in geometry to the less advanced students, but which also made contact with recent research on moduli spaces of immersed constant curvature surfaces in R^3. Dominic Joyce gave a special lecture on his recent work on manifolds which admit G_2 holonomy. As part of the series, I. Gelfand from Rutgers University gave a talk on integrable systems in which he demonstrated his special seminar style in person. The second series of lectures was given by Karen Uhlenbeck with the help of George Daskalapolous. These lectures on gauge field theory were intended to present the essential ideas and intuition behind the subject of the summer school. The last lecture of the series was given by Ed Witten, a permanent member at the institute, who gave a particularly interesting and comprehensible lecture on how gauge theory is used in classical (as opposed to quantum) physics to a very enthusiastic audience.

Afternoons were divided among working on the problems which the lecturers contributed, attending group sessions on subjects of interest to a group of students (equivariant gauge theory, symplectic geometry, algebraic geometry and surface geometry were the sessions I was aware of), and one-on-one tutoring sessions with the lecturers and mentors. Key people in assisting the students at these sessions were Lisa Fastenberg (a student who had attended the program last year in algebraic geometry and who returned this year), Nancy Hingston, Lisa Jeffrey and Jaye Talvacchia. Each afternoon there was a colloquium style lecture by a senior woman mathematician from the area, who spent some time that day in the afternoon and evening with the other participants. These talks were given by Nancy Hingston, Jean Taylor, Lisa Jeffrey, Dusa McDuff, Lesley Sibner, Tilla Weinstein and Linda Keen. The program had one special event. Pam Davis, an artist who is doing a multi-media project on women in science, attended, described her work and took many photographs.

One of the key features of the program was that the mentoring program took place as a mathematical event at the Institute for Advanced Study. Many of the members, as well as students and faculty from area universities and colleges, either attended the lectures or shared a lunch table with the participants. While all the women involved enjoyed the opportunity to carry on the activities of mathematical life in an environment in which women were well represented, there was a noticeable blending of the program into the usual primarily male mathematical fraternization which always takes place at the Institute. Many of the senior participants took what spare time they had to talk to coworkers, and the more advanced graduate students were clearly out to get somewhere on their theses.

I am not the one to say whether this influx of women students into the hallowed halls of the Institute for Advanced Study was a disruption. I received more comments from mathematicians on the students' youth and enthusiasm than on their sex, many of the women in a great variety of roles and positions at the institute were openly welcoming, and we were told with open envy that such a program would not be possible in physics because there were so few women students. Of course, Paramount Pictures was making a film about Einstein on the Institute grounds while we were there, and it may have been that this real distraction upstaged the mentoring program.

The two stated goals of the program are to increase the number of women who apply and attend the Park City Summer School and to increase the number of women pursuing research and

Karen Uhlenbeck, University of Texas

leadership roles in the mathematics community. The first goal has been achieved, and it will take a number of years to assess the results as they relate to the second. There are a few anecdotal comments to be made concerning the outcome. A number of observers commented that the students were very serious and earnest in their mathematical pursuits, and the students themselves remarked on this as well. This clearly comes from a number of sources. The students themselves come from situations where there are few if any other women students to work with in their field. Professors like myself teach in an environment in which students of any sex with the determination and enthusiasm of these young women are hard to find. Outsiders may truly expect women not to be serious, and practically everyone seems to think that if a program has the word "mentoring" in its title, it must somehow be remedial and/or not serious science. I hope that this program has made a contribution towards changing all our expectations.

A mentoring program for women in algebraic geometry with similar goals took place last year at MSRI in Berkeley, although the structure was slightly different. More junior mentors were available as the previous year had been a special year in algebraic geometry at MSRI. There are plans to continue this as a yearly event with adjustments for variations in the field of the Park City/IAS Summer School and the programs at the Institute for Advanced Study. The program for next year is "Non-linear wave phenomena," and the details of the mentoring program are available now.

AWM PANEL AT MATHFEST

"Celebrating women's achievements in algebra, analysis, combinatorics, and geometry: past, present, and future"

A summary report of the AWM panel, held Monday, August 15, 1994, at the AMS/MAA Summer Mathfest at the University of Minnesota, Minneapolis, Minn.

To continue in the AWM tradition of celebrating the many contributions of women to mathematics, four panelists were invited to spend some time this summer thinking, reading, and then talking about women, other than themselves, who have been or are now notable in their particular field. Besides focusing on mathematical achievements, we found it interesting to consider different sorts of contributions that these women make. In addition, we hoped to show a part of the picture of women in a variety of fields so that current students and new members of the mathematical community could learn of the presence (or absence) of women and the related possibilities for collaboration and mentoring.

Marie Vitulli of the University of Oregon looked at original work and contemporary accounts of Charlotte Angas Scott and of Augusta Ada Lovelace. Scott worked in algebro-geometric singularity theory in the late 1800's and early 1900's, writing two books and more than 20 research articles; in addition, she was a founding member of the AMS and an early co-editor of the *American Journal of Mathematics*. She was chair of the Mathematics Department at Bryn Mawr College for many years and was the advisor of seven (female) Ph.D. students, all of whom had productive mathematical careers. Lovelace, daughter of Lord Byron and a member of the British upper class, lived from 1815 to 1852 and dabbled in mathematics as an amateur. Lovelace's work has not been recognized until recently though she was arguably the first person to write a computer program. She translated an article by the Italian engineer and mathematician, Menabrea, on Babbage's analytical machine and added commentary, figures, examples, and speculation about uses of the machines. Although this commentary appeared in a professional journal, only her initials accompanied the article.

Doris Schattschneider of Moravian College spoke about the diverse work of Marjorie Senechal of Smith College. Although Senechal did her graduate research in number theory, her major contributions have since been in areas of discrete geometry, including tilings of the plane and other surfaces and in mathematical crystallography. Equally significant are her inventive teaching, her extensive expository writing (including a current book on quasicrystals that is accessible to beginners and practitioners in many fields), and her running of creative workshops. For example, in the summer of 1993 Schattschneider worked with Senechal, who directed the Regional Geometry Institute at Smith College on discrete and computational geometry with a program that successfully integrated

Joan P. Hutchinson, Macalester College, organizer

undergraduate and graduate students, high school teachers, and researchers at all levels.

Unfortunately, at the last moment, Jane Gilman of Rutgers University–Newark was unable to attend the panel discussion, but she emailed in a summary of her intended presentation, which was read during the panel. Choosing women in geometry and topology, she portrayed the recent work of Joan Berman and of Linda Keen, both of whose productive careers have spanned more than 25 years and both of whom are currently doing some of their most deep and important research. She raised the fact, as had Doris, that women's careers often follow different patterns — does this mean that women's resumés should be read differently than men's? Jane also called attention to the recent work of Harumi Tanigawa whose work in Teichmüller space theory and in the intersection of dynamical systems, low-dimensional topology, and complex analysis points toward the future of these fields.

Karen Saxe of Macalester College presented some statistics gathered from looking at journal submissions in her field, analysis. She found that of names recognizably male or female (between 53 and 66%), between 3.8 and 6.2% of the authors were female mathematicians. By contrast, in the *Journal of Undergraduate Mathematics*, of the 95% recognizable names, 33.5% of the papers were women's. I presented some statistics from combinatorics and graph theory. For example, in the Institute of Combinatorics and its Applications, 16.5% of the executive committee, 17.2% of the members of council, and 14.8% of the institute members are women. At the 1994 25th Southeastern International Conference on Combinatorics, Graph Theory, and Computing, 15.4% of the hour speakers and 19.8% (counting multiplicities) of the paper authors were women. I also mentioned the examples of the 1993 Combinatorial Mathematics and Computing Conference at the University of Manitoba and the Special Session on Discrete Mathematics at the 1994 summer meeting of the Canadian Mathematics Society where, respectively, seven out of seven and six out of nine invited speakers were women. And I spoke on the impressive work of Cheryl Praeger of Western Australian University in group theory and applications to combinatorics and in national and international administrative work.

The panel finished with lively discussion among and questions from the audience. All of us on the panel wish to thank the AWM for their support of and encouragement for our presentation.

IQ

The National Council for Research on Women announces a new popular-format quarterly, *IQ*, a resource for information affecting the lives of women and girls. Aimed at a wide readership, *IQ* will serve as a forum in print for linking research, policy, and practice, with the goal of expanding cross-sector networks and encouraging cross-sector dialogue and exchange. Audiences include educators, funders, researchers, media, policy experts, activists — anyone who understands the importance of readable, quick access to cutting-edge scholarship, policy analysis, and effective practice.

Each issue will have a core theme (the first focuses on the upsurge in sexual harassment among children and teenagers) and will feature a lead article that is expanded by Perspectives, interviews with key researchers, policy specialists, and practitioners. Other regular features include Key Tips and Findings, IQ Eye Openers, Policy in Action, Resource Organizations, and a Book Shelf that lists all reports and studies cited in the issue.

All *IQ* subscribers are enrolled as Council Affiliates, receive discounts on Council publications, and have the opportunity to be listed in (and receive a free copy of) *Who's Where and Doing What*, the Council's multi-indexed directory of Affiliates and Member Centers. For more information, call (212) 274-0730, fax (212) 274-0821, or write to 530 Broadway, 10th Floor, New York, NY 10012.

MATH/SCIENCE NETWORK

The Math/Science Network is a non-profit membership organization of educators, scientists, mathematicians, parents, community leaders, and government and corporate representatives whose mission is to promote the continuing advancement in mathematics and science education of all people, with a particular emphasis on the needs of women and girls. Its major goal is to increase the participation, retention and advancement of girls and women in mathematics, science and technology. To join or for more information, contact: Math/Science Network, Mills College, 5000 MacArthur, Oakland, CA 94613; (510) 430-2222.

WOMEN INFLUENCING WASHINGTON: MAKING YOUR VOICE HEARD

How often have we all said "I'm just one person; what I say doesn't matter"? After spending a year working in a Congressional office, I know this is not true; one person can make a difference, and you can be that person.

Wielding influence in the political world, the world that allocates funding for science and provides support for equity for historically excluded groups, is a skill that all scientists, especially female scientists, should learn. The gains in access to jobs, or promotion to higher positions, or closing the wage gap between women and men, or family leave, or a host of other gains that benefit women scientists would not have been realized without people making their voices heard in the most powerful offices in the land. Unfortunately, influencing people is not a skill we are taught as scientists. We are taught from the start that truth will reveal itself if we dig deeply and cleverly enough, and we are assured that once this truth is recognized, it will join all those other truths that stand as scientific knowledge. We influence by the truth of our assertions.

But most of the world does not operate this way. The majority of issues which require decisions are not black and white and have associated with them no such "truth". There is only a relative value, a point of view, or the coercive power of a proponent. Decisions are made on cost-benefit analysis, and no one has an exclusive right to define cost and benefit; it's all in your point of view.

What follows is a practical How-To Guide for communicating with the people who make the decisions. The guide is focused on lobbying a Congresswoman, but with minor adjustments, is appropriate for lobbying any seat of power.

Why would you lobby?

Lobbying is just another name for communicating your point of view. There are many reasons for you to communicate with members of Congress or your state legislature or federal agencies. These people may, in fact, be very concerned about the issue that concerns you, but they may not have the time to investigate it. Or they may not yet be aware that the issue exists, but would be concerned if they knew. Or they may not understand why the issue should be important to them. You, as a lobbyist, can provide the background, or the specifics, or the motivation to become involved.

Can I do it?

Providing information is simple; it is what many of us do as a major part of our job. While the parameters may be somewhat different when dealing with a legislator, the basic principles are the same. Remember that your legislator is knowledgeable, but probably not a scientist. You must communicate at a level that the general public could comprehend. For not only must you make your position comprehensible to your Congresswoman, but then she must be able to defend it to other representatives and to her constituency. Try to present your position in a way that is easily restated to the world at large, because that is what your Representative must do.

How do you start?

1) Make an initial contact with the office you want to lobby. Introduce yourself, using your professional title and the fact that you are a voting constituent, if appropriate. This can be done by phone or by mail. Raise the issue you are concerned with and ask for support for your position.

2) If you get a response of support, request some specific action. This could range from a vote on a piece of legislation, to supporting a bill in process, to a statement to the media, to an appearance at a professional meeting. If you are told that such things have already been done, ask the office to send you all the pertinent information so you can publicize it within your own professional circles. Then thank the person for the support.

3) If you get a response of no support, try to determine what motivated this stance. At this point, you will want to be in phone contact with the office,

by Laurie A. Fathe, Assistant Professor of Physics at Occidental College and former APS Congressional Science Fellow
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and building a working relationship with the staffer who deals with the issue. Once you've done your advance work, request a meeting with the Representative and your contact staff person. Don't be disappointed if you meet only with the staff person; they are the representative's eyes and ears.

Orchestrating an effective meeting

1) Do your homework! There is no more important element for a successful meeting than being prepared. Know your issue inside out, and discover as much as you can about your representative's position.

2) Be prompt and be brief. A representative has an insanely busy schedule, and many staffers routinely put in 60 hour weeks. You will go far to enhance your position if you develop a five minute presentation and a one-page fact sheet. Bring along support material which provides greater detail, but be ready to make your case in a minimum of words.

3) Listen as well as talk. Often the person you are meeting with will give you clues about what her concerns are. If you are good at thinking on your feet, you might try to reframe your issue within the framework of the representative's concerns. Otherwise listen attentively, take notes, and formulate your response after the meeting.

4) Follow up after the meeting with two letters: one to the representative (even if she wasn't at the meeting) and one to the staff person. Thank them for their time, and restate your position. If you are getting support or help from this office, thank them and express your hope for continued backing for this issue. If the office is not supporting your position, try reframing your argument in light of what you learned at the meeting.

Maintaining a relationship

1) You have now generated a contact in an office where you can have influence. Whether or not you received support for this particular issue, if you have conducted yourself professionally, you are now known and respected.

2) Keep the staff person informed about the original issue. If some portion of the issue changes or new information becomes available, let the office know. Once you have a reputation established, you may even find the staff person calling you for information.

3) Inform your staff contact when new issues arise. With the volume of paper that crosses a congressional staffer's desk, only issues of "importance" get any focus. You can provide the motivation for promoting an issue from "bypass" to "important" status.

4) If your Congresswoman is on a committee that deals with relevant issues, try to keep informed on the committee's work. The staff person can be very helpful here, as can electronic access.

5) Send your Congresswoman and your staff contact a resumé and an offer to testify at hearings, if you are comfortable doing so. There is always a need for informed voices in Washington, and every Congresswoman likes to have someone from home on stage.

Things to remember

1) Merely writing a letter is a powerful act. The standard assumption in Washington is that for every person who writes a letter on an issue, there are 100 people who are concerned but will not write. Thus a single letter has an impact, but ten letters from constituents signals a ground swell of concern. This is where local and national professional organizations can be very effective. If you do not know what to write about, contact your professional organization (CSWP, APS, AWIS, AWM, AAUW, SWE, etc.) and ask what issues currently need support — they'll be thrilled to hear from you.

2) Use your organizational and professional ties as leverage. If you can show that you represent the views of the APS or any other organization, and then cite the number of members who reside in this Congressional district, you have just multiplied your influence. Even if you can't give local membership numbers, national numbers carry weight. Saying that there are 42,000 APS members nationwide shows the strength of the organization, and your activism shows that this group knows how to wield power.

3) Remember your friends. Write a short article in your professional organization's newsletter citing the support you received from your Congresswoman. Try to get a quote to use in the article. Be certain to send a copy to the Representative after it is published. Invite your representative to high profile gatherings — remember, these people need publicity to get reelected, and you would like your friends reelected.

4) The Internet is one of the most powerful tools you have. If you have never done so, take a few hours to explore the world with Gopher. For

lobbying purposes, you want to look at the House and Senate Gophers, federal agency gophers (NSF, NASA, ...), and perhaps a professional organization's site. More and more information is accessible electronically, and you can have it in the comfort of your own computer. There are even e-mail addresses for some representatives now; e-mail to congress@hr.house.gov for more information or find it in the House gopher.

5) As the commercial says: Just do it! Whether you write, call, schedule a meeting, or send e-mail is not as important as the fact that you have given input into the policy process. Everyone starts somewhere, and most people may never do more than sending a letter. If you do that much, you have made an important contribution.

Final thoughts

The world of science, exemplified by the lone researcher in her lab, removed from the world, is long gone, if it ever was anything more than a fantasy. Some may mourn the passing of this world, and the need to master new skills to survive in today's climate. But if learning to lobby is the price we have to pay for progress, it is a small cost for the phenomenal gains we can realize. There will always be a need to change, to progress and to grow, and overcoming the inertia of the entrenched system requires concerted effort. But progress most often comes not in the form of revolution, but evolution, with small, seemingly insignificant steps adding up to a concrete whole. Each small step you take moves us all forward; one person can make a difference, and that person can be you.

OPENING SPEECH AT ICM'94

A hundred years ago, in 1897, the first International Congress of Mathematicians was held in Zürich. In 1932, the Congress met in Switzerland for the second time. On that occasion, the Fields Medal was introduced as your Nobel Prize equivalent. Today, our country hosts your congress for the third time. No other country has been honored in such a way by your scientific community, and I am sure that the "genius loci" will show his gratitude for your fidelity and ensure the success of your work.

I feel personally very honored to open your Congress. It's a rare opportunity to host the world's leading masters of this art and to come into contact with their scientific debate.

If the subject of your congress was cancer research or modern history, for a lay person it would be simpler to understand what the discussion is about. In contrast, mathematics at first sight seems to be an abstract tool for its own purpose or an exclusive art.

Two years ago, in Rio de Janeiro, under the sponsorship of UNESCO, "World Mathematical Year 2000" was launched. On that occasion, the International Mathematical Union defined a vision for mathematics which stresses the relationship between science and society. The Declaration of Rio de Janeiro states that "pure and applied mathematics are one of the main keys to understanding the world and its development." I am sure that society needs these keys.

But since I am not a mathematician myself, I wonder what doors they open and what society will find behind them. Therefore I would like to learn from you how mathematicians view their role in society. With the relationship between science and society in mind, I sent three questions to over a dozen of the world's most eminent mathematicians....

The first question concerns pure mathematics. Pure mathematics seems to function within a realm of complete independence. Its results have their purpose not in their usefulness to society but in their truth. The clarity of this truth finds a beauty which elevates pure mathematics to an art form. But, in contrast to a harpist who delights others by her music, I fear the pure mathematician cannot make his art accessible to a wider public. My question then was: How can pure mathematics justify its art to the state which finances it?

For Beno Eckmann, mathematics "sets the standard for every objective thought," and according to Friedrich Hirzebruch, "without mathematics there would be no structured logical thinking." For Raoul Bott, "the treasure the [mathematician] hunts is at the very core of all ... precise inquiry into the world.... As such [his] search must be a central concern of any enlightened state."

I agree, and I am convinced of the need of mathematical thinking as a fundamental component of the modern world. Historically mathematics has

Bundesrätin Ruth Dreifuss, Zürich, August 3, 1994

been a key to open the doors to Enlightenment. Today, pure mathematics can still be considered as the guardian of the grail of logical thinking.

But as Roland Bulirsch puts it, "mathematics is invisible culture." Further, Jürgen Moser says that "mathematics may not be accessible for the enjoyment of a broad audience." If this culture of pure mathematics is invisible and accessible, how then can one show its practical use and demonstrate its tangible results?

Armand Borel explains that "mathematics resembles an iceberg: beneath the surface is the realm of pure mathematics, hidden from the public view.... Above the water is the tip, the visible part which we call applied mathematics." According to Phillip Griffiths, "one of the deep mysteries of life is the way in which the best pure mathematics, pursued for its own sake, inexplicably and unpredictably turns out to be useful." Jürgen Moser adds that "the difficulty in getting this message across lies in the longer timespan needed to recognize the significance of mathematical discoveries.... Sometimes twenty or more years have to elapse.... Politicians unfortunately often think in much shorter terms."

This is certainly true not only for politicians but for society as a whole.... We ask for immediate return on investment. We want real-time information. The lifespan of technologies is getting shorter and shorter. Cost efficiency and speed have become the basic criteria to judge any human activity. This is dangerous because it's short-sighted.

In such an environment it is very important to continue to recognize that knowledge is a value in itself. Mathematics or philosophy or any basic research develops only thanks to this principle which is an important part of our civilization. If we start to forget it, we jeopardize the roots of our progress.

The future is unpredictable. We cannot judge knowledge on the basis of its immediate usefulness. As an example, the work of Vaughan Jones, who connected three-dimensional knot theory with functional analysis, was awarded the Fields Medal at your last congress in Kyoto on the basis of its intrinsic merit. Later, his theory was utilized by physicists in statistical mechanics and by biologists to explain the structure of DNA. It is only through the recognition and support of basic research that society can ensure the continued and full development of scientific progress.

Let us turn to applied mathematics. Today applied mathematics has become a basis for all other sciences and has a tremendous impact on life in modern societies. Applied mathematics is ... both highly relevant and useful to society, but it has lost its innocence.... [I]t seems to me that there has been little ethical discussion on the role of mathematics in society. Thus [my second question is]: Has mathematics avoided such discussions?

There are mathematicians who claim moral neutrality for their science. René Thom for example writes me that "mathematics by itself is ethically neutral." But Sir Michael Atiyah reminded me in his answer that the "atomic bomb was only built after extensive mathematical calculations," and Jürgen Moser adds that "the renowned mathematicians von Neumann and Ulan played an important role" in this project. Armand Borel asks "should one see the fact that mathematics is at the base of artillery or guided bombs as an ethical problem?" Yes, I think one should....

I do not think that making a distinction between abstract theory and practical application can altogether eliminate the ethical problem. We owe much of our progress in society to mathematicians, and we have to recognize their merits while at the same time they have to assume their responsibilities. Raoul Bott has expressed his argument against ethical neutrality [by] writing to me that "the age of innocence has come to an end for us all." ...

Let's turn now to my last question: If, as Minister of Science, I had the possibility to create ten new professorships in Swiss universities, how many of them should I give to mathematics and why?

Phillip Griffiths is generous with his science and answers: "They should all go to mathematical scientists." So is Gerd Faltings: nine chairs for mathematics, but — as he likes music — he leaves the tenth chair to the harpists. Sir Michael Atiyah, Friedrich Hirzebruch, and Jürgen Moser request four or five chairs for mathematics. That is about the average of all the answers....

In view of the growing importance of science I understand why scientists ask for more means, why they want more professorships than they have....

Science and research are crucial today. You don't have to convince me of this as minister of science, but together we have to convince the public and the Parliament. We have to convince the taxpayer. This is a difficult task when public budgets are running huge deficits....

It is a task of the scientific community to tell the public why science matters. It is your task — and it is mine....

EDUCATION COMMITTEE

An Application of Mathematics: The Marriage Tax

The following article about the marriage tax suggests an interesting example of mathematics for this era of proposals to teach mathematics through real-life applications. Congress and the Executive Branch have been advocating "family values," but the marriage tax indicates that they may secretly wish to discourage marriage, especially among low-income couples with children, and among two-career couples whose incomes are relatively close. Or does it indicate a deficit in mathematics and statistics education?

There is Still a Marriage Tax

The changes in the personal income tax embodied in the Omnibus Budget Reconciliation Act of 1993 did not eliminate the marriage tax: spouses with roughly equal incomes still tend to pay a marriage tax, while spouses with unequal incomes tend to receive a marriage subsidy. A new NBER study by Daniel Feenberg and Harvey Rosen predicts that in 1994, 52 percent of American couples will pay a marriage tax averaging about $1244, while 38 percent will receive a subsidy averaging about $1399. But these averages mask considerable dispersion, they write. "Under the new law, the marriage tax for certain low-income families can exceed $3000 annually; for certain very high-income families, it can exceed $10,000 annually."

In *Recent Developments in the Marriage Tax* (NBER Working Paper No. 4705), Feenberg and Rosen estimate that the average marriage tax for the population as a whole is $124; under the old law, in contrast, there was an average subsidy to the population of $143. The most striking difference between the old and new laws applies to the high-income group: because of the 10 percent surcharge on taxable income above $250,000, the average marriage tax for this group is $7451.

Feenberg and Rosen observe in general that, except at the high end of the income distribution, most childless couples face little change in the marriage tax. For many low-income couples with children, the marriage tax is higher under the new law, though.

The tax law also provides a substantial "dowry" for an individual with no income who marries someone with income: marriage is subsidized as long as the spouses' incomes are sufficiently far apart. Conversely, the tax law penalizes marriage for couples whose incomes are relatively close.

These results are based on a sample of actual U.S. tax returns. Estimates are generated by the NBER's Tax Simulation Model.

Reprinted from the NBER Digest, *National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138, June, 1994, p. 1.*

In connection with proposals to teach mathematics through real-life applications, please give us the benefit of your experience by returning the following questionnaire. We appreciate your help.

1. What role in the development of your own interest in mathematics did applications play?
2. Do applications play a major role in your professional work?
3. Please share with us especially effective examples of use of real-life applications in the mathematics classroom at any level (K-14).
4. Optional: Name, address and telephone (may we call you?)

Please return your answers to: AWM Education Committee, Sally I. Lipsey, Chair, 70 East 10th Street, #3A, New York, NY 10003-5106.

INTERSECTIONS

Intersections is JoAnne Growney's latest collection of poems; it contains over fifty pages of her mathematical and non-mathematical verse. (See the February, May, and August-September issues of the *Monthly* for examples). Growney, a math professor at Bloomsburg University, is an active member of the Humanistic Mathematics Network and an organizer of poetry readings at math meetings. To order, send $8.47 ($7.37 for each additional copy) to JoAnne Growney, KADET PRESS, 147 West 4th Street, Bloomsburg, PA 17815.

IMPROVING THE CLIMATE FOR WOMEN AND MINORITIES IN MATHEMATICS AND SCIENCE

The underrepresentation of women and minorities in the scientific workforce is a deep and persistent problem that will not change without fundamental reform at all levels of the educational process. An area of particular concern is the difficulty students from underrepresented groups have in the transition from undergraduate to graduate work. As an educator of women, my greatest frustrations have been the difficulty bright students have in graduate school and the talent that has been squandered by graduate programs indifferent to the needs of women and minorities. Yet, in the midst of massive science education reform, graduate education remains virtually untouched. The present system presents a formidable obstacle to the goal of increasing the percentage of women and minorities in the science and engineering professions in the next century. It is crucial that the academic research community in this country recognize and address its responsibility for the successful graduate training of these students. Failure to do so will not only frustrate ongoing efforts to encourage women and minorities to pursue scientific careers, but will also waste valuable human resources in the process.

In the past decade, the educational community has learned a great deal about the encouragement and mentoring of students. "Stand and Deliver" offered but one example of the positive effects of good teaching. In many of the sciences, the percentage of women majors at the undergraduate level is approaching parity. Spelman College in Atlanta in Atlanta, a small historically Black liberal arts college for women, has over 100 mathematics majors. Programs around the country, many with federal funding, are producing a core of talented minority students eager to pursue graduate work in the sciences. Despite these successes, the number of Ph.D.'s awarded to Black Americans in science-based fields remains alarmingly low, and the percentage of American women Ph.D.'s in the sciences is still far below that at the baccalaureate level.

In order to understand what is happening to these students, we must look closely at their experiences in graduate school. When we do, we become increasingly frustrated by what we find. "Sink or swim" attitudes still prevail, often leaving students discouraged, demoralized, and disconnected from the culture of scientific research. Women and minority students are particularly adversely affected by the lack of encouragement and support that is the norm. A recent NRC study on Doctoral and Post-doctoral Study in the Mathematics Sciences found that a positive learning environment in which women and minority students are expected to succeed is critical to the success of these students. Unfortunately, such programs are all too rare. The prevailing culture equates high attrition rates with high standards and results in a climate that is often inhospitable to women and minorities. These students represent a tremendous investment: of their own resources, of those of their families, teachers, and funding agencies. To miss the opportunity to make them scientists and mathematicians is a terrible waste.

There is an urgent need to bridge the gap between undergraduate and graduate education for women and minorities and to guide students across this difficult transition point. One way to do this is to build on the prior positive experiences that brought these students to graduate school in the first place; another is to insure that students receive encouragement and mentoring, particularly in their early years in graduate school. There is much to be learned from the proliferation of highly successful summer research programs now available, some of them federally funded (for example, the NSF Research Experiences for Undergraduates Program), some of them internships in research laboratories or industry. These programs are successful for a variety of reasons:

- Students receive an introduction to research that often results in attracting them to research careers.
- Students often develop important professional relationships with faculty at the host institutions,

by Rhonda Hughes, AWM Past President, Bryn Mawr College
This article was written as a background paper for the Forum on Science in the National Interest held at NAS on January 31–February 1 and sponsored by the Executive Office of the President - Office of Science & Technology Policy

and participating faculty are committed to the students' success.

- The students have fun.

Unfortunately, these features are often missing from the first years of graduate work. Rather, graduate school is seen as an endless series of obstacles, rites of passage into an exclusive club. The burden of proof rests with the students, and many graduate faculty still have narrow views about who is worthy of membership. Positive high school and undergraduate experiences are often completely negated by the graduate school culture. We must use what we have learned from the successful undergraduate programs and extend those ideas to the graduate experience.

Model Programs

In addition to providing mentoring, new model programs should also provide students with the opportunity to engage in appropriate research projects from the outset. In order to achieve both of these aims, model programs should link undergraduates contemplating graduate school not only with schools, but with individuals. Students would apply for graduate stipends in conjunction with a faculty "mentor," in much the same way the NSF Postdoctoral Fellowships pair young Ph.D.'s with established researchers. Students or their faculty advisors would approach graduate faculty as possible mentors, while faculty might encourage undergraduates to apply for these awards as a way of attracting good students. In fact, these awards should serve to reward faculty with reputations as strong mentors, regardless of their home institution.

Awards might provide partial support for the first two years of graduate work, summer research and some travel support for the students, as well as a modest research award to the faculty mentor. Awards should be much more widespread than NSF Graduate Fellowships and should be targeted at women and minority students. The salient features of this program would be to institutionalize mentoring and to provide students with the opportunity to engage in appropriate research projects from the beginning of their graduate school experience, under the guidance of a faculty member committed to their success. Such mentoring programs should eventually be built into the graduate programs of all institutions, so that fewer women and minority students would drop out of graduate school, disillusioned and unnoticed.

The Scientist within You: Experiments and Biographies of Distinguished Women in Science (ACI Publishing) showcases 23 women scientists and mathematicians from many cultures. Available in bookstores now, it was designed as a science supplement for grades 3–8 or as a "science sampler" for career exploration at higher levels.

NSF-AWM TRAVEL GRANTS FOR WOMEN

The objective of the NSF-AWM Travel Grants 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.

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 many 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, such as a regular NSF grant, is ineligible. Partial institutional support does not however make the applicant ineligible.

Target Dates. 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, to: Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461; (301) 405-7892.

A CONSORTIUM TO ADVANCE WOMEN IN MATHEMATICS 1995

If funded by the NSF, a consortium of seven mathematics departments will begin offering special programs designed to encourage talented women undergraduates to pursue advanced degrees in the mathematical sciences.

Summer Programs for Freshmen and Sophomores:

- Carleton and St. Olaf Colleges will offer a four-week program to develop students' skills in conjecture, proof, and the use of mathematical software.
- SUNY Stonybrook's six-week program will involve each student in creative problem solving in both pure and applied mathematics.

Summer Programs for Juniors:

- The George Washington University will offer a six-week program of intensive short courses leading to interesting open problems.
- Mills College will continue to operate its successful six-week Summer Mathematics Institute, where students participate in intensive interactive seminars led exclusively by active women mathematicians.
- Mt. Holyoke College will offer an eight-week program in which small groups of students will work with faculty on research problems.
- The University of Michigan at Ann Arbor will operate an eight week research program in which each student will work one-on-one with faculty on ongoing projects.

Junior Year at Chicago:

- The University of Chicago will host promising students who wish to deepen and broaden their mathematical background in an intensive year of study in mathematics.

All seven programs will provide advice and information about graduate schools and careers in mathematics.

Instructors are urged to bring this announcement to the attention of their students. For more information and application materials, please send email to millssmi@ella.mills.edu or write to CAWM, c/o Summer Mathematics Institute, Mills College, Oakland, CA 94613.

Teaching Opportunities

Four of the programs described above (at Carleton and St. Olaf Colleges, SUNY Stonybrook, The George Washington University, and Mills College) may employ women mathematicians to teach in their programs; dates, subjects, and levels of students may vary.

The Consortium is setting up a registry of women mathematicians who wish to be considered for such positions. For further details please send email or write as above.

MATH COMMUNICATION

MSRI will host a conference on "The Future of Mathematical Communication," November 30 – December 3, 1994. Recently there has been a huge increase in mathematicians' use of the Internet. The time is ripe for the mathematical community to examine issues, set goals, and coordinate efforts. For more information, email work1194@msri.org or write to Future of Mathematical Communication Conference, Mathematical Sciences Research Institute, 1000 Centennial Drive #5070, Berkeley CA 94720. Also, it is planned to multicast the conference in real time on the MBone channel of Internet.

ICM PANEL

In 1986, a panel discussion organized by American woman mathematicians took place at the ICM in Berkeley. The participating European women started to think it might be a good idea to have an organization of their own. An informal international network started growing, and in seven years six meetings were organized, with both general discussions and mathematical program. (The next will be in Madrid in July 1995). There are participating members from 20 countries, and fruitful contacts

Marjatta Naatanen, Helsinki, Finland

with other organizations, such as AWM, have been made.

Finally EWM (European Women in Mathematics) was legally founded in December 1994 in Helsinki, Finland. One reason for choosing Finland was that EMS (European Mathematical Society) also has its seat in Helsinki. EWM is organized through a system of regional and international coordinators, together with a small standing committee. As for regional activities, in France, Femmes et Mathematiques has been very active for years and Germany has an e-mail network. EWM is also interested in collecting statistics. The Helsinki office keeps lists of members and acts as an information center.

Looking at the statistics in the table below, it might be surprising to compare Northern countries such as the Scandinavian countries and Germany with Southern European countries like Italy, Spain, and Portugal. The result is that the latter have a much bigger percentage of women mathematicians. This fact does not seem to be very easy to explain.

A question that is often asked is if men can join EWM. Men are welcome to join EWM as supporting members.

The address is: EWM office, Riitta Ulmanen, Secretary, Department of Mathematics, P.O. Box 4 (Hallituskatu 15), SF-00014, University of Helsinki, Finland; e-mail: ulmanen@sophie.helsinki.fi.

STATISTICAL DATA ON WOMEN MATHEMATICIANS IN EUROPE

Country	Mathematicians		Full Professors	Ph.D. 1990	Students in Math
	women/total	% of women	women/total	women/total	% of women
Austria (1989)	*54/762*	*7*	*0/73*	*3/21*	*39*
Belgium	30/219	14	8/134	12/32	54
Bulgaria	254/855	30	1/42	4/23	40
C.S.F.R.	60/500	12	2/65	1/10	42
Denmark	4/121	3	1/19	1/5	30
Estonia	32/109	29	0/8	0/4	60
Finland	3/127	2	1/34	8	41
France		20–25	6%	20%	30 (Univ.) – 17 (Prep.)
W. Germany (1987)	40/1500	3	4/490	19/208	33
Georgia	486/1217	40	7/72	1/26	70
Greece	*67/283*	*24*	*3/56*		
Hungary	32/281	11	4/103	5/36	15
Iceland	0/10	0	0/4	0/0	33
Ireland	7/135	5	0/9	2/3	30
Italy	609/1727	35	84/646		70
Luxembourg	1/7	14	1/5		24
Netherlands	19/437	4	1/88	2/41	22
Norway	9/103	9	3/45	0/5	10–20
Poland (from 5 univ.)	107/359	30	7/44	3/16	60
Portugal		*40–50*	*5%*		*50–60*
Spain	*168/1075*	*16*	*12/279*		
Sweden	7/150	5	0/21	1/10	30
Switzerland	3/141	2	0/91	4/42	25
Ukraine	31/145	21	1/33	1/3	50
United Kingdom	97/1379	7	3/267	46/266	31
Yugoslavia	91/530	17	12/132	4/24	60

Sources: Entries in roman, European Mathematical Societies (questionnaire from EMS); in italics, European Women in Mathematics

WISE INSTITUTE

Despite the fact that she was the first person ever to win two Nobel Prizes, one in physics and one in chemistry, scientist Marie Curie still was denied membership to the all-male French Academie des Sciences. Lillian Moller Gilbreth, a pioneer in modern industrial engineering, received far less credit for her groundbreaking work in psychology and motion study than her husband, Frank.

Today's women scientists and engineers may have traveled slightly farther along the road than these pioneers, but the road remains rocky for women students, faculty, and researchers. Penn State is addressing the issue by creating a university-wide program titled Women in the Sciences and Engineering (WISE) Institute.

"Nationally and at Penn State, women are still underrepresented in many scientific and technical fields," said Dr. John Brighton, provost and executive vice president. "Although women comprise 45 percent of the work force, only 16 percent are employed as scientists and engineers, according to 1990 National Science Foundation figures. And those 16 percent are concentrated in psychology and the social and life sciences.

"The institute represents an innovative approach to cross-disciplinary interaction among engineers, humanists, scientists and social scientists with an interest in helping Penn State attain its goal of becoming a more diverse institution," he adds. "The ultimate goal is to increase the number of women and improvement of the climate for women working in these fields."

The institute will coordinate existing and new activities for women in science and engineering and communicate information throughout the university system. There are already several initiatives within individual university units to assist and enhance the recruitment and retention of women undergraduate and graduate students.

"We believe that WISE is unique nationally," said Dr. Londa Schiebinger, director and professor of history and women's studies at Penn State. "The institute combines research about and intervention programs for women in the sciences and engineering. Many colleges and universities have one or the other or both such programs, but they often are working in isolation.

"In the research area, for example, one problem is that the humanists and social scientists are not talking to the professional women scientists and engineers who face subtle forms of discrimination on a daily basis," she notes. "We hope that the WISE Institute will be able to stimulate dialogue between the groups, providing more accurate information about persistent barriers and models for success."

"Intervention programs, such as junior high and high school science programs for girls, are prevalent at schools and universities, but we need more evaluation about their effectiveness," says Sharon Jadrnak Luck, associate director of the institute.

"We want to find out what has been successful, what has made these efforts effective and integrate those factors into activities across the university," says Luck.

Other goals for the institute include assisting and supporting efforts to recruit and retain women in faculty, staff and administrative positions and identifying ways to create a more supportive climate across Penn State for women in science and engineering.

The idea for the institute emerged from an institutional action plan developed at the Committee on Institutional Cooperation (CIC) WISE Conference in 1992, which included Big 10 and other major research universities. Penn State's WISE Institute will build on and expand the groundwork developed by the College of Engineering's Women in Engineering Program and will bring together the various women's activities sponsored by different departments and campuses across the University.

The WISE Institute has established a far-reaching organization encompassing students, faculty, and staff representing science-based colleges and all campuses, and other academic, corporate, foundation and government representatives. The steering committee includes five academic deans and the vice provost for educational equity.

The institute is supported by central university and college funds and will seek additional funding from national foundations, government agencies and corporations.

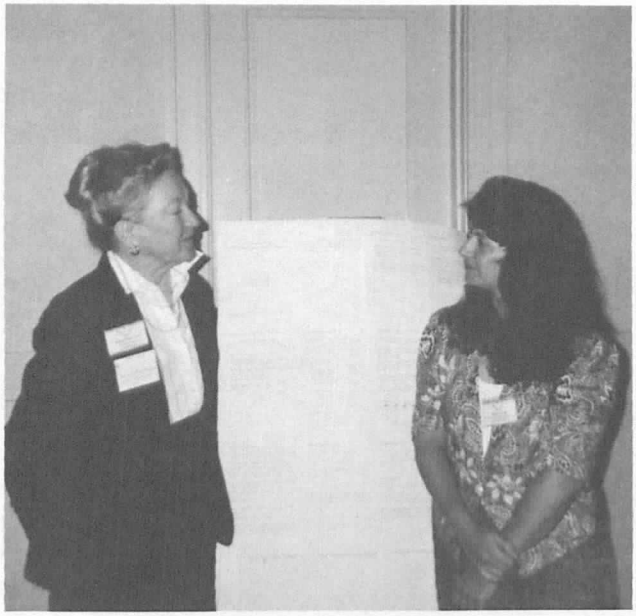
"Success in the sciences and engineering is not only a function of motivation and ability, but also is affected by the classroom, the workplace and the policies of an institution," says Schiebinger. "Scientists and engineers rely on teamwork, labs, organization and interaction to do their work. Through the WISE Institute, we strive to ensure women's full participation in science and technical fields."

SIAM WORKSHOP

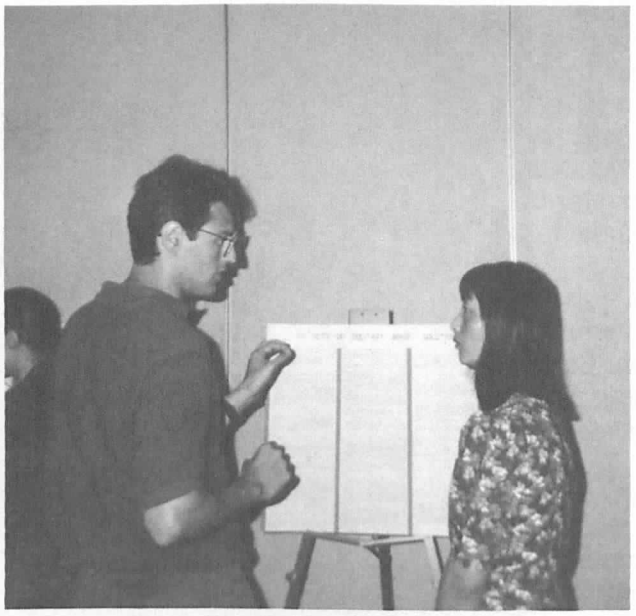
Post-docs: Back: Dianne O'Leary (Chair), Mary Catherine A. Kropinski, Tong Lee, Marianne Huebner, Joanna Wood Schot (AWM), Xiaobai Sun; Front: Mary Ann Horn, Regina B. Cohen, Ditza Auerbach, Erding Luo, Cristina L. Draghicescu; Not pictured: Suncica Canić

Graduate Students: Back: Dianne O'Leary (Chair), Alessandra Chiareli, Yi Li, Rebekah Valdivia, Christina Kendziorski, Perla Myers, Joanna Wood Schot (AWM); Front: Gowri Ramanathan, Zhilan Feng, Sandra Kingan, Ramit Mehr, Silvia Crivelli

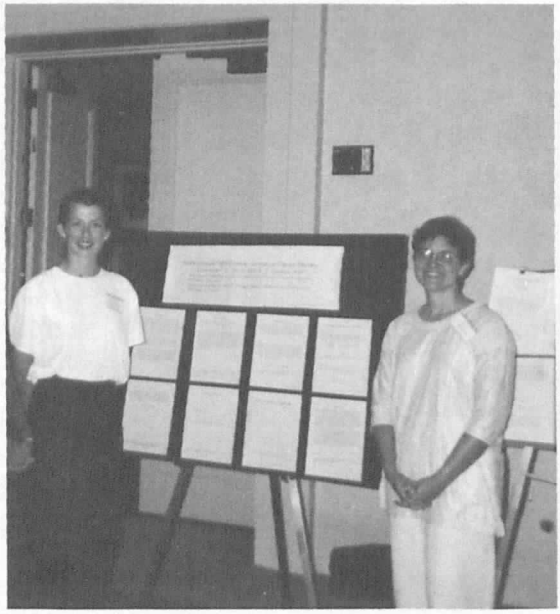
POSTER SESSION



Joanna Wood Schot, AWM Executive Director
Silvia Crivelli, University of Colorado, Boulder



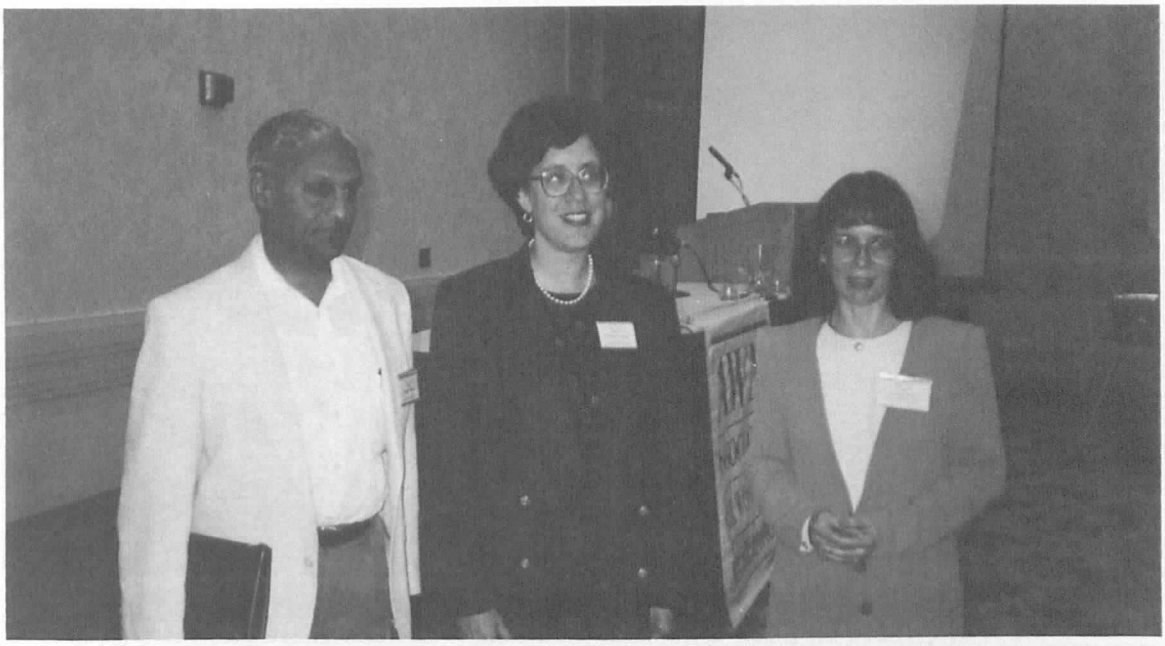
J. Nathan Kutz, IMA
Yi Li, Penn State University



Christina Kendziorski, Marquette University
Catherine Roberts, University of Rhode Island

Perla Myers, UCSD; Patricia Hersh,
Schafer Prize Runner-up; and Audrey Terras, UCSD

PANELS



"Funding Mathematics Research" panelists Jagdish Chandra, Army Research Office and Deborah Lockhart, NSF with Dianne O'Leary, University of Maryland, AWM Workshop Chair

"Careers in Applied Mathematics" panelists Deborah P. Levinson, Colorado College; Mimi Celis, Silicon Graphics Computer Systems; Ann Almgren, Lawrence Livermore National Lab, and Joyce McLaughlin, Rensselear Polytechnic Institute

PRIZE SESSION

Alice T. Schafer, AWM Past President, Marymount; Jing Rebecca Li, Schafer Prize Winner, University of Michigan; and Joanna Wood Schot, AWM Executive Director

Schafer Prize: Jennifer M. Switkes, Jing Rebecca Li, Nina Zipser, Patricia Hersh, Julia J. Rehmeyer
Standing: Alice T. Schafer, Joanna Wood Schot; Could not attend: Yi Wang

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APPALACHIAN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - Mathematics Education - Applications are invited for a tenure-track position in mathematics education at the assistant professor level in the mathematical sciences department beginning August 1995. A doctorate in mathematics education and experience in public school teaching are required. Persons with expertise in educational uses of technology are especially encouraged to apply. Teaching is primary; scholarship is expected and supported. Appalachian State University, a member of The University of North Carolina System, has approximately 12,000 students. It is located in the Blue Ridge Mountains of northwestern North Carolina. The department includes mathematics (BS, MS), mathematics education (BS, MS), computer science (BS) and statistics (BS). To apply, send a letter of application, resume, copy of graduate transcript, and have three letters of recommendation forwarded by January 20, 1995 to: **Dr. James R. Smith, Search Committee ME, Department of Mathematical Sciences, Appalachian State University, Boone, North Carolina 28608**, (704) 262-3050; (jrs@math.appstate.edu). Appalachian State University is an Equal Opportunity/Affirmative Action Employer and actively encourages applications from women and minorities.

APPALACHIAN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - Mathematics - Applications are invited for as many as three entry level tenure-track positions at the assistant professor level in mathematics, beginning August 1995. A Ph.D. in mathematics is required. A strong commitment to teaching is mandatory and scholarship is expected and supported. Applicants will be considered in both pure and applied mathematics, excluding statistics, mathematics education and computer science. Appalachian State University, a member of The University of North Carolina System, is located in the Blue Ridge Mountains of northwestern North Carolina and has an enrollment of about 12,000 students. The Department of Mathematical Sciences includes mathematics (B.S. and M.S.), mathematics education (B.S. and M.S.), computer science (B.S.) and statistics (B.S.). To apply, send a letter of application, an AMS application cover sheet, resume, graduate transcripts, and have three current letters of recommendation forwarded by January 20, 1995 to: **Dr. James R. Smith, Search Committee M, Department of Mathematical Sciences, Appalachian State University, Boone, North Carolina 28608,** (704) 262-3050; (jrs@math.appstate.edu). Appalachian State University is an Equal Opportunity/Affirmative Action Employer and actively encourages applications from women and minorities.

APPALACHIAN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - Computer Science - Applications are invited for a tenure-track position in computer science at the assistant professor level beginning Fall 1995. A Ph.D. in computer science or equivalent is required. A strong commitment to teaching is mandatory and scholarship is expected and supported. Expertise in software engineering, computer architecture, artificial intelligence, or database is preferred, but all areas of computer science will be considered. Appalachian State University, a member of The University of North Carolina System, is located in the Blue Ridge Mountains of northwestern North Carolina and has an enrollment of 12,000 students. The Department of Mathematical Sciences includes mathematics, applied mathematics, mathematics education, statistics, and computer science. The department offers a CSAB/CSAC accredited B.S. degree in computer science and is currently planning an M.S. program. The computer science program has 9 full-time positions and approximately 150 majors. To apply, send a letter of application, resume, graduate transcripts, and have three current letters of recommendation forwarded by February 1, 1995 to: **Dr. James R. Smith, Chair, Search Committee CS, Department of Mathematical Sciences, Appalachian State University, Boone, NC 28608,** (704) 262-3050; (jrs@cs.appstate.edu). Appalachian State University is an Equal Opportunity/Affirmative Action Employer and actively encourages applications from women and minorities.

AT&T BELL LABORATORIES - Research Department Heads or Laboratory Directors - CHRISTIANS & TIMBERS, one of the leading retained executive search firms in the information technology industry, has been engaged by AT&T Bell Laboratories to augment their already diverse staff with searches for either TOP WOMEN Research Department Heads or Laboratory Directors in the following technical categories: **1) Networking Technology**, including: wireless transmission, voice/data networks, signalling protocols, network architecture for mobile computing and communications, network management, and broadband ATM technology; **2) Multimedia Communications** within interactive environments including: machine vision, image processing, image compression, computer graphics, information retrieval and messaging, and protocol/controls for client/server interactions; **3) CAD and circuit designs for high performance VLSI**; and **4) Software including: database technology**, operating systems, and applications software. **Interested women may contact Greg Selker at 216-765-5870 or e-mail Christian & Timbers at g.selker@applelink.apple.com.**

BOSTON COLLEGE- DEPARTMENT OF MATHEMATICS - Boston College invites nominations and applications for a tenured position in the Department of Mathematics at the level of Full, or possibly Associate, Professor. Qualifications include the Ph.D. in the mathematical sciences, a strong record of scholarship, and a commitment to teaching at the undergraduate and master's levels. An applicant's area of research should be compatible with those of the department; these include, but are not limited to, analysis, dynamical systems, number theory, probability and statistics, and topology. The position will be available on September 1, 1995. Boston College is a Jesuit University, enrolling approximately ten thousand undergraduate and four thousand graduate students. The Department of Mathematics includes twenty-one full time faculty, and offers undergraduate programs in mathematics and computer science, as well as graduate programs leading to the MA and MST degrees in mathematics. Applicants should submit a curriculum vitae along with a cover letter, and are invited to include names of references. Send all materials and inquiries to: **W. J. Keane, Chair, Department of Mathematics, Boston College, Chestnut Hill, MA 02167**. E-Mail: keane@bc.edu. Review of applications and nominations will begin on January 1, 1995, and continue until the position is filled. Boston College is an Affirmative Action/Equal Opportunity Employer.

BOSTON UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics at Boston University invites applications for a two year position at the Visiting Assistant Professor level in the area of Dynamical Systems. The position will begin in September, 1995, 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 St., Boston, MA 02215**. Application deadline: January 15, 1994. Boston University is an Affirmative Action/Equal Opportunity Employer.

BOWDOIN COLLEGE - DEPARTMENT OF MATHEMATICS - Tenure-track Assistant Professorship starting Fall 1995. Initial appointment for three years with renewal possible. Seeking candidates with primary research interests in one of the following fields: operations research, mathematical economics, numerical analysis, or geometry (AMS subject classification numbers 51, 52, 53, 65, or 90). Ph.D. required and strong research record or potential expected. Normal teaching load is two courses per semester. A record of superior undergraduate teaching is expected. Review of candidates begins December 1, 1994, but applications will be considered until position is filled. Send completed AMS applications cover sheet, resume and 3 letters of recommendations to: **James E. Ward, Chair, Department of Mathematics, Bowdoin College, Brunswick, ME 04011.** Include e-mail address. Bowdoin College is committed to equal opportunity through affirmative action. Women and members of minority groups are urged to apply and invited to identify themselves as such.

BRANDEIS UNIVERSITY - DEPARTMENT OF MATHEMATICS - We have two openings beginning September 1995. One opening will be a three-year assistant professorship, tenure track appointment. The other will be a one year terminal appointment. Normal teaching load is six hours per week. Teaching will be at both the undergraduate and graduate levels. Ph.D. and demonstrated excellence in teaching and research required. Send curriculum vitae and letters of recommendation by January 1, 1995, to: **Paul Monsky, Hiring Chairman, Brandeis University, Department of Mathematics, Waltham, MA 02254-9110.** Brandeis is an Affirmative Action/Equal Opportunity Employer and encourages applications from women and minority candidates.

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BROOKLYN COLLEGE - DEPARTMENT OF MATHEMATICS - The Department of Mathematics of Brooklyn College of the City University of New York announces a tenure-track assistant professorship in mathematics. The successful applicant will possess the Ph.D. degree and will have expertise in one of the areas that the Department is working to develop: applied statistics, operations research, applied mathematics for the decision sciences, or a closely related area. Commitments to research, teaching, and curriculum development are essential. Duties will include teaching a range of undergraduate mathematics courses as well as joining an ongoing process of curriculum development. Salary is commensurate with qualifications and experience within the range $29,931 to $34,011. Candidates should send and arrange to have three letters of reference sent to: **Prof. George S. Shapiro, Chairperson, Department of Mathematics, Brooklyn College, 2900 Bedford Avenue, Brooklyn, NY 11210-2889**. Applications received by February 1, 1995 will receive full consideration. AA/EOE/M/V/H/F.

BROWN UNIVERSITY - MATHEMATICS DEPARTMENT - J.D. Tamarkin Assistant Professorship. Three-year appointment, beginning July 1, 1995. Competitive salary. Applicants (regardless of age) should have received the Ph.D. degree before the start of the appointment, but no earlier than January 1, 1993, have a strong research potential, and have a commitment to teaching. Field of research interest will be taken into account. A curriculum vitae, a completed application form, and three letters of recommendation should be received by December 31, 1994. Requests for application forms and all other inquiries should be addressed to: **Tamarkin Search Committee, Department of Mathematics, Brown University, Box 1917, Providence, RI 02912.** Brown University is an Equal Opportunity/Affirmative Action employer and encourages applications from women and minorities.

BROWN UNIVERSITY - DIVISION OF APPLIED MATHEMATICS - The Division of Applied Mathematics has a tenure-track position at the Assistant Professor level in the general area of partial differential equations. The ideal candidate should be able to combine research on the theory of partial differential equations with applications to the sciences. Excellent communication skills are required for teaching at the undergraduate and graduate levels. The starting date for the position is September 1995. A Ph.D. is required; all requirements for the degree must be completed by August 31, 1995. Applicants should have a curriculum vitae, at least three letters of recommendation, and relevant publications sent to: **Professor Donald E. McClure, Chair, PDE position, Division of Applied Mathematics, Brown University, 182 George Street, Providence, RI 02912**. To receive full consideration, complete applications should be received by January 15, 1995. Brown University is an affirmative action/equal opportunity employer. Women and minorities are encouraged to apply.

BROWN UNIVERSITY - DIVISION OF APPLIED MATHEMATICS - Post-Doctoral Fellows - Lefschetz Center for Dynamical Systems - Post-doctoral positions in the general area of dynamical systems with preference given to applicants whose research interests lie in areas compatible with current research in the LCDS; e.g., ordinary, partial and functional differential equations; stochastic control, stochastic systems and nonlinear filtering theory. We are also interested in computational methods for these systems as well as applications. The number of appointments will depend upon the availability of research funds. Send resume, two letters of recommendations, or inquiries, to: **II.J. Kushner, Director, LCDS, Division of Applied Mathematics, Brown University, Providence, RI 02912**. For full consideration, send material by January 15, 1995. Brown University is an affirmative action/equal opportunity employer. Women and minorities are encouraged to apply.

COLBY COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - We have two tenure-track openings at the assistant professor level, commencing September 1, 1995. Ph.D. required. The salary is competitive, and based on experience. Colby is a small, private, highly selective liberal arts college located in central Maine. The student body numbers some 1,700, the faculty 165. The Department of Mathematics and Computer Science currently numbers nine full time and two part time, all of whom have the Ph.D. We have major and minor programs in mathematics and computer science. We are a young, active department, which places a high value on both teaching and research. The annual teaching load is 5 courses. The largest class size is 30. For one of the openings, we prefer someone with a pure mathematics background. For the other position we prefer someone with a strong computer science and mathematics background. Candidates who are able to demonstrate excellence in teaching are likely to be ranked higher in our selection process. Colby actively encourages applications from women and minority candidates. We are an Equal Opportunity Affirmative Action Employer. Review of applications will begin on December 10, 1994, and will continue until the positions are filled. Send a letter of application and a current curriculum vitae in hard copy to: **Dale Skrien, Chair, Department of Mathematics and Computer Science, Colby College, Waterville, ME 04901 (djskrien@colby.edu).** Also, arrange for three letters of reference to be sent to the same address. These letters should deal with both your research and your teaching abilities.

COLGATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Colgate University invites applications for one and possibly two assistant professorships in mathematics, at least one of which will be tenure-track. A Ph.D. is required, and all fields of specialization are welcome. Colgate is a highly selective liberal arts college with 2,700 students. Faculty members normally teach 5 semester-courses per year, and are expected to maintain an active program of original research. Applicants should send vitae and three letters of recommendation by January 2, 1995 to: **The Hiring Committee, Department of Mathematics, Colgate University, Hamilton, NY 13346.** Colgate is an equal opportunity, affirmative action employer. Applications from women and minorities are encouraged.

COLUMBIA UNIVERSITY - DEPARTMENT OF MATHEMATICS - Possible openings for Ritt Assistant Professor - for new PhD's regardless of age. One-year appointment, normally renewable for three more years. Teaching load, two courses per semester with possible graduate course in specialty. Send vitae and (p)reprints and have letters of recommendation sent to professors familiar with your research and teaching. Please submit "AMS APPLICATION COVER SHEET" with application. Application deadline: January 15, 1995. Send to: **Hiring Committee, Department of Mathematics, Columbia University, New York, NY 10027**. First consideration will be given to applicants whose folders are complete by January 15, 1995. Columbia University is an Equal Opportunity/Affirmative Action Employer.

COLUMBIA UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for possible positions at the Associate Professor or Professor level. Excellence in research and a commitment to teaching required. Applications should include letter of application, a detailed vitae (with publications list), description of current research interests and references. Application deadline: December 15, 1994. Late applications may be considered. Send to: **SENIOR SEARCH COMMITTEE, Department of Mathematics, Columbia University, New York, NY 10027**. Columbia University is an Equal Opportunity/Affirmative Action Employer.

CORNELL UNIVERSITY - DEPARTMENT OF MATHEMATICS - We anticipate the following positions to be available as of July 1, 1995. (1) Tenure-track or tenured positions, any rank. Send curriculum vitae & at least 3 references to: **Recruiting Committee** by December 1, 1994. (2) H.C. Wang Assistant Professorships. Non-renewable, 3-year term. Send curriculum vitae & at least 3 references to: **Department of Mathematics, Cornell University, White Hall, Ithaca, N.Y. 14853-7901 Contact: Ms. M. Klinger, Recruiting Committee**, michelle@math.cornell.edu by January 1, 1995. Early applications welcome. Ph.D. required for all positions. Proven excellence in teaching and research. Cornell University is an Equal Opportunity/Affirmative Action Employer.

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. $35,000 for nine months; $7,778 summer research stipends. 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, 1995 are considered first. Dartmouth is committed to Affirmative Action and strongly encourages minorities and women to apply.

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DARTMOUTH COLLEGE - DEPARTMENT OF MATHEMATICS - tenure-track Assistant Professor, beginning 95-96. Teaching four 10-week courses over 2 or 3 terms. First priority is a modern analyst, second priority is a mathematical statistician strongly interested in signal processing. Exceptional circumstances could lead to an appointment in some third field or at a higher level. Send letter of application, vitae, research interests, four letters of recommendation, at least one on teaching, to: **Betty Harrington, Department of Mathematics, 6188 Bradley Hall, Dartmouth College, Hanover, NH 03755-3551.** Applications complete by February 1, 1995 considered first. Women and minorities are encouraged to apply.

DUKE UNIVERSITY - DEPARTMENT OF MATHEMATICS - William W. Elliott Research Assistant Professorship of Mathematics - Applications are invited for the William W. Elliott Research Assistant Professorship of Mathematics. Candidates should have completed a doctorate at of September 1, 1995 and show definite promise in research and teaching. The teaching load will be six hours per week during one semester and three hours per week during the other, so that the appointee will have additional time for research. The appointment is for one year and is renewable for two additional years. The salary will be $35,000 covering work in the regular two-semester year. Applicants please send (a) a completed application cover sheet (available in the September 1994 edition of the Notices of the AMS); (b) a vitae; (c) a description of the research in your thesis and other work you have done (1-3 pages); and (d) plan for future research. Applications should be filed by December 31, 1994; early application is advisable. The applicant should have three letters of recommendation, including one which evaluates teaching, sent directly to Duke by mid-January. All correspondence, including references, should be addressed to: **Elliott Committee, Department of Mathematics, Box 90320, Duke University, Durham, NC 27708-0320.** E-mail: elliott@math.duke.edu. Duke is an Affirmative Action/Equal Opportunity Employer.

DUKE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications and nominations are invited for a possible tenure/tenure track position in applied mathematics. Rank and salary are open; the position is to start September 1, 1995. Applicants should send a curriculum vitae, a research plan, and a completed information form (available from the department at apply@math.duke.edu); and they should arrange for three letters of recommendation to be sent. A teaching recommendation is also strongly suggested. Complete applications received by January 1, 1995 will be guaranteed full consideration. Address correspondence to: **Faculty Search Committee, Department of Mathematics, Box 90321, Duke University, Durham, NC 27708-0321.** Duke University is an Affirmative Action/Equal Opportunity Employer.

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE, SWITZERLAND - The Swiss Federal Institute of Technology in Lausanne invites applications for a **Faculty position in Applied Analysis.** The teaching duties will include mathematics courses for engineering students, as well as courses for students in mathematics. Willingness and talent to teach at all university levels is a requirement. The new professor is expected to lead an important research activity in areas of applied analysis. In her/his research, the new professor is expected to collaborate actively with existing research groups at EPFL. Applicants should have shown ability to carry out and to direct high level research projects. Female applicants are particularly welcome. Start of the appointment: as convenient. Interested persons can write to: **the Office of the President, CE-Ecublens, CH-1015 Lausanne, Switzerland**, for more ample information concerning this position.

EMORY UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - The Department of Mathematics and Computer Science, Emory University, invites applications for two anticipated tenure track Assistant Professorships for 1995-96. **Position 1**: A Ph.D. in Mathematics or Computer Science and a promising research program in Numerical Analysis/Computational Science are required. **Position 2**: A Ph.D. in Mathematics or Computer Science and a promising research program in Theoretical Computer Science are required. As the department supports several undergraduate programs within Emory College, a Ph.D. in Mathematics, and MS in Computer Science/Mathematics, applicants are expected to have strong records or promise, as undergraduate and graduate teachers. Applications must specify one of Positions 1 and 2, and include, curriculum vitae's (with at least three recommender's names). Please see that recommendation letters are letters are sent to: **Professor Dwight Duffus, Screening Committee, Department of Mathematics and Computer Science, Emory University, Atlanta, GA 30322.** Screening of applications will begin on January 1, 1995. Emory is an Affirmative Action/Equal Opportunity Employer.

FRANKLIN & MARSHALL COLLEGE - DEPARTMENT OF MATHEMATICS - Assistant Professor of Mathematics and Visiting Assistant Professor of Mathematics - Undergraduate mathematics department has a tenure-track entry-level position and a visiting position renewable for two or three years, starting Fall 1995. Ph.D. expected by Sept. 1995. For tenure-track job, preference will be given to candidates specializing in algebra, number theory or discrete math. Teaching: 5 courses per year. Continued scholarly activity expected. Send resume; graduate and undergraduate transcripts; four letters of recommendation, two of which address teaching ability; list of courses taught, including applicant's responsibilities and AMS Application Cover Sheet to: **Alan Levine, Chair, Department of Mathematics, Franklin & Marshall College, Lancaster, PA 17604-3003.** The deadline for the tenure-track position is January 20, 1995. Consideration for the visiting position begins January 20; applications accepted until position filled. Franklin & Marshall is committed to cultural pluralism and strongly encourages applications from minorities and women. Franklin & Marshall is an Affirmative Action/Equal Opportunity Employer.

FRANKLIN & MARSHALL COLLEGE - DEPARTMENT OF MATHEMATICS - Assistant Professor of Mathematics and Computer Science - Tenure-track entry-level position in undergraduate mathematics department starting Fall 1995. Ph.D. expected by Sept. 1995. Teaching: 5 courses per year in mathematics or 4 courses in computer science. Continued scholarly activity expected. Send resume; graduate and undergraduate transcripts; four letters of recommendation, one addressing teaching ability in computer science and one in mathematics; list of courses taught, including applicant's responsibilities and plan for future research to: **Professor Jay Anderson, Department of Mathematics, Franklin & Marshall College, Lancaster, PA 17604-3003** by January 20, 1995. Franklin & Marshall is committed to cultural pluralism and strongly encourages applications from minorities and women. Franklin & Marshall is an Affirmative Action/Equal Opportunity Employer.

THE GEOMETRY CENTER - UNIVERSITY OF MINNESOTA, MINNEAPOLIS - Postdoctoral Research and Training Fellowships - The Geometry Center is the NSF Science and Technology Research Center for Computation and Visualization of Geometric Structures. The Center has created a unified mathematics computing environment supporting math and computer science research, mathematical visualization, software and tool development, application development, video animation production, and K-16 math education and outreach. Up to three fellowships will be awarded for the academic year 1995-96. They are for one year with the possibility of a one-year renewal by mutual agreement. Remuneration will be $40,000/twelve months if there is not other support. Applicants are expected to demonstrate a high level of research accomplishment in mathematics or computer science, and to be at home in a computing environment. Postdocs are expected to maintain a vigorous program of independent research. They are also expected to participate fully in the life of the Center, that is, to participate in activities in a combination of research, technology development, education and outreach. To apply: send a vitae; a summary of research accomplishments; documentation of computing experience; a research plan, indicating plans to make use of computing and graphics resources; and three references who are familiar with your work and whom you have asked to send letters of recommendation. Applications from underrepresented groups are specifically encouraged. Application materials should be sent by December 31, 1994, preferably by e-mail to: postdoc_appl@geom.umn.edu or by surface mail to: **Postdoc Applications, The Geometry Center, University of Minnesota, Suite 500, 1300 South Second Street, Minneapolis, MN 55454.** The University of Minnesota is an Equal Opportunity Educator and Employer.

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HARVEY MUDD COLLEGE - DEPARTMENT OF MATHEMATICS - Senior Position in Applied Mathematics - The department invites qualified candidates who can provide leadership in applied mathematics to apply for a senior position, which will begin July 1, 1995. The successful candidate will be eligible for appointment to the rank of associate or full professor, and is expected to assume a term as department chair in the near future. The anticipated hiring of several new faculty members over the next five years will give the successful candidate a unique opportunity to have a strong hand in shaping the department. Applicants should have an earned doctorate or equivalent, strong administrative skills, an established record in research, and a commitment to excellence in teaching, research, and other scholarly activities. Candidates in all areas of applied mathematics will be considered. Salary will be commensurate with experience and qualifications. Harvey Mudd College is a small, highly selective, privately supported institution with major programs in physics, chemistry, engineering, mathematics, biology, and computer science. About one-third of incoming students are National Merit Scholars. The curriculum emphasizes breadth in science and engineering with a commitment to studies in the humanities and social sciences. The program is rigorous and designed to prepare students for industry as well as graduate study. Change magazine reports that HMC was the first in the country in the percentage of its alumni who earn Ph.D.s. The college has an enrollment of 630 and is associated with four other undergraduate colleges and a graduate school in Claremont, forming an academic community of about 5,000 students. Faculty at HMC may also have an appointment to the graduate school faculty and can advise doctoral students in research. HMC has 11 mathematics and five computer science faculty and the Claremont Colleges combined have a total of 48 mathematics and computer science faculty. The department has an excellent network of both office and laboratory computer workstations. Harvey Mudd College is an affirmative action, equal opportunity employer. Minority and women candidates are especially encouraged to apply. Preference will be given to applications received by December 1, 1994. Applicants should be prepared to have three letters of reference sent upon request and send a curriculum vitae, a description of their research, teaching, and administrative experience, to: **Professor Robert Borrelli, Search Committee Chair, Department of Mathematics, Harvey Mudd College, Claremont, CA 91711.**

HOWARD UNIVERSITY - DEPARTMENT OF MATHEMATICS - Assistant Professorships are anticipated for 1995-1996. Ph.D., demonstrated excellence in teaching and active participation in research required. We encourage applicants in Algebraic Topology, but other applications are welcome. Send resume and direct three letters of reference to: **Chairman, Mathematics Department, Howard University, Washington, D.C. 20059**. Deadline: January 18, 1995.

INSTITUTE FOR ADVANCED STUDY- SCHOOL OF MATHEMATICS - The School of Mathematics will grant a limited number of memberships, some with financial support, for research in mathematics at the Institute during the academic year 1995-96. Candidates must have given evidence of ability in research comparable at least with that expected for the Ph.D. degree. Application blanks may be obtained from: **The School of Mathematics, Attention: Richard A. Lloyd, Institute for Advanced Study, Olden Lane, Princeton, New Jersey 08540**, (E-mail address: lloyd@math.ias.edu) and should be returned (whether or not funds are expected from some other source) by December 1, 1994. The Institute for Advanced study is An Equal Opportunity/Affirmative Action Employer and encourages applications from women and minorities.

IOWA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Department Chair - The Department of Mathematics invites applications and nominations for the position of Department Chair and Professor Mathematics. The university administration recognizes the importance of mathematics to science and technology and has committed itself to invigorating and strengthening the research and teaching functions of the department. Applicants should possess effective administrative and interpersonal skills and be dedicated to promoting excellence in research and excellence in both graduate and undergraduate education. Applicants should have a distinguished and continuing record of funded research and graduate advising appropriate for appointment to the rank of full professor, and will be expected to maintain a strong research program. There will be additional faculty hires as present and future retirements proceed over the next few years. The chair will be expected to provided leadership and direction in this hiring. The department currently has 52 tenured or tenure-track faculty. Research areas include ordinary and partial differential equations, control theory, functional analysis, combinatorics, algebra, probability, and logic. The department serves approximately 60 graduate majors, 140 undergraduate majors and about 16,000 students in other disciplines. Applicants should send a resume together with the names, addresses, and phone numbers of four references to: **the Chair of the Search Committee, Department of Mathematics, Iowa State University, Ames, Iowa 50011-2066** (seagrave@iastate.edu). Consideration of applications will begin on November 15th, 1994 and will continue until the position is filled. Iowa State University is an Affirmative Action/Equal Opportunity Employer. Qualified Women, minorities, and members of the other protected groups are encouraged to apply.

JOHNS HOPKINS UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department of Mathematical Sciences at the Johns Hopkins University invites applications for an anticipated faculty position to begin in Fall 1995. The core areas of the Department are Discrete Mathematics, Matrix and Numerical Analysis, Operations Research and Optimization, and Probability and Statistics. Candidates with a strong background in one of these areas or in the area of numerical mathematics are encouraged to apply. We especially welcome applicants who can interact effectively with faculty and students in the School of Engineering, particularly in such thrust areas as information, biomedical, environmental, and materials sciences. A broad and outstanding mathematical background is essential. Applicants at all levels will be considered. Selection will reflect demonstration (for senior applicants) and promise (for junior applicants) of excellence in research, teaching and innovative applications. A Ph.D. degree is required. Applications in the areas of algebra, analysis, geometry, number theory, and topology will not be accepted by the Mathematical Sciences Department, which is distinct from the Mathematics Department. Minority and women candidates are encouraged to apply. The Johns Hopkins University is an affirmative action/equal opportunity employer. Applicants are requested to send initially only a curriculum vitae with a cover letter describing professional interests and aspirations. Recommendation letters, transcripts, preprints and reprints are to be furnished only upon request. Please address applications to: **Faculty Search Committee, Dept. of Mathematical Sciences, The Johns Hopkins University, 220 Maryland Hall, Baltimore, MD 21218-2689.** Applications are requested by January 15, 1995.

JOHNS HOPKINS UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for anticipated faculty positions within the general area of algebra, analysis, geometry, number theory and topology. Positions may be filled at any level, but most likely will be assistant professors or visiting appointments. Minority and women candidates are encourages to apply. The Johns Hopkins University is an Affirmative Action/Equal Opportunity Employer. Applicants should submit a curriculum vitae and arrange for letters of recommendation to be sent to: **Appointments Committee, Department of Mathematics, 404 Krieger Hall, Johns Hopkins University, Baltimore, MD 21218**. Offers will be made any time after February 1, 1995. If positions have not been filled, late applicants will be considered. (Applications in probability, statistics, operations research, and numerical methods will not be considered; applicants in these areas should instead contact the Department of Mathematical Sciences in the School of Engineering.)

LOUISIANA TECH UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Applications are invited for an anticipated senior level position for an applied mathematician with a national reputation and a proven grant record whose research interests are centered squarely in the area of Applied Computational Analysis and Modeling and who would be capable of overseeing the entire computational program within the School of Science. The position could open as early as March 1995. A resume and three letters of recommendation should be sent to: **R.J. Greechie, Head, Department of Mathematics and Statistics, Louisiana Tech University, Ruston, LA 71272**. The screening of applications will begin on October 14, 1994 and will continue until the position is filled. Louisiana Tech University is an Equal Opportunity/Affirmative Action Employer. We are interested in receiving applications from qualified women and minorities.

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MACALESTER COLLEGE - MATHEMATICS AND COMPUTER SCIENCE DEPARTMENT - Applications are invited for a tenure track position in Computer Science at the Assistant Professor level to begin in the Fall of 1995. Candidates must have a Ph.D. in Computer Science and must be committed to teaching and research in a four-year liberal arts college. Women and minorities are especially encouraged to apply. Macalester College does not discriminate in employment because of race, religion, creed, sex, national or ethnic origin, age, marital status, sexual orientation, or disability. Applicants should send a resume, a statement giving reasons for interest in a liberal arts college, and arrange for three letters of reference to be sent to: **Wayne Roberts, Macalester College, Mathematics and Computer Science Department, 1600 Grand Ave., St. Paul, MN 55105.**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY - DEPARTMENT OF MATHEMATICS - One or two assistant professor or higher levels in applied mathematics will probably become available in Fall 1995 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, 1995. For further information, write 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 1995 - 1996. 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, 1995. Applicants please arrange to have sent (a) a vitae; (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, 1995. Please arrange to have sent (a) a vitae; (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, 1995 and our decisions will be announced in the early spring. For further information, write 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.

MEREDITH COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Computer Science - Assistant/Associate Professor and Director of Computer Science. Ph.D. in Computer Science or Computer Information Systems,; a strong interest in teaching; a commitment to undergraduate liberal arts and computer science education. Meredith College is a church-related women's college with a stable enrollment of about 2,000 students. Apply to: **Dr. Virginia Knight, Head, Department of Mathematics and Computer Science, Meredith College, 3800 Hillsborough Street, Raleigh, NC 27607**; inquiries to vknight@mercury.interpath.net. Meredith College is an Equal Opportunity Employer; women and minorities are encouraged to apply.

MICHIGAN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department is seeking applicants for several tenure track positions; openings are available at various levels. Excellence in research and teaching is essential and two or more years beyond the Ph.D. is expected. Please send a resume and arrange to have three letters of recommendation sent to: **The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027**: E-mail: hiring@mth.msu.edu. It would be helpful if resume included (if possible) electronic address. Applications received by December 1, 1994 will be given more attention. Women and minorities are strongly encouraged to apply. MSU is an Affirmative Action/Equal Opportunity Institution.

MICHIGAN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - One or more postdoctoral fellowships in Mathematics. The appointment is for two years. Duties include teaching at most four (3 credit) semester courses each year with the expectation that the fellow will devote remaining time to research. These fellowships are normally offered to persons (regardless of age) who have had their doctorate less than two years. There will also be some instructor positions available. Please send a resume, a brief statement of research interests and arrange to have three letters of recommendation sent to: **The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027**: E-mail: hiring@mth.msu.edu. Applications received by December 1, 1994 will be given more attention. MSU is an Affirmative Action/Equal Opportunity Institution.

MILLERSVILLE UNIVERSITY - MATHEMATICS DEPARTMENT - Assistant Professorship to begin Fall 1995. Responsibilities include teaching mathematics courses in elementary and secondary teacher education, teaching a wide variety of undergraduate mathematics service courses, teaching and curriculum development in mathematics educations both at the undergraduate and MEd levels, and supervision of student teaching experiences. Must have doctorate (or completion within one year) in mathematics education or mathematics with a specialization in mathematics education. Must be broadly trained in mathematics with at least 24 semester hours of graduate level courses in pure or applied mathematics. Must 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. Evidence of teaching effectiveness is the primary consideration. Preference given to candidates with experience teaching mathematics in secondary or middle schools. Candidates must be able to work effectively with professional and community groups. Full consideration will be given to applications received by January 20, 1995. Send letter of applications, curriculum vitae, copies of transcripts and three current letters of recommendation (at least two letters must attest to recent teaching effectiveness) to: **Dr. Bernie Schroeder, Staff Search Chair, Department of Mathematics/WM1194, Millersville University, P.O. Box 1002, Millersville, PA 17551-0302.** AA/EOE.

MOORHEAD STATE UNIVERSITY - MATHEMATICS DEPARTMENT - Tenure track position at rank of assistant professor to begin September 1995. A Ph.D. or Ed.D. in mathematics education is strongly preferred. Substantial progress towards a terminal degree is required. Eligibility for licensure at some level K-12 and good communications skills are required. Preference will be given to candidates with evidence of successful teaching experience at the K-12 and college level. Interest or experience in teaching a mathematics methods course for elementary education majors and evidence of ability to work effectively as a member of a teaching team are desirable. Duties include teaching mathematics education methods courses, elementary education content courses and undergraduate mathematics courses. Other responsibilities include advising secondary mathematics education majors, developing in-service workshops, working on assigned committees and maintaining an appropriate level of professional activity. The teaching load is twelve hours per semester, which may include supervising student teachers. Screening of applications will begin January 20, 1995. Completed applications must include a resume, MSU Standard Application Form, graduate and undergraduate transcripts, and three letters of reference. Apply to: **Ronald Jeppson, Chair, Mathematics Department, Moorhead State University, Moorhead, Minnesota 56563**, (218) 236-2274. Moorhead State is an Equal Opportunity/Affirmative Action Employer and Educator.

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NATIONAL SCIENCE FOUNDATION - DIVISION OF MATHEMATICAL SCIENCES - Director - NSF Directorate for Mathematical and Physical Sciences seeks qualified candidates for the position of Director, Division of Mathematical Sciences. The incumbent will provide management and direction to the Division which includes research support programs in areas involving Algebra and Number Theory, Applied Mathematics, Classical Analysis, Computational Mathematics, Modern Analysis, Statistics and Probability, Topology, Foundations and Geometric Analysis. Appointment to this Senior Executive Service position may be on a career or 2 to 3 year limited term basis, with a $96,830 to $111,839 salary range. Alternatively, selectee may be assigned under Intergovernmental Personnel Act provisions, retaining current salary and benefits. Applicants must have a Ph.D. or professional experience in the mathematical sciences or related field, substantial research experience and strong evidence of scholarship in mathematical sciences or recognized leadership in research administration, and demonstrated supervisory skills. Applicants should contact George Pittmon on 703-306-1187 (hearing impaired individuals may call TDD 703-306-0189) to request announcement EP 94-22 for complete qualification requirements and applications procedures. Please specify appointment type(s) in which you are interested. Applications should be mailed to: **George Pittmon, National Science Foundation, Executive Personnel and Development Branch, Suite 315, 4201 Wilson Blvd., Arlington, VA 22230.** Applications must be received by December 9, 1994. NSF is an Equal Opportunity Employer committed to employing a highly qualified staff that reflects the diversity of our nation.

NEW COLLEGE OF THE UNIVERSITY OF SOUTH FLORIDA - DIVISION OF NATURAL SCIENCES - New College of USF, the honors college of the State University System of Florida, has an opening for a tenure track position in mathematics beginning August 1995. Rank is open depending on qualifications. A Ph.D. in Mathematics is required together with a strong research record/potential and a commitment to excellence in undergraduate teaching. Only applicants in the general area of ANALYSIS will be considered. Responsibilities include teaching two classes per semester, plus individual or group tutorials and supervision of senior theses (these are required for all students). New College is a highly selective liberal arts college with a student/faculty ratio of 11:1, an has a system of contracts and written evaluations rather than credit hours and grades. The SAT scores of New College students are among the highest in the nation. New College was ranked first in *Money Guide: Best College Buys*, 1993-94 and 1994-95 editions. To apply, send letter of application with vitae and a statement of teaching philosophy, and direct three letters of reference to: **Dr. Karsten Henckell, Chair of Search Committee, Division of Natural Sciences, New College of USF, 5700 N. Tamiami Trail, Sarasota, FL 34243.** Applicants that want to be considered for an interview at the AMS/MAA Joint Mathematics Meeting in January should have completed their applications by December 16, 1994. New College of the University of South Florida is an EOE/AA/ADA Institution. Qualified individuals who need disability accommodations, contact Karsten Henckell, at (813) 359-4370 five working days in advance. The search and selection process will be in accordance with provisions of the State of Florida Sunshine laws. Search Committee meetings and documents are available for public inspection.

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY - DEPARTMENT OF MATHEMATICS - Tenure Track Position - New Mexico Institute of Mining and Technology has a tenure track position available starting in August 1995. The position involves teaching courses in classical applied mathematics and modeling, and maintaining an active research program in applied mathematics, preferably in an area suitable for collaboration with other researchers at New Mexico Tech. The department has a strong interdisciplinary program in cooperation with other departments and research groups on campus. Areas of applications included atmospheric physics, biology, computer science, engineering, groundwater hydrology, environmental problems and reservoir simulation. Tech is a small scientific and engineering school dedicated to excellence in teaching and research. Candidates must be able to communicate effectively in written and spoken English. All requirements for the Ph.D. in mathematics or related field must have been completed by January 15, 1995. College teaching experience is required; numerical computing and industrial experience are desirable. Screening will begin February 15, 1995, and continue until the position is filled. Women and minority applicants are encourage to apply. Send applications, curriculum vitae, graduate transcripts, and have three letters of reference sent to: **New Mexico Institute of Mining and Technology, Human Resources, Wells Hall, Box C-084C, Socorro, NM 87801.** New Mexico Institute of Mining and Technology is an Affirmative Action/Equal Opportunity Employer.

NEW MEXICO STATE UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - The department invites applications for tenure-track and visiting positions in pure and applied mathematics and statistics for academic year 1995-1996. The department has 32 tenure-track positions, and offers B.S., M.S. and Ph.D. degrees. New tenure-track appointments are expected to be at the assistant professor level. Applicants should demonstrate strong potential for success in both teaching and research. A complete application consists of an introductory letter from the applicant, a curriculum vitae, and three or more letters of recommendation. The applicant's letter should identify research area and interest in tenure-track or visiting positions; letters of recommendation should address abilities in both research and teaching. For tenure-track positions, an applicant's letter and vitae must be received by December 15, 1994 and other supporting materials must be received by January 9, 1995. Tenure-track appointments are made during the spring semester; visiting appointments are made as vacancies occur. Application materials should be sent to: **Hiring Committee, Department of Mathematical Sciences, New Mexico State University, Las Cruces, NM 88003-8001.** NMSU is an Equal Opportunity/Affirmative Action Employer.

NORTH CAROLINA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for a tenure track appointment in Symbolic Computation, beginning in the Fall of 1995. Applicants at all levels will be considered. Candidates should have a strong ongoing research program and a demonstrated competence in teaching. Applicants should send a vitae and letters of reference to: **Symbolic Computation Search Committee, Mathematics Department, Box 8205, North Carolina State University, Raleigh, NC 27695.** Applications received by January 15, 1995 will be given full consideration. NCSU is an is an Affirmative Action/Equal Opportunity Employer and in its commitment to diversity and equity, seeks applications from women, minorities and disabled individuals.

NORTHEASTERN ILLINOIS UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics, Northeastern Illinois University, invites applications for tenure track Assistant Professor beginning Fall 1995. Required: earned doctorate in mathematics. Responsibilities: teaching lower level service courses; courses to support undergraduate and graduate programs in applied math, probability and statistics or teach training; and curriculum development. Department offers undergraduate and master degrees with specializations in statistics, operations research, scientific computing, elementary and secondary school teaching. Send application letter, vitae, and 3 letters of reference (at least 1 addressing teaching effectiveness) to: **Search and Screen, Dr. Richard Reichhardt, Department of Mathematics, Northeastern Illinois University, 5500 N. St. Louis Avenue, Chicago, IL 60625.** Review of applications begins January 1, 1995. Northeastern University is an Affirmative Action/Equal Opportunity Employer.

NORTHWESTERN UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for a newly created position of Lecturer in Mathematics starting in September 1995. This position carries a two course teaching responsibility in each of the three quarters of the academic year. The term of appointment will be for one year and will be renewable twice upon evidence of excellence in teaching. Candidates must present solid evidence of effective teaching and quality research. Teaching experience of at least two courses is expected, and teaching performance should be substantiated, if possible, by tabulated student evaluations. Send applications and three letters of reference to: **Chairperson, Personnel Committee, Department of Mathematics, Northwestern University, 2033 Sheridan Road, Evanston, IL 60208-2730.** Initial inquiries may be sent via e-mail to: hiring@math.nwu.edu. In order to receive full consideration, applications should be received by December 15, 1994. Northwestern University is an equal opportunity/affirmative action employer and encourages applications from minority and women candidates.

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NORTHWESTERN UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Mathematics Department will sponsor an Emphasis Year in analysis/applied analysis. This program will include two two-year assistant professorship positions starting September 1995 and possible visiting positions for more senior mathematicians for part of the academic year 1995-96, contingent upon availability of funds. Applications should include a curriculum vitae and three letters of recommendation, and be sent to: **The Emphasis Year Secretary, Department of Mathematics, Northwestern University, 2033 Sheridan Road, Evanston, IL 60208-2730.** In order to ensure full consideration, an application should be received by January 15, 1995. Northwestern University is an affirmative action/equal opportunity employer committed to fostering a diverse faculty; women and minority candidates are especially encouraged to apply.

NORTHWESTERN UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for an anticipated tenure-track assistant professor position starting September 1995. Priority will be given to exceptional research mathematicians. Fields of interest within the department include Algebra, Analysis, Dynamical Systems, Probability, Partial Differential Equations, and Topology. Northwestern is an affirmative action/equal opportunity employer committed to fostering a diverse faculty; women and minority candidates are especially encouraged to apply. Candidates should arrange that at least three letters of recommendation be sent to: **Prof. J. Sally, Chair, Personnel Committee, Department of Mathematics, Northwestern University, 2033 Sheridan Road, Evanston, IL 60208-2730.** Initial inquiries may be sent via e-mail to: hiring@math.nwu.edu. In order to receive full consideration, applications should be received by December 15, 1994. Hiring is contingent upon eligibility to work in the United States.

OHIO STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics of The Ohio State University hopes to have available several positions, both visiting and permanent, effective Autumn Quarter 1995. Candidates in all areas of applied and pure mathematics are invited to apply. Significant mathematical research accomplishments or exceptional promise, and evidence of good teaching ability, will be expected of successful applicants. Please send credentials and have at least three letters of recommendation sent to: **Professor Robert Brown, Department of Mathematics, The Ohio State University, 231 W. 18th Avenue, Columbus, Ohio 43210.** Review of resumes will begin immediately. The Ohio State University is an Equal Opportunity/Affirmative Action Employer. Qualified women and minority candidates are encouraged to apply.

PURDUE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Purdue University invites applications for several tenure-track or two-year research assistant professorships beginning August 1995. Ph.D. by August 1995, exceptional research promise, and excellence in teaching required. Possible positions at the Associate Professor/Professor level beginning August 1995. Ph.D. and excellent research and teaching credentials required. Applicants should mention at least one Purdue faculty member with whom they expect to have common research interests. Preference will be given to completed applications received by December 15, 1994. Send resume and three letters of recommendation (for assistant professorships, at least one letter should discuss teaching) to: **Leonard Lipshitz, Head, Department of Mathematics, Purdue University, West Lafayette, IN 47907-1395.** Purdue University is an Affirmative Action/Equal Opportunity Employer.

QUEEN'S UNIVERSITY @ KINGSTON - DEPARTMENT OF MATHEMATICS AND STATISTICS - The Department will be making a renewable (tenure-track) appointment in Applied Mathematics at the Assistant or possibly Associate Professor level to begin July 1995. Membership or eligibility for membership in a Canadian professional engineering association is required. The Department is particularly interested in applicants in communications theory, information theory or fluid mechanics, but other areas will be considered. The successful applicant will have a strong research record, be expected to develop an independent research programme, be willing and competent to teach a broad range of applied mathematics courses, and supervise graduate students. Interested candidates should arrange that a curriculum vitae, a description of teaching and research interests, at least three letters of recommendation, and copies of their three most significant publications arrive at the address below before January 15, 1995. At least one letter should comment on the candidate's teaching. Send to: **Professor Leslie Roberts, Associate Head Department of Mathematics and Statistics, Queen's University Kingston, Ontario K7L 3N6, Canada**; Fax: 613-545-2964; E-mail: mastdept@qucdn.queensu.ca. Queen's University has an employment equity programme and encourages applications from all qualified candidates, including women, aboriginal peoples, people with disabilities and visible minorities.

RENSSELAER POLYTECHNIC INSTITUTE - DEPARTMENT OF MATHEMATICAL SCIENCES - Applications are invited for a tenured or tenure-track position in applied mathematics, to begin in September 1995. Requirements included a Ph.D., strong research and teaching potential for junior level appointments, and a demonstrated outstanding record of senior-level appointments. Applicants should submit a letter of application, a curriculum vitae, a description of research interests, and arrange to have three letters of recommendations sent to: **Mark H. Holmes, Chair, Department of Mathematical Sciences, Rensselaer Polytechnic Institute, Troy, NY 12180.**

RICE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Griffith Conrad Evans Instructorships - Postdoctoral appointments for two to three years for promising research mathematicians with research interests in common with the active research areas at Rice, particularly geometric topology, geometric analysis, differential geometry, mathematical physics and ergodic theory. Duties will include research and classroom teaching. Applications received by December 31, 1994 will receive full consideration. Rice University is an Equal Opportunity/Affirmative Action Employer and strongly encourages applications from women and minority group members. Inquiries and applications should be addressed to: **Chair, Evans Committee, Department of Mathematics, Rice University, P.O. Box 1892, Houston, TX 77251-1892.**

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 beginning September 1995. Candidates must have a Ph.D., have a strong research record, and be able to demonstrate outstanding promise, as well as a commitment to effective teaching. Research interests of the department include the following: representation theory, automorphic forms, number theory, low dimensional topology, Riemann surfaces, and algebraic geometry. Applicants should arrange for a curriculum vitae and at least four letters of recommendation, including one which addresses teaching, to be sent to: **William Keigher, Associate Chair, Department of Mathematics and Computer Science, Rutgers University, Newark, NJ 07102.** Responses may also be e-mailed to math@andromeda.rutgers.edu. Processing of applications will begin in December 1994. Rutgers University is an is an Affirmative Action/Equal Opportunity Employer.

SOUTHERN ILLINOIS UNIVERSITY @ CARBONDALE - DEPARTMENT OF MATHEMATICS - Continuing Position - Applications are invited from qualified candidates for a tenure track position at the assistant professor level beginning on August 16, 1995. Ph.D. in mathematics required. Preference will be given to applicants in the areas of algebra, combinatorics, ordinary or partial differential equations, probability and topology. Candidates must have demonstrated excellence in research or potential for such. Applicants should provide evidence of excellence in teaching, and foreign applicants must provide evidence of the ability to teach in English effectively. Send letter of application, resume and three letters of recommendations to: **Continuing Position, c/o Ronald B. Kirk, Chair, Department of Mathematics, Southern Illinois University @ Carbondale, Carbondale, IL 62901.** The closing date is December 1, 1994 or until the position is filled. SIUC is an Equal Opportunity/|Affirmative Action Employer. Women and minorities are particularly encouraged to apply.

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ST. OLAF COLLEGE - MATHEMATICS DEPARTMENT - Tenure-track assistant professor beginning September 1995. Requires Ph.D. in statistics, interest in applications, and commitment to undergraduate teaching. Send vitae, statement of professional interests and goals, and three letters of recommendation to: **Richard Kleber, Mathematics Department, St. Olaf College, Northfield, MN 55057**. St. Olaf is is an Affirmative Action/Equal Opportunity Employer and affiliated with the Lutheran Church. Women and minorities encouraged to apply. Early applications are encouraged.

SUNY @ STONY BROOK - DEPARTMENT OF MATHEMATICS/INSTITUTE FOR MATHEMATICAL SCIENCES - The Department and the Institute anticipate making a small number of visiting and junior appointments (Post-Docs and tenure-track assistant professors) starting Fall 1995. All areas of mathematics considered, but areas of research at Stony Brook preferred. Currently, the Institute is interested in dynamical systems. Applicants should submit only one application (automatically considered for both). Send to: **Appointments Committee, Math Department, SUNY at Stony Brook, Stony Brook, NY 11794-3651** e-mail address: hiring@math.sunysb.edu. Information Application Deadline: January 15, 1995 (on rolling basis thereafter). Candidates must have demonstrably outstanding research potential and teaching credentials. Send curriculum vitae and have 3 or more letters of recommendation sent to Appointments Committee. For further information, write, or preferably send e-mail (the body of the message may be left blank). SUNY at Stony Brook is an Affirmative Action/Equal Opportunity Employer.

TENNESSEE TECHNOLOGICAL UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for a tenure-track position at the rank of Assistant Professor, available August 1995. Ph.D. in mathematics in the area of combinatorics, graph theory, optimization, of control, evidence of excellent teaching ability, and strong interest in research are required. Duties include teaching undergraduate and graduate courses, engaging in research activities, participating in course and curriculum development, and directing graduate students. Initial screening of applications will begin on January 10, 1995, but the position will remain open until filled. Send transcript and curriculum vitae, and have three letters of recommendation sent to: **Dr. B.M. O'Connor, Search Committee Chairperson, Department of Mathematics, Box 5054, Tennessee Technological University, Cookeville, TN 38505,** e-mail: boc3530@tntech.edu; fax: 615-372-6172. Tennessee Technological University is an is an Affirmative Action/Equal Opportunity Employer.

TRINITY COLLEGE, HARTFORD - DEPARTMENT OF MATHEMATICS - Applications are invited for a tenure-track assistant professorship, duties of which commence late August 1995. Requirements: Ph.D. in mathematics, strong evidence of research potential and successful classroom instruction, and commitment to undergraduate education in a liberal arts setting. Preference given to specialists in algebra, logic, or geometry. Computer expertise and experience in laboratory calculus settings are desirable. Send a cover letter, curriculum vitae, statements on teaching and research interests, and three letters of reference (at least one of which addresses teaching) to: **Search Committee, Department of Mathematics, Trinity College, Hartford, CT 06106**. We also anticipate filling two one-year slots, specialization open. Interested parties should so indicate in the cover letter, and check the e-MATH listings in early December. Review of applications will begin January 9, 1995, and will continue until positions are filled. Trinity College is an Equal Opportunity/Affirmative Action Employer. Women and members of minority groups are especially encouraged to apply.

UNIVERSITÉ LAVAL - DÉPARTEMENT DE MATHÉMATIQUES ET DE STATISTIQUE - Poste en Algèbre et Théorie des Nombres - Le Département de mathématiques et de statistique sollicite des candidatures pour un poste de carrière en algèbre et théorie des nombres qui sera disponible le 1er juin 1995. **FONCTIONS:** Enseignement des mathématiques aux trois cycles, y compris dans des cours autres que ceux des programmes de mathématiques. Direction d'etudiants de deuxième et de troisième cycle. Recherche fondamentale en algèbre et théorie des nombres. Participation aux activités de l'equipe d'algèbre et de théorie des nombres. Participation aux autres tâches univeritaires. **CRITÈRES DE SÉLECTION:** Être titulaire d'un doctorat en mathématiques ou d'un diplôme jugé équivalent. Être actif en recherche fondamentale et oeuvrer en algèbre et théorie des nombres ou dans un domaine relié à la théorie des nombres. Manifester la volonté de développer l'équipe d'algèbre et de théorie des nombres du Département et la composante à l'Université Laval du Centre interuniversitaire en calcul mathématique algébrique. Posséder des aptitudes pour l'enseignement, y compris à de grands groupes. Pouvoir enseigner en français. **INFORMATION:** L'Université Laval applique un programme d'accès à l'égalité qui consacre la moitié des postes vacants à l'engagement de femmes. Conformément aux exigences prescrites en matière d'immigration au Canada, la priorité sera accordée aux citoyens canadiens et aux résidents permanents du Canada. Le salaire est déterminé par la convention collective suivant l'ancienneté et le rang universitaire accordés. Les personnes intéressées sont priées de faire parvenir, avant le 31 décembre 1994, à l'adresse ci-dessous: une copie de leur curriculum vitae; des tirés-à-part de quelques publications récentes; deux lettres de recommandation témoignant de leurs aptitudes professionnelles tant en enseignement qu'en recherche. **Claude Lemaire, Directeur, Département de mathématiques et de statistique, Université Laval, Sainte-Foy, Québec, G1K 7P4 Canada.**

UNIVERSITÉ LAVAL - DÉPARTEMENT DE MATHÉMATIQUES ET DE STATISTIQUE - Poste pour le Baccalauréat en Enseignement Secondaire (Mathématiques) - Le Département de mathématiques et de statistique sollicite des candidatures pour un poste de carrière spécialement consacré au baccalauréat en enseignement secondaire (voies mathématiques). L'entrée en fonction est le 1er juin 1995. **FONCTIONS:** La fonction principale de la personne recrutée sera d'enseigner des cours de mathématiques destinés aux étudiants du baccalauréat en enseignement secondaire et d'effectuer toute tâche universitaire en relation avec ce programme. Elle devra faire de la recherche et pourra être requise pour effectuer d'autres taches universitaires, notamment l'enseignement d'autres cours et la supervission d'etudiants des deuxième et troisième cycles. **CRITÈRES DE SÉLECTION:** Détenir un doctorat en mathématiques ou un diplôme jugé équivalent. Les candidatures des personnes qui sont proches d'obtenir un doctorat seront également considérées. Faire la preuve, à la satisfaction du comité de sélection, de son intérêt pour la formation des maîtres du secondaire en mathématiques et de sa capacité à donner des cours de mathématiques adaptés aux futurs enseignants du secondaire. Avoir la capacité de faire de la recherche en mathématiques. Pouvoir enseigner en français. Seront considérées comme des stouts: une bonne connaissance du système d'enseignement secondaire au Québec, la capacité à s'intégrer dans une des équipes de recherche existantes du département, une formation complémentaire dans un domaine lié à l'enseignement secondaire. **INFORMATION:** L'Université Laval applique un programme d'accès à l'égalité qui consacre la moitié des postes vacants à l'engagement des femmes. Les candidatures féminines et les candidatures de jeunes présentant un grand potential sont particulièrement encouragées. Conformément aux exigences prescrites en matière d'immigration au Canada, la priorité sera accordée aux citoyens canadiens et aux résidents permanents du Canada. Le salaire est déterminé par la convention collective suivant l'ancienneté et le rang universitaire accordés. Les personnes intéressées sont priées de faire parvenir, avant le 31 janvier 1995, à l'adresse ci-dessous, une copie de leur curriculum vitae, des tirés-à-part de quelques publications récentes ou tout autre travail de recherche et deux lettres de recommandation témoignant de leurs aptitudes professionnelles tant en recherche qu'en enseignement. **Claude Lemaire, Directeur, Département de mathématiques et de statistique, Université Laval, Sainte-Foy, Québec, G1K 7P4 Canada.**

UNIVERSITY OF ARIZONA - DEPARTMENT OF MATHEMATICS - The Mathematics Department at the University of Arizona may have tenure-track and postdoctoral positions subject to availability of funding beginning Fall 1995. **TENURE TRACK POSITIONS.** Excellent research record or potential, strong commitment to teaching required. Fields should complement but not duplicate existing department research strengths in arithmetic geometry, computational science, differential geometry, dynamical systems, mathematical physics, nonlinear science and number theory. **POSTDOCTORAL FELLOWSHIPS (Research Associates).** Applicants with strengths in all areas compatible with department interest are encouraged to respond. In addition, special Center of Excellence Awards in nonlinear optics and fluid mechanics are available. The Mathematics Department may also have several ***visiting position*** for next year. We encourage early application. Deadline date will be January 1, 1995 or whenever positions are filled. Women and minority applicants are especially welcome. Send application, which should include a letter of interest, curriculum vitae with a list of publications, and a minimum of three (3) letters of recommendation (enclose or arrange to be sent), to: **Personnel Committee, Department of Mathematics, University of Arizona, Tucson, Arizona 85721.** The University of Arizona is an Affirmative Action/Equal Opportunity/ADA Employer.

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UNIVERSITY OF CALIFORNIA @ BERKELEY - DEPARTMENT OF MATHEMATICS - Charles B. Morrey Jr. Assistant Professorships - We invite applications for these special two-year (nontenure-track) positions effective July 1, 1995. Applicants should have a recent Ph.D. in the areas of algebra, analysis, applied mathematics, foundations, or geometry and topology. Applicants should send a resume, reprints, preprints, and/or dissertation abstract, and ask three people to send letters of recommendation to: **The Vice Chair for Faculty Affairs, Department of Mathematics, University of California @ Berkeley, Berkeley, CA 94720.** We should receive this material no later than January 1, 1995. Applications received after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

UNIVERSITY OF CALIFORNIA @ BERKELEY - DEPARTMENT OF MATHEMATICS - Temporary Postdoctoral Positions - Several temporary positions beginning in Fall 1995 are anticipated for new and recent Ph.D.'s of any age, in the areas of algebra, analysis, and applied mathematics, foundations or geometry and topology. The terms of these appointments may range from one to three years. Applicants for NSF or other postdoctoral fellowships are encouraged to apply for these positions; combined teaching/research appointments may be made for up to three years. Mathematicians who research interest are close to those of regular department members will be given some preference. Applicants should send a resume, and reprints, preprints, and/or dissertations abstract, and ask three people to send letters of recommendation to: **The Vice Chair for Faculty Affairs, Department of Mathematics, University of California @ Berkeley, Berkeley, CA 94720.** We should receive this material no later than January 1, 1995. Applications received after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

UNIVERSITY OF CALIFORNIA @ BERKELEY - DEPARTMENT OF MATHEMATICS - Tenured or Tenure Track Position - We invite applications for one or more positions effective July 1, 1995 at either the tenure-track (Assistant Professor) or tenured (Associate or Full Professor) level, subject to budgetary approval, in the areas of algebra, analysis, and applied mathematics, foundations or geometry and topology. Tenure track applications are expected to have demonstrated outstanding research potential, normally including major contributions beyond the doctoral dissertation. Such applicants should send a resume, and reprint or preprints, and/or dissertation abstract, and ask three people to send letters of recommendation to: **The Vice Chair for Faculty Affairs, Department of Mathematics, University of California @ Berkeley, Berkeley, CA 94720.** Tenure applicants are expected to demonstrate leadership in research and should send a curriculum vitae, list of publications, a few selected reprints or preprints, and the names and addresses of three references to: The Vice Chair for Faculty Affairs at the above address. We should receive this material no later than January 1, 1995. Applications received after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

UNIVERSITY OF CALIFORNIA, DAVIS - DEPARTMENT OF MATHEMATICS - Regular and Visiting Faculty Positions in Mathematics - Applications are invited for three anticipated tenure track positions and several Visiting Research Assistant Professorship (VRAP) positions in the Department of Mathematics, University of California, Davis, effective July 1, 1995. These positions are contingent on budgetary approval. Appointment of the tenure track positions will be made at the Assistant Professor level commensurate with qualifications. Qualifications include a Ph.D. degree in mathematical sciences and great promise in research and teaching. Duties include mathematical research, undergraduate and graduate teaching, and service. For the tenure track positions, the Department of Mathematics is recruiting in 1) Computational Mathematics, 2) Analysis/PDEs, and 3) Algebra/Number Theory. The VRAP positions are renewable for a total of three years with satisfactory performance in research and teaching. The VRAP applicants are required to have completed their Ph.D. no earlier than 1991. The Department of Mathematics is interested in applicants in the following areas for the VRAP positions: 1) Computational Mathematics 2) Analysis/PDEs, 3) Algebra/Number Theory, 4) Applied Mathematics, 5) Mathematical Physics, and 6) Geometry/Topology. The tenure-track positions are open until filled, but to assure consideration, applications should be received by December 16, 1994. The application deadline for the VRAP positions is February 1, 1995. To initiate the application process, request an application package by writing an e-mail message to forms@math.ucdavis.edu. Those who do not have access to e-mail can obtain the package by writing to: **Chair of Search Committee, Department of Mathematics, University of California, Davis, California 95616-8633**. The Department of Mathematics at UC Davis is an affirmative action employer with a strong institutional commitment to the achievement of diversity among its faculty and staff. In this spirit, we are particularly interested in receiving applications from women, persons of color and persons from other underrepresented groups.

UNIVERSITY OF CALIFORNIA, LOS ANGELES - DEPARTMENT OF MATHEMATICS - The UCLA Department of Mathematics invites 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: statistics; applied and computational mathematics; logic; geometry, topology and dynamical systems; analysis and differential equations; algebra, number theory and combinatorics; mathematical developments arising from physics. Teaching load is an average of 4.5 quarter courses per year. Positions subject to availability of resources and administrative approval. To apply, send electronic mail to: **search@math.ucla.edu** or write to: **John Garnett, Chair, Department of Mathematics, University of California, Los Angeles, CA 90024-1555, 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) Two E.R. Hedrick Assistant Professorships**. Applicants must show very strong promise in research and teaching. Salary $39,600. 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 1, 1995. **(2) One or two Research Assistant Professorships in Computational and Applied Mathematics.** Applicants must show very strong promise in research and teaching. Salary $39,600. On 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 1, 1995. **(3) One 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 $39,600 -$47,000. 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 $34,248 or more, depending on experience. Preference will be given to applications completed by February 1, 1995. **(4) An Adjunct Assistant Professorship.** One year appointment, probably renewable once. Strong research and teaching background required. Salary $35,900 - $40,500. 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 or write to: John B. Garnett, Chair, Department of Mathematics, University of California, Los Angeles, CA 90024-1555. Attn: Staff Search.** UCLA is an Equal Opportunity/Affirmative Action Employer.

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UNIVERSITY OF CALIFORNIA, SANTA BARBARA - DEPARTMENT OF MATHEMATICS - The University of California, Santa Barbara invites applications in ANALYSIS and ALGEBRAIC GEOMETRY for the following positions in the Department of Mathematics, beginning Fall 1995. TWO TENURE TRACK POSITIONS - tenure-track appointments at the assistant professor level, effective July 1, 1995. Applicants should be in either analysis or algebraic geometry. In analysis, preference will be given to candidates in harmonic analysis, several complex variables, and functional analysis (linear or nonlinear). Demonstrated research excellence and potential to become an effective teacher are required. Candidates who best enhance the long term research plans of the department will be given preference. SPECIAL VISITING POSITIONS - Subject to availability of funds, one or more special one-year visiting assistant professorships in analysis or algebraic geometry, with possibility of a second year, carrying a teaching load of 5 or 6 one quarter courses per year. Demonstrated research excellence and teaching effectiveness are both required. Applicants should send the following materials to: **either the Analysis Committee, the Algebraic Geometry Committee, OR the Visiting Appointments Committee,** as appropriate, at the **Department of Mathematics, University of California, Santa Barbara, CA 93106-3080:** a vitae, a publication list, and a statement of research interest. Include an e-mail address if available. Applicants should also arrange to have at least four letters of recommendation sent to the appropriate committee. Applicants for the tenure track positions will automatically be considered for any visiting positions upon request, so duplicate applications are unnecessary. Applications which are complete by January 3, 1995, will be given full consideration. UCSB is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF DELAWARE - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department of Mathematical Sciences will have a tenure-track position in Industrial Applied Mathematics beginning September 1, 1995. Candidates should have Ph.D. and demonstrated research potential in applied math. Preference given to candidates who have potential to interact with faculty in following areas fluid dynamics (transonic aerodynamics, viscolasticity); inverse problems (tomography, scattering); wave propagation (acoustic, electromagnetic); scientific computing and solid mechanics (elasticity, thermoelasticity). Commitment to teaching essential. Preference will be given to candidates who evidence experience and/or ability in developing research links and student internships with industry (preferably Mid-Atlantic region) or national laboratories. Send curriculum vitae, reprints and/or preprints and 3 letters of reference to: **Dr. Ralph Kleinman, Chair, Search Committee, Department of Mathematical Sciences, University of Delaware, Newark, DE 19716** by January 15, 1995 for full consideration. The University of Delaware is an Equal Opportunity Employer which encourages applications from qualified minority group members and women.

UNIVERSITY OF DELAWARE - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department of Mathematical Sciences invites applications for a tenure track position at the Associate /Advanced Assistant Professor level starting September 1, 1995. A doctorate in mathematics or mathematics education with an active research program in secondary mathematics education is required. Candidates must possess at least a Master's degree (or equivalent) in mathematics and have a distinguished publishing record in educational research. Candidates should be able to work with doctoral candidates in the College of Education who have an interest in mathematics education at the secondary level. Candidates are also expected to help support our preservice and inservice programs. The department presently has some effort and expertise available for preservice and inservice programs. Candidates will be expected to teach a variety of mathematics courses at the undergraduate level including methods courses, and to supervise student teachers. Applicants should send a curriculum vitae, reprints and/or preprints and arrange to have three letters of reference sent to: **Professor David J. Hallenbeck, Chair, Search Committee, Department of Mathematical Sciences, University of Delaware, Newark, DE 19716.** Applications must be received by January 15, 1995 to received full consideration. The University of Delaware is an Equal Opportunity Employer which encourages applications from qualified minority group members and women.

UNIVERSITY OF FLORIDA - DEPARTMENT OF MATHEMATICS - Applications are invited for two tenure track positions at the assistant professor level in the following areas: combinatorics, probability and topology/dynamical systems. Appointments commence in August 1995. Applicants must show strong research promise and are expected to excel in teaching undergraduate mathematics courses. Applicants should forward a curriculum vitae and a list of publications to: **Chair of Search Committee, Department of Mathematics, University of Florida, Gainesville, FL 32611-8000**. Applicants should supply evidence of commitment to teaching and arrange for at least three letters of recommendation to be forwarded to the address above. Completed applications and supporting letters are due December 20, 1993. The Department especially welcomes applications from women and minority candidates. The University of Florida is an Affirmative Action/Equal Opportunity institution. Anyone requiring special assistance in completing the application should contact the search committee chairperson.

UNIVERSITY OF HAWAII - DEPARTMENT OF MATHEMATICS - One tenure track position as assistant professor to begin in Fall 1995. Hiring is pending clearance and availability of funds. Duties include mathematical research and teaching 6 credit hours per semester. Minimum qualifications include a Ph.D. in mathematics, a demonstrated potential for research and a commitment to teaching. Preference will be given to those applicants whose specialties blend well with those already represented in the department: function theory, algebraic topology, differential geometry, PDE, algebra, universal algebra and lattice theory. Annual salary: $34,644 to $51,264 depending on qualifications. Applicants should send a detailed resume and have three confidential letters of recommendation sent to: **T.B. Hoover, Chair, Department of Mathematics, University of Hawaii, Honolulu, HI 96822** (hoover@math.hawaii.edu). All items should be postmarked by 12/24/94 to guarantee full consideration. Women and minorities are encouraged to apply.

UNIVERSITY OF ILLINOIS @ CHICAGO - DEPARTMENT OF MATHEMATICS, STATISTICS, AND COMPUTER SCIENCE - Applications are invited for the following two positions, effective August 21, 1995. First, **a tenure track Assistant Professorship in number theory and related areas.** Applicants must have a Ph.D. or equivalent in Mathematics or a related field, an outstanding research record, and evidence of strong teaching ability. Salary negotiable. Second, **a Research Assistant Professorship.** This is a non-tenure track position normally renewable annually to a maximum of three years. The position carries a reduced teaching load of one course per semester, with the requirement that the incumbent play a significant role in the research life of the Department. The salary for AY 95-96 for this position is expected to be $40,000. Applicants must have a Ph.D. or equivalent in Mathematics, Computer Science, Statistics, Mathematics Education or related field, and evidence of outstanding research potential. The Department has active research programs in all areas of pure mathematics, computational and applied mathematics, combinatorics and computer science, statistics, and mathematics education. Send vitae and direct 3 letters of recommendation, indicating the position being applied for, to: **Henri Gillet, Interim Head, Department of Mathematics, Statistics, and Computer Science, University of Illinois at Chicago, 851 S. Morgan (M/C 249), Chicago, IL 60607.** To ensure full consideration, materials must be received by February 1, 1995. Minorities, persons with disabilities, and women are particularly encouraged to apply. UIC is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF ILLINOIS @ URBANA-CHAMPAIGN - DEPARTMENT OF MATHEMATICS - Applications are invited for an entry-level, tenure track, faculty position to commence August 21, 1995. We will consider candidates with research qualifications in either Probability or Topology. Salary and teaching load are competitive. Candidates should send a letter of application, curriculum vitae and publication list, and arrange to have three letters of reference sent directly to: **Gerald J. Janusz, Chair, Department of Mathematics, University of Illinois @ Urbana-Champaign, 1409 West Green Street, Urbana, IL 61801**; (telephone: (217) 333-3352, e-mail: search@math.uiuc.edu) Area of research should be identified using the 2-digit Mathematical Reviews classification scheme. For an applicant to secure full consideration, all materials, including letters of reference, should be received by December 9, 1994. Interviews may be conducted prior to December 9, 1994, but all completed applications received by that date will receive full consideration. Candidates must have completed the Ph.D. (or equivalent) by the time the appointment begins and are expected to present evidence of excellence, or potential for excellence, in research and teaching. Applications from women and minority candidates are especially encouraged. The University of Illinois is an Affirmative Action/Equal Opportunity Employer.

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UNIVERSITY OF KANSAS - DEPARTMENT OF MATHEMATICS - Applications are invited for tenure-track positions at the assistant professor level and (pending funding) for visiting positions at the assistant professor level beginning August 16, 1995 or as negotiated. For the tenure-track positions, preference will be given to candidates first in partial differential equations, then stochastic control theory, then to candidates whose specialties mesh well with those already represented in the department. For the visiting positions, preference will be given to candidates whose research interests mesh well with those of our faculty. Candidates must have a Ph.D. or its requirements completed by August 15, 1995. Postdoctoral experience for the tenure-track positions is preferred but optional. Application, detailed resume with description of research, and three recommendation letters should be sent to: **C.J. Himmelberg, Chairman, Department of Mathematics, 405 Snow Hall, University of Kansas, Lawrence, KS 66045-2142**. Deadlines: Review of applications will begin on December 1, 1994 and will continue until the positions are filled. The University of Kansas is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF MANITOBA - DEPARTMENT OF APPLIED MATHEMATICS - The Department of Applied Mathematics at The University of Manitoba invites applications from mathematically qualified persons for a tenure-track position to start July 1, 1995, at the Assistant Professor level, subject to final budgetary approval. Salary is dependent on qualifications and experience (94-95 salary range $36,328-$48,000). Applicants must have a Ph.D. with postdoctoral or equivalent experience in computational applied mathematics. Responsibilities include undergraduate and graduate teaching and supervision as well as developing a vigorous independent research program. Opportunities within the University exist for collaboration in a variety of fields. The Department is closely linked to the University's Institute for Industrial Mathematical Sciences, which is concerned with external collaboration with industry. The University of Manitoba encourage applications from qualified women and men, including members of visible minorities, Aboriginal people, and persons with disabilities. Women are particularly encouraged to apply. The University offers a smoke free work environment save for specially designated areas. This advertisement is directed to Canadian citizens and permanent residents. Applicants must submit a curriculum vitae, a description of research and teaching interest, teaching evaluations (if available), representative reprints, and the names and addresses of at least three referees to: **Dr. R.S.D. Thomas, Chair, Search Committee, Department of Applied Mathematics, University of Manitoba, Winnipeg, MB R3T 2N2 Canada**. For further information, write as above or fax, (204) 275-0019, or e-mail thomas@cc.umanitoba.ca. Deadline for receipt of applications is January 6, 1995.

THE UNIVERSITY OF MEMPHIS - DEPARTMENT OF MATHEMATICAL SCIENCES - Chair - The Department of Mathematical Sciences invites applications for the position of chair. The Department includes pure and applied mathematics, computer science, and statistics. It offers degrees at all levels including the Ph.D. and provides a very favorable research environment in terms of library and computing facilities, teaching load, travel opportunities, etc. Applicants may be from any area of the mathematical sciences, and should have a strong and ongoing research record qualifying for appointment as full professor with tenure. We seek applicants who can creatively lead a multidisciplinary group, with evidence of strong administrative skills and a demonstrated commitment to excellence in teaching, research, and other scholarly activities. The University of Memphis (formerly Memphis State University) is the largest of 46 institutions in the Tennessee Board of Regents system, the seventh largest system of higher education in the nation. It is an Equal Opportunity/Affirmative Action University committed to education of a non-racially identifiable student body. Women and minorities are strongly urged to apply. The selection process will begin February 1, 1995 and continue until the position is filled. The term as chair will begin in Fall 1995. The successful candidate must meet Immigration Reform Act criteria. Applicants should submit a curriculum vitae and names of references to: **Prof. James E. Jamison, Chair-Search Committee, Department of Mathematical Sciences, The University of Memphis, Memphis, TN 38152**; Jamisonj@hermes.msci.memst.edu The University of Memphis is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF MICHIGAN - DEPARTMENT OF MATHEMATICS - The University of Michigan expects to have at least two T.H. Hildebrandt Research Assistant Professorships. Three-year appointment, reduced teaching load. Also expect to have several 3-year term assistant professorships. Preference given to persons of any age having the Ph.D. degree less than two years, with a research interest in common with senior faculty. Applicants should have a strong research program and serious commitment to teaching. Salary competitive. Non-discriminatory Affirmative Action Employer. Starting date: September 1995. Send application to: **Professor B.A. Taylor, Chairman, Department of Mathematics, University of Michigan, Ann Arbor, MI 48109-1003**. E-mail: math.chair@umich.edu. Application deadline is January 4, 1995.

UNIVERSITY OF MICHIGAN - DEPARTMENT OF MATHEMATICS - The University of Michigan expects to have up to five tenure eligible or tenured positions including several as part of an interdisciplinary/applied initiative. Besides the initiative, searching broadly for individuals who would significantly broaden and strengthen areas currently represented and who cut across areas. Exceptional research and teaching experience required. Non-discriminatory Affirmative Action Employer. Starting date: September 1995. Send application to: **Professor B.A. Taylor, Chairman, Department of Mathematics, University of Michigan, Ann Arbor, MI 48109-1003**. E-mail: math.chair@umich.edu. Applicants considered on a continuing basis. Rank and salary negotiable.

UNIVERSITY OF MINNESOTA - MINNESOTA CENTER FOR INDUSTRIAL MATHEMATICS AND THE SCHOOL OF MATHEMATICS - Assistant or Associate Professor - Work with the Director and the Associate Director of the Center to implement the various missions of the Center, teach undergraduate and graduate courses, and direct Master's and Ph.D. students within the programs of the School of Mathematics and the Minnesota Center for Industrial Mathematics. An important responsibility of the position will be to initiate interactions with industry for the purpose of setting up joint research projects with faculty associated with the Center and with `graduate students. Qualifications: Ph.D. in Mathematics or Applied Mathematics with strong science background. Experience in research projects with industry, government laboratories, or other institutions outside of academia is desirable. Salary will be commensurate with background and experience. Send current curriculum vitae, minimum 3 letters of recommendation, and description of research experience by February 1, 1995 to: **Professor Mitchell Luskin, Chair, Search Committee for Industrial Mathematics, School of Mathematics, University of Minnesota, 127 Vincent Hall, 206 Church Street, Minneapolis, MN 55455.** The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

UNIVERSITY OF MINNESOTA - MINNESOTA CENTER FOR INDUSTRIAL MATHEMATICS AND THE SCHOOL OF MATHEMATICS - Associate Director of the Minnesota Center for Industrial Mathematics and Full Professor in the School of Mathematics - The School of Mathematics at the University of Minnesota is establishing the Minnesota Center for Industrial Mathematics. The School is seeking to hire a senior mathematician as Associate Director of the Center. The Associate Director will hold the position of tenured Full Professor in the School of Mathematics. Duties: The Associate Director will work with the Director of the Center to implement the various missions of the Center, teach undergraduate and graduate courses, and direct Master's and Ph.D. students within the programs of the School of Mathematics and the Minnesota Center for Industrial Mathematics. An important responsibility of the Associate Director will be to initiate interactions with industry for the purpose of setting up joint research projects with faculty associated with the Center and with graduate students. Qualifications: Ph.D. in Mathematics of Applied Mathematics with strong science background. Experience in research projects with industry, government laboratories, or other institutions outside of academia is desirable but not essential. Salary will be commensurate with background and experience. Send current curriculum vitae, minimum 3 letters of recommendation, and description of research experience by January 1, 1995 to: **Professor Mitchell Luskin, Chair, Search Committee for Industrial Mathematics, School of Mathematics, University of Minnesota, 127 Vincent Hall, 206 Church Street, Minneapolis, MN 55455.** The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

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UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - Dunham Jackson Instructorship - This is a three-year appointment from Fall, 1995 to Spring, 1998 with a teaching load of one course per quarter. Outstanding research and teaching abilities required. Preference will be given to applicants whose research interests are compatible with those of the School. Applicants should have received a Ph.D. or equivalent degree in mathematics no earlier than January 1, 1994, and no later than Sept. 15, 1995. Summer School teaching may be available during summer of 1996 and 1997 to supplement regular stipend. Salary competitive. Consideration of applications will begin December 1, 1994. Send letter of application, current curriculum vitae, minimum 3 letters of recommendation, and description of research to: **Eugene Fabes, Head, School of Mathematics, University of Minnesota, 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455**. The University of Minnesota is an Equal Opportunity Educator and Employer.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - The School of Mathematics may have available one or more tenure track Assistant Professor or tenured Associate or Full Professor positions starting Fall, 1995. Ph.D. or equivalent degree in mathematics by the beginning date of appointment, outstanding research and teaching abilities are required. Applications at all levels are invited, but preference will be given to candidates whose research interests are compatible with those of the School. Of special interest are Probability, Differential Equations (O.D.E., P.D.E., Dynamical Systems, Control Theory, Mathematical Physics, and Geometric Analysis. Salary competitive. Consideration of applications will begin December 1, 1994. Send letter of application, current curriculum vitae, minimum 3 letters of recommendation, and description of research to: **Eugene Fabes, Head, School of Mathematics, University of Minnesota, 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455**. The University of Minnesota is an Equal Opportunity Educator and Employer.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - Several temporary or visiting positions at all levels from Assistant to Full Professor may be available for terms ranging from one quarter to two years beginning September, 1995. Ph.D. or equivalent degree in mathematics by beginning date of appointment, strong research and teaching abilities are required. Preference will be given to applicants whose research interests are compatible with those of the School. Salary competitive. Consideration of applications will begin December 1, 1994. Contact **Eugene Fabes, Head, School of Mathematics, University of Minnesota, 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455**. The University of Minnesota is an Equal Opportunity Educator and Employer.

UNIVERSITY OF MINNESOTA - SCHOOL OF MATHEMATICS - Assistant Professor, Mathematics, 2-Year Temporary Position, for recent Ph.D.s especially interested in several areas of curriculum development and mathematics education in a major mathematics department. These areas include graduate training, undergraduate curriculum reform, and programs for mathematically gifted secondary school students. This position will be a 9-month, non-tenure track appointment with the School of Mathematics, with a 2-year initial period, and renewable for up to 2 additional years. Work under the supervision of the Director of the Mathematics Special Projects Office with the University's Talented Youth Mathematics Program (UMTYMP), departmental initiatives, and developing various grants. Projected salary $32,000-$34,000 for the academic year 9/1-6/15 depending on qualifications. Summer appointments on externally funded projects may be available. Responsibilities: Teaching undergraduate and UMTYMP calculus component coursework. Work with the Director on undergraduate curriculum development and K-12, undergraduate and graduate programs and activities which are educationally innovative. Conduct research with the Director and senior staff leading to the publication of articles and materials related to these programs. Qualifications: Ph.D. degree in mathematics, with extensive teaching experience at the undergraduate level required. Research and publication experience and involvement in educationally related programs, and mathematics research publications desirable. Experience with innovative educational programs for talented secondary school students or undergraduates desirable. Send curriculum vitae, 3 letters of recommendation (including at least one letter detailing teaching experience and educational involvement), and statements on both teaching/educational and mathematical interest and background to: **Dr. Harvey B. Keynes, School of Mathematics, University of Minnesota, 127 Vincent Hall, 206 Church Street SE, Minneapolis, MN 55455-0487**. Closing date for receipt of application January 31, 1995. The University of Minnesota is an Equal Opportunity Educator and Employer.

UNIVERSITY OF MISSOURI, COLUMBIA - DEPARTMENT OF MATHEMATICS - Applications are invited for up to three tenure-track positions at the Advanced Assistant Professor level beginning in August of 1995. The positions each require a Ph.D. in Mathematics, quality teaching and a distinguished research career. Selections for the positions will be based primarily on demonstrated research achievement in Commutative Algebra/Algebraic Geometry, Mathematics Physics or Modern Analysis. Send a curriculum vitae along with a letter of application (include e-mail address) and arrange for three letters of recommendation to be sent to: **Elias Saab, Chair, Department of Mathematics, University of Missouri, Columbia, MO 65211** (e-mail mathumc@mizzou1.missouri.edu). The application deadline is January 31, 1995, or until the position is filled thereafter. Applications received after February 28, 1995 will not be guaranteed consideration. The University of Missouri is an Affirmative Action/Equal Opportunity.

UNIVERSITY OF MONTANA - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department of Mathematical Sciences has openings for two tenure track Assistant Professors beginning Fall 1995. One position each in Operations Research and Statistics are available. A doctorate in Mathematical Sciences and a commitment to excellence in teaching and research are required. Research must be compatible with interests of current faculty members in the department in Operations Research or Statistics. The department offers BA, MA, MAT and Ph.D. degrees in several areas of mathematics. A longer job description may be obtained by anonymous ftp at ftphost.umt.edu in the subdirectory /pub/math (read 'readme' first) or by calling the phone number below. Applications (including resume, graduate transcripts, and 3 letters of recommendation) should be sent to: **Don Loftsgaarden, Chair, Department of Mathematical Sciences, University of Montana, Missoula, MT 59812**. Phone: (406) 243-4171, e-mail: ma_dol@selway.umt.edu (questions only). Screening of applicants will begin on January 16, 1995 and continue until the positions are filled. The University of Montana is an Equal Opportunity/Affirmative Action Employer.

UNIVERSITY OF NORTH CAROLINA @ CHAPEL HILL - DEPARTMENT OF MATHEMATICS - Applications are invited for one faculty appointment effective Fall 1995. Rank and salary depend on qualifications and budget considerations. Ph.D. in mathematics and exceptionally strong research record and commitment to excellent teaching required. At least 3 years experience beyond the Ph.D. preferred. Candidates with research in computational partial differential equations and related areas are especially encouraged to apply. Send curriculum vitae, abstract of current research program, and four letters of recommendation to: **Search Committee Chairman, Math. Department, CB #3250 Phillips Hall, UNC at Chapel Hill, Chapel Hill, NC 27599-3250**. UNC is an Affirmative Action/Equal Opportunity Employer. Women and minorities are encouraged to identify themselves voluntarily. Completed applications received by January 2, 1995 are assured of full consideration.

UNIVERSITY OF OREGON - DEPARTMENT OF MATHEMATICS - Assistant, Associate, or Full Professor tenure track position in pure mathematics or mathematical statistics beginning September 1995. Qualifications are a Ph.D. in mathematics, a strong record of research accomplishment, and evidence of teaching ability. Preference given to candidates with research interests that complements those currently represented. Competitive salary with excellent fringe benefits. Send complete resume and three letters of recommendation to: **Gary Seitz, Head, Mathematics Department, University of Oregon, Eugene, Oregon 97403**; seitz@math.uoregon.edu. Women and minorities encouraged to apply. The University of Oregon is an Affirmative Action/Equal Opportunity/ADA Institution committed to cultural diversity.

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UNIVERSITY OF REDLANDS - DEPARTMENT OF MATHEMATICS - The University of Redlands Department of Mathematics invites applications for a tenure-track position at the assistant professor level beginning September 1, 1995. Responsibilities include teaching six undergraduate courses per academic year, including computer-based courses; directing student research projects; and engaging in scholarly activity. Requirements for the position include the Ph.D. in mathematics (any area of specialization is acceptable) and evidence of excellence in and commitment to undergraduate teaching. We are seeking a person who is committed to meeting the educational needs of an increasingly diverse student population. The University of Redlands is a selective, private, comprehensive university located in sunny Southern California. It enrolls 1,500 undergraduates in liberal arts and sciences and in small professional programs in business, music, and communicative disorders. To apply, send a letter of application which includes a statement of teaching philosophy, curriculum vitae, and three letters of reference (at least two of which must address teaching) to: **Dr. Mary Scherer, Chair, Mathematics Search, Department of Mathematics, University of Redlands, P.O. Box 3080, Redlands, CA 92373-0999**. Application deadline is February 1, 1995. Department representatives will attend the AMS-MAA Joint Meetings in San Francisco, California, January 4-7, 1995. The University of Redlands is an Equal Opportunity Employer, and especially encourages women and members of under-represented groups to apply, even if their career paths have been unconventional.

UNIVERSITY OF RICHMOND - DEPARTMENT OF MATHEMATICS - A tenure track position most likely at the rank of Assistant Professor will be available beginning in late August, 1995. A Ph.D. in either mathematics or statistics is required. In addition, candidates should have a strong commitment to undergraduate teaching, including the teaching of calculus, and have an active research program. The University of Richmond is a small, 3,000-student, highly selective private liberal arts college. With classes of 25 or fewer students, faculty enjoy many opportunities for personal interaction with students. They are strongly encouraged to direct independent studies and to sponsor summer research projects. Send letter of application, curriculum vitae, statements of teaching interests and scholarship goals to: **J. Van Bowen, Chair, Department of Mathematics and Computer Science, University of Richmond, Richmond, VA 23173** (e-mail hiring@math.urich.edu). In addition, have at least 3 letters of recommendation sent to the same address. Review of applications will begin December 15, 1994, and continue until the position is filled. The University of Richmond is an Equal Opportunity Employer and particularly encourages applications from women and minority candidates.

UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES - DEPARTMENT OF MATHEMATICS - The Department of Mathematics anticipates several visiting and post-doctoral positions. Applicants must show strong research promise and possess excellent communications skills for teaching undergraduate mathematics courses. To apply, please submit the following materials in a single package: letter of application (including your e-mail address and fax number), the AMS Application Cover Sheet, and a curriculum vitae. Candidates for postdoctoral positions should also arrange to send three letters of recommendation. Mail application to: **Chair of Appointments Committee, Department of Mathematics - DRB 155, University of Southern California, Los Angeles CA 90089-1113**. Review of applications will begin January 15, 1995. USC is an Equal Opportunity/Affirmative Action Employer. Women and minorities are especially encouraged to apply.

UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES - DEPARTMENT OF MATHEMATICS - The Department of Mathematics anticipates a tenure-track or possibly tenured position in mathematical biology open at all levels. The applicant's areas of research should concern the analysis of genome information, including the sequence databases. Strength in computational analysis, algorithms, combinatorics or statistics is desirable. Applicants must show strong research promise and possess excellent communications skills for teaching undergraduate mathematics courses. To apply, please submit the following materials in a single package: letter of application (including your e-mail address and fax number), the AMS Application Cover Sheet and a curriculum vitae. Candidates for junior positions should also provide at least three letters of recommendation. Mail application to: **Chair of Appointments Committee, Department of Mathematics, DRB 155, University of Southern California, Los Angeles CA 90089-1113**. Applications are requested by January 1, 1995. USC is an EO/AA Employer. Women and minorities are especially encouraged to apply.

UNIVERSITY OF SOUTHERN COLORADO - DEPARTMENT OF MATHEMATICS - Applications are invited for two tenure-track positions, each requiring a doctorate in mathematics. Candidates must demonstrate a strong commitment to excellence in teaching and teaching a culturally diverse student population. Strong communication skills are essential, and ongoing scholarly activities are expected. The University of Southern Colorado is building a multicultural faculty and strongly encourages applications from female and minority candidates. Send letter of application which includes a statement of professional goals, current resume, copy of graduate transcripts, and three letters of reference (two must comment on teaching) to: **Roger W. Johnson, Search and Screen Committee, University of Southern Colorado, Department of Mathematics, 2200 Bonforte Boulevard, Pueblo, Colorado 81001-4901**. Evaluation of applications will begin immediately and continue until positions are filled. USC is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF TENNESSEE, KNOXVILLE - MATHEMATICS DEPARTMENT - The Mathematics Department of the University of Tennessee seeks to fill two tenure-track assistant or beginning associate professorships. One of these positions will be a joint appointment with the Graduate Program in Ecology, for which we seek a candidate with strong training in both mathematics and ecology. The second position will be in the Mathematics Department, for which we seek a candidate specializing in an area of mathematical ecology that will enhance links between our group in mathematical ecology and other areas of strength within the department. Particular areas of interest include dynamical systems, scientific computation, applied stochastic processes, statistics, control theory and optimization. Successful candidates must provide evidence of research competence in applied mathematics as well as evidence that their work is biologically significant. The Mathematics Department, with the backing of the university, is committed to improving its teaching of calculus. In particular, these open positions will sometimes involve teaching calculus, usually in a life sciences sequence developed as part of an NSF-funded curriculum project. Successful applicants should have evidence of outstanding teaching at lower division levels. A Ph.D. in Mathematics or other appropriate field with a research record in mathematical ecology, or in another area of mathematics but with substantial applications to ecology, is required for either position. It should be emphasized that a desire to work on applications in ecology is not sufficient; no candidate will be considered unless they have a record of such applications. Postdoctoral experience is preferred, but not required. Applicants should stipulate which of the two positions they are applying for, or whether they wish to be considered for both. Substantial research promise as well as dedication to teaching are paramount. Employment begins August 1, 1995. Interested applicants should arrange to have a vitae, three reference letters, and a research statement (including abstracts) sent to: **Professor John B. Conway, Mathematical Ecology 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, July/August and September 1994 or the AMS gopher). Review of applications will begin December 1, 1994 and will continue until the position is filled. Information about the department can be found via mosaic (http://mathsun1.math.utk.edu/) or gopher (mathsun1.math.utk.edu). UTK is an Affirmative Action/Equal Opportunity/Title IX/Section 504/ADA Employer.

UNIVERSITY OF TENNESSEE, KNOXVILLE - MATHEMATICS DEPARTMENT - The Mathematics Department of the University of Tennessee seeks to fill a tenure-track assistant professorship in differential geometry. Possible areas include evolution by curvature, geometric measure theory, harmonic maps, minimal surfaces, Riemannian geometry, scalar curvature, spectrum of the Laplacian, symplectic geometry, and Yang-Mills equations. We are especially interested in candidates working on the interface between differential geometry and partial differential equations. The Mathematics Department, with the backing of the university, is committed to improving its teaching of calculus. This position was created to support this effort by reducing class size. The successful applicant will have to demonstrate his/her ability to teach calculus well. A Ph.D. is required. Some postdoctoral experience is preferred, but not required. Substantial research promise as well as dedication to teaching are paramount. Employment begins August 1, 1995. Interested applicants should arrange to have a vitae, three reference letters, a research statement (including abstracts), and evidence of quality teaching sent to: **Professor John B. Conway, Differential Geometry 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, July/August and September 1994 or the AMS gopher). Review of applications will begin December 1, 1994 and will continue until the position is filled. Information about the department can be found via mosaic (http://mathsun1.math.utk.edu/) or gopher (mathsun1.math.utk.edu). UTK is an Affirmative Action/Equal Opportunity/Title IX/Section 504/ADA Employer.

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UNIVERSITY OF TEXAS @ ARLINGTON - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for possibly two to three anticipated tenure-track positions beginning with the Fall Semester of 1995. We seek candidates in various areas of Mathematics which are complimentary to those of the current faculty and would enhance and support the goals of the Department. Application deadline is December 31, 1994, or until positions are filled. Salary and rank are commensurate with qualifications which must include the Ph.D. degree (in hand or expected by September 1995). Assistant Professor candidates must show strong potential or excellence on 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 preferred. The University of Texas at Arlington does not discriminate on the basis of race, sex, color, religion, national origin, age, handicap, or veteran status in provision of educational opportunities or employment opportunities and benefits. The University of Texas at Arlington is an Affirmative Action/Equal Opportunity Employer. Please send a resume and three letters of recommendation to: **The University of Texas at Arlington, Department of Mathematics, Chairman, Recruiting Committee, Box 19408, Arlington, TX 76019-0408.**

UNIVERSITY OF TEXAS @ AUSTIN - DEPARTMENT OF MATHEMATICS - Openings for Fall 1995 include five Instructorships, two of which have R.H. Bing Faculty Fellowships attached to them, and two or more positions at the Assistant Professor 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, 1995. Preference will be given to those whose doctorates were conferred in 1994 or 1995. 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 $32,500 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 applications for such a position is unnecessary. An applicant for an Assistant Professor position must present a record of exceptional achievement in her or his research area and must demonstrate a proficiency at teaching. In additional 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 qualifications of the individual who fills it. Those wishing to apply for the aforementioned Instructor/Bing Fellowship positions are asked to send a vitae and a brief research summary to: **The University of Texas at Austin, Department of Mathematics, Austin, TX 78712, c/o I-Recruiting Committee** or to the e-mail address, i-recruit@math.utexas.edu. Those wishing to apply for the aforementioned Assistant Professor positions are asked to send a vitae and brief research summary to the above address, c/o AP-Recruiting Committee, or to the e-mail address ap-recruit@math.utexas.edu. In both cases application via e-mail are encouraged. Applications must be supported by three or more letters of recommendation, at least one of which speaks to the applicants' teaching credentials. Please include in your vitae one primary and one or more secondary two digit AMS subject classification numbers that describe your research interests. The screening of applications will begin on December 1, 1994. The University of Texas at Austin is an Equal Opportunity Employer. Qualified women and minority group members are urged to apply.

UNIVERSITY OF TORONTO - DEPARTMENT OF MATHEMATICS - The Department solicits applications for a tenure-stream appointment in Geometric Analysis. The appointment is at the downtown (St. George) campus at the level of Assistant Professor, to begin July 1, 1995. Candidates are expected to have at least three years experience in teaching and research after the Ph.D., and to be able to demonstrate excellence in each. In particular, a candidate's research should show clearly the ability to make significant original and independent contributions to Mathematics. Salary commensurate with qualifications. Applicants should send their complete curriculum vitae including a list of publications, a short statement describing their research programme and all appropriate material about their teaching. They should also arrange to have at least four letters of reference sent directly to: **Professor V. Ivrii, Associate Chair, Department of Mathematics, University of Toronto, Toronto, Canada M5S 1A1.** At least one letter should be primarily concerned with the candidates' teaching. To insure full consideration, this information should be received by January 15, 1995. In accordance with its Employment Equity Policy, the University of Toronto encourages applications from qualified women or men, members of visible minorities, aboriginal peoples and persons with disabilities.

UNIVERSITY OF TORONTO - DEPARTMENT OF MATHEMATICS - The Department solicits applications for a tenure-stream appointment in Applied Mathematics. Preference will be given to researchers in the areas of applied probability, and non-linear partial differential equations. The appointment is at the downtown (St. George) campus at the level of Assistant Professor, to begin July 1, 1995. Candidates are expected to have at least three years experience in teaching and research after the Ph.D. and to be able to demonstrate excellence in each. In particular, a candidate's research should show clearly the ability to make significant original and independent contributions to Mathematics. Salary commensurate with qualifications. Applicants should send their complete curriculum vitae including a list of publications, a short statement describing their research programme, and all appropriate material about their teaching. They should also arrange to have at least four letters of reference send directly to: **Professor V. Ivrii, Associate Chair, Department of Mathematics, University of Toronto, Toronto, Canada M5S 1A1.** At least one letter should be primarily concerned with the candidate's teaching. To insure full consideration, this information should be received by January 15, 1995. In accordance with its Employment Equity Policy, the University of Toronto encourages applications from qualified women or men, members of visible minorities, aboriginal peoples and persons with disabilities.

UNIVERSITY OF TORONTO - DEPARTMENT OF MATHEMATICS - The Department solicits applications for a tenure-stream appointment in Geometry at the level of Assistant Professor. Preference will be given to researchers in the areas of algebraic geometry, arithmetic algebraic geometry and differential geometry. The appointment is at the downtown (St. George) campus, to begin July 1, 1995. Candidates are expected to have at least three years experience in teaching and research after the Ph.D., and to be able to demonstrate excellence in each. In particular, a candidate's research should clearly establish the ability to make significant original and independent contributions to Mathematics at the highest level. Salary is commensurate with qualifications. Applications should send their complete curriculum vitae including a list of publications, a short statement describing their research programme, and all appropriate material about their teaching. They should also arrange to have at least four letters of reference sent directly to: **Professor V. Ivrii, Associate Chair, Department of Mathematics, University of Toronto, Toronto, Canada M5S 1A1.** At least one letter should be primarily concerned with the candidate's teaching. To insure full consideration, this information should be received by December 31, 1994. In accordance with Canadian immigration requirements this advertisement is directed to Canadian citizens and landed immigrants of Canada. In accordance with its Employment Equity Policy, the University of Toronto encourages applications from qualified women or men, members of visible minorities, aboriginal peoples and persons with disabilities.

UNIVERSITY OF TORONTO - DEPARTMENT OF MATHEMATICS - The Department solicits applications for one or more limited term Assistant Professorships, which may be at the St. George (downtown), Scarborough or Erindale campus. The positions are for the three-year period July 1, 1995 to June 30, 1998. Duties consist of teaching and research, and candidates must demonstrate clear strength in both. Preference will be given to candidates with recent doctoral degrees. Salary commensurate with qualifications. Applicants should send their complete curriculum vitae including a list of publications, a short statement describing their research programme, and all appropriate material about their teaching. They should also arrange to have at least four letters of reference sent directly to: **Professor V. Ivrii, Associate Chair, Department of Mathematics, University of Toronto, Toronto, Canada M5S 1A1.** At least one letter should be primarily concerned with the candidate's teaching. To insure full consideration, this information should be received by December 31, 1994. In accordance with Canadian immigration requirements this advertisement is directed to Canadian citizens and permanent residents of Canada. In accordance with its Employment Equity Policy, the University of Toronto encourages applications from qualified women or men, members of visible minorities, aboriginal peoples and persons with disabilities.

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ADVERTISEMENTS

UNIVERSITY OF WISCONSIN, EAU CLAIRE - MATHEMATICS DEPARTMENT - Tenure track and temporary positions in Mathematics. Starting August 1995. For one tenure track position, a Ph.D. in mathematics education is required with an emphasis in elementary or middle school mathematics education preferred. Ability to teach according to NCTM standards desired. For other positions, preference will be given to applicants with specialties in algebra or geometry. Ability to contribute to computer science offerings and to the use of technology in teaching will also be considered. All position responsibilities include teaching undergraduate 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: **David Lund, Mathematics Department, University of Wisconsin, Eau Claire, Eau Claire, WI 54702**. Deadline for all application materials is January 15, 1995. The University of Wisconsin, Eau Claire is an Equal Opportunity/Affirmative Action Employer.

UNIVERSITY OF WISCONSIN, MADISON - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for up to three faculty positions at the tenure track or early tenured level to begin August 1995 or later. Preference will be given to the areas of Applied Mathematics, Geometry and Topology. Candidates should exhibit evidence of outstanding research and a strong commitment to excellence in teaching. Applicants should send a completed application cover sheet (as provided on page 577 of the July/August 1994, Notices of the AMS) and a curriculum vitae which includes a publication list and a brief statement of research plans to: **Hiring Committee, Department of Mathematics, Van Vleck Hall, University of Wisconsin, Madison, 480 Lincoln Drive, Madison, WI 53706-1388.** Applicants should also arrange to have sent to the above address, 3 to 4 letters of recommendation, at least one of which must discuss the applicant's teaching experiences and capabilities. Other evidence of good teaching will be helpful. The deadline for completed applications is November 20, 1994. The University of Wisconsin is an Affirmative Action, Equal Opportunity Employer and welcomes applications from women and minorities. Unless confidentiality is requested in writing, information regarding the applicants must be released upon request. Finalist cannot be guaranteed confidentiality.

UNIVERSITY OF WISCONSIN, MADISON - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for possible Van Vleck Assistant Professorships to begin August 1995. Appointments are for a fixed term of two or three years. The usual teaching load is two courses per semester. Ordinarily only those applicants who have received their doctorate since 1992 and prior to September 1995 will be considered. Promise of excellence in research and teaching ability are important. Preference will be given to candidates who are likely to interact well with other members of the Department. Applicants should send a completed application cover sheet (as provided on page 577 of the July/August 1994 Notices of the AMS) and a curriculum vitae which includes a publication list and a statement of research accomplishments and plans to: **Hiring Committee, Department of Mathematics, Van Vleck Hall, University of Wisconsin, Madison, 480 Lincoln Drive, Madison, WI 53706-1388.** Applicants should also arrange to have sent to the above address, 3 to 4 letters of recommendation, at least one of which must discuss the applicant's teaching experiences and capabilities. The deadline for completed applications is January 31, 1995. The University of Wisconsin is an Affirmative Action, Equal Opportunity Employer and encourages applications from women and minorities. Unless confidentiality is requested in writing, information regarding the applicants must be released upon request. Finalist cannot be guaranteed confidentiality.

VALPARAISO UNIVERSITY - DEPARTMENT OF MATH AND COMPUTER SCIENCE - Located one hour from Chicago loop. Pending budget approval, tenure-track, assistant professor in math, beginning August 1995. Ph.D. in math desired, required for tenure. Teaching experience, familiarity with calculus reform, background in Computer Science helpful. Applications from women and minorities especially encouraged. Candidates should be willing to work in a scholarly community committed to Christian higher education and the Lutheran tradition. Send letter of applications and vitae to: **Patrick Sullivan, Chair, Department of Math and Computer Science, Valparaiso University, Valparaiso, IN 46383.**

WAYNE STATE UNIVERSITY - DEPARTMENT OF COMPUTER SCIENCE - Chair - The Wayne State University Department of Computer Science invites nominations, including self nominations, for the position of Professor and Chair. The University, located in Detroit's Cultural Center, is a comprehensive (Carnegie I), urban research university serving some 33,000 students. The Department of Computer Science, one of nine departments of the College of Science, currently has fourteen faculty members, approximately 350 graduate students and 300 undergraduate majors. It offers degree programs through the Ph.D. A variety of research programs are supported by federal agencies and industrial concerns. The Department's quarters include modern laboratory facilities. The new Chair will be expected to provide leadership in building and enhancing the Department's research and teaching programs. Candidates should have a strong research record, a commitment to teaching and good administrative skills. A Ph.D. in Computer Science or a related field is the normal prerequisite. Nominations, including self nominations, of minority and women candidates are encouraged. Please send nominations, self nominations and queries to: **Professor Henry V. Bohm, Chair, Selection Advisory Committee, c/o Office of the Dean, College of Science, 2226 Faculty Administration Building, Wayne State University, Detroit, MI 48202.** Persons wishing to be considered for the position should include a curriculum vitae and the names of at least three professional references. The reviewing of candidates will begin in November 1994, and will continue until an appointment is completed. Wayne State University is an Equal Opportunity/Affirmative Action Employer.

WESTERN MICHIGAN UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Mathematics - Western Michigan University seeks applications for a one-year temporary Instructor in mathematics education for Fall 1995, pending budgetary approval. Minimum requirements include a Master's degree in mathematics education and K-12 teaching experience. Western Michigan University, a Carnegie Classification Doctoral I Institution and Equal Opportunity Employer, has an Affirmative Action program which encourages applications from underrepresented groups. Send letter of application, vitae, academic transcripts and three letters of recommendation to: **Ruth Ann Meyer, Chair, Department of Mathematics and Statistics, Western Michigan University, Kalamazoo, MI 49008.** Fax: (616) 387-4530; Internet: ruth.a.meyer@wmich.edu. Review of applications will begin December 1, 1994 and applications will be accepted until the position is filled.

WESTERN MICHIGAN UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Mathematics - Western Michigan University seeks applications for a tenure-track Assistant Professor position in topology/geometry beginning Fall 1995, pending budgetary approval. Ph.D. degree in mathematics or evidence of imminent award required, as well as demonstrated potential for teaching, scholarship and publication. Western Michigan University, a Carnegie Classification Doctoral I Institution and Equal Opportunity Employer, has an Affirmative Action program which encourages applications from underrepresented groups. Send letter of application, vitae, statement of research plans, academic transcripts and three letters of recommendation to: **Ruth Ann Meyer, Chair, Department of Mathematics and Statistics, Western Michigan University, Kalamazoo, MI 49008**. Fax: (616) 387-4530; Internet: ruth.a.meyer@wmich.edu. Review of applications will begin December 1, 1994 and applications will be accepted until the position is filled.

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS - Williams College anticipates tenure-eligible position in mathematics or applied mathematics, beginning Fall 1995, probably at the rank of assistant professor; in exceptional cases, however, more advanced appointments may be considered. Excellence in both teaching and research is essential; a doctorate is required. Please have a vitae and three letters of recommendation on teaching and research sent to: **Hiring Committee, Williams College, Department of Mathematics, Williamstown, MA 01267.** Evaluation of applications will begin November 15, 1994 and continue until the position is filled. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

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ADVERTISEMENTS

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS - Williams College anticipates visiting position for the 1995-96 year, probably full-time, probably at the rank of assistant professor; in exceptional cases, however, more advanced appointments may be considered. Excellence in teaching and research, and doctorate expected. Please have a vitae and three letters of recommendation on teaching and research sent to: **Visitor Hiring Committee, Williams College, Department of Mathematics, Williamstown, MA 01267.** Evaluation of applications will begin November 15, 1994 and continue until the position is filled. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

YORK UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Faculty Position in Mathematics - Subject to budgetary approval, applicants are invited for a tenure-track appointment at the Assistant Professor level in the Department of Mathematics and Statistics, to commence July 1, 1995. The successful candidate will be expected to have an established record of research excellence and demonstrated leadership abilities in a contemporary area of Algebra or closely related areas such as Algebraic Geometry or Algebraic Number Theory. Applicants must have a completed Ph.D. and proven teaching abilities. Applicants should send resumes and arrange for at least three letters of recommendation to be sent so that they arrive before December 1, 1994, directly to: **Georges Monette, Chair, Department of Mathematics and Statistics, York University, 4700 Keele Street, North York, Ontario, M3J 1P3 Canada**, Fax: (416) 736-5757, E-mail: chair@mathstat.yorku.ca. York is implementing a policy of employment equity, including affirmative action for women faculty. The Department of Mathematics and Statistics encourages applications from qualified women and men, members of racial minorities, people with disabilities and Native Peoples. In accordance with Canadian immigration requirements, preference will be given to Canadian citizens and permanent residents.

GRADUATE STUDY IN MATHEMATICS AT RUTGERS UNIVERSITY

At Rutgers, excellent faculty and graduate students investigate many areas of pure and applied mathematics. Notably active areas of study include: combinatorics / discrete mathematics, mathematical physics, and control and systems theory in applied mathematics; non-linear analysis, Lie theory, number theory, group theory, logic, and partial differential equations in pure mathematics.

The graduate program offers teaching and research assistantships to help students finance their studies. In recent years assistantships have paid about $10,000 a year plus tuition. The Graduate School offers several awards such as the Excellence Fellowships carrying stipends of up to $14,000 a year plus tuition. Minority students may benefit from the Minority Advancement Program (MAP) Fellowships in teaching and research, which award up to $14,000 a year plus tuition. The Bunting-Cobb Graduate Residential Fellowships for Women in Mathematics, Science, and Engineering provide two-year stipends of $2,000-$4,000 in addition to room and board to women who serve as residence hall mentors. We encourage applications from all qualified students, especially women and minorities.

Please write for further information and application forms:

GRADUATE PROGRAM IN MATHEMATICS
HILL CENTER, BUSCH CAMPUS
RUTGERS UNIVERSITY
NEW BRUNSWICK, NEW JERSEY 08903

Or send e-mail to: *admit@math.rutgers.edu*

AWM Events at the Joint Mathematics Meetings - San Francisco - January 4-7, 1994

Preliminary Schedule as of October 15, 1994

Wednesday, January 4th

3:20 p.m. **Panel Discussion:** ***"AWM: Why Do We Need It Now?"*** (see page 6 for more details.)

4:20 p.m. **Business Meeting.**

9:30 p.m. **Open Reception:** with refreshments and cash bar. This has been a popular, well attended event in the past.

Thursday, January 5th

9:00 a.m. Sixteenth Annual **Emmy Noether Lecture:** ***"Measuring Noetherian Rings"***
presented by **Judith D. Sally**, Northwestern University

4:25 p.m. Presentation of the Fifth Annual **Louise Hay Award** for Contributions to Mathematics Education.
This award presentation is held in conjunction with the Joint Prize Session. A cash bar reception will immediately follow.

Saturday, January 7th

9:00 a.m.-5:00 p.m. **AWM Workshop** for Graduate Students and Postdoctoral Mathematicians
Participants will have the opportunity to present and discuss their research and to meet with other mathematicians at all stages of their careers. The workshop will also have a panel discussion on issues of career development and a luncheon. All mathematicians (female and male) are invited to attend the entire program. The AWM Workshop is supported by the NSF and the ONR.

AWM will have an information table in the exhibit area throughout the meeting. **For more details** on the above events, please stop by the **AWM Information Table** for an ***AWM Events Program*** or refer to your ***Joint Mathematics Meetings Program***.

ASSOCIATION FOR WOMEN IN MATHEMATICS

1994/1995 MEMBERSHIP FORM

AWM's membership year is from October 1, 1994 to September 30, 1995. Please fill-in this information and return it along with your DUES to:

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

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

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

ADDRESS_____

_____

_____

Home Phone: **Work Phone:**

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.**

REGULAR INDIVIDUAL MEMBERSHIP..... $ 40 _____

2ND FAMILY MEMBERSHIP..... $ 30 _____
(NO newsletter) Please indicate regular family member: _____

CONTRIBUTING MEMBERSHIP..... $100 _____
Indicate if you wish for this contribution to remain anonymous: _____

RETIRED or PART-TIME FACULTY (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 $ _____

N/D94

AWM

Newsletter Volume 24, Number 6, November–December, 1994

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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College Park, Maryland 20742-2461

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