IN THIS ISSUE

PRESIDENT'S REPORT

Congratulations!

Judith Sunley, former director of the DMS, former executive officer of the MPS Directorate, and now in the Director's office of NSF, received the Presidential Award for a Distinguished Executive.

Dusa McDuff, State University of New York at Stony Brook, was elected as a Fellow to the American Academy of Arts and Sciences. Her research areas include groups of symplectic diffeomorphisms, symplectic geometry and foliations.

Jiang-Hua Lu of the University of Arizona, Kate Okikiolu of U.C. San Diego, Jennifer Schultens of U.C. Berkeley, and Brooke Shipley of Notre Dame were awarded NSF Mathematical Sciences Postdoctoral Research Fellowships.

Andrea Bertozzi, one of the three women receiving a Sloan Fellowship this year, has accepted a tenured position at Duke University and is spending this year at Argonne National Lab as the Maria Goeppert-Mayer Distinguished Scholar.

Burlington Mathfest

One of the nicest AWM events at the Burlington meeting was the presentation of the Schafer Prize awards at the Joint Prize Session at the opening banquet. The winner, Ruth Britto-Pacumio; three runners-up, Wung Kum Fong, Nancy Heinschel, and Jessica A. Wachter; and honorable mention recipient Karen Shuman were there to receive their prizes in person, from Alice Schafer herself. Another honorable mention recipient, Tara Brendle, was unable to attend the prize session due to a trip abroad. All participated in a Research Experience for Undergraduates Program (REU) except Fong, who participated in the Mills College/MSRI summer program. I am very pleased to have had the opportunity to get to know this group of talented, highly motivated women mathematicians.

I moderated an AWM panel, "Do women and men have different career trajectories?" with panelists Claudia Henrion (Dartmouth College), Joyce McLaughlin (Rensselaer Polytechnic Institute), Carolyn

Gordon (Dartmouth College) and Diane Spresser (Program Director, Teacher Enhancement Program, NSF). Claudia has done extensive research on this topic and gave an overview of her findings. Joyce gave a report on the SIAM Mathematics in Industry Studies, and Carolyn and Diane talked about their own experience as women mathematicians.

The AWM reception was lively and well attended as usual.

This was a very good conference with many invited addresses, special sessions, and activities organized by different societies. In particular, I would like to mention that Doris Schattschneider gave three beautiful MAA Hedrick Lectures to a packed audience: "The fascination of tiling," "Symmetry and order," and "Aperiodicity and quasicrystals." The Hedrick Lecture Series started in 1952, and Schattschneider is the second women Hedrick Lecturer, the first being Mary Ellen Rudin in 1979. Joyce McLaughlin gave an AMS-MAA Invited Address on "Strings, beams, membranes, and plates: Finding properties of vibrating systems from nodes or nodal lines." Marjorie Senechal gave the Sutherland Frame Lecture on "Tilings as diffraction gratings."

The AWM Elections

The nominating committee has selected candidates for the AWM December election: Sylvia Wiegand (University of Nebraska) for President; Lynne Butler (Haverford College), Teresa Edwards (Spelman College), Lee Lorch (York University), and Sara Robinson (U.C. Berkeley) for Member-at-Large of the Executive Committee; and Kay Smith (St. Olaf College) for Treasurer. There are several firsts in this coming election: This is the first time since 1980 that the election for Members-at-Large of the Executive Committee has been contested — two candidates will be chosen. Lee is our first male candidate for AWM office, and Sara, an officer of the Noetherian Ring, is our first graduate student candidate. I would encourage all members to vote (for statements from the candidates and further information on voting, see the following article; ballots are included in this issue of the *Newsletter*).

AWM 25th Anniversary Celebration in Orlando

AWM will celebrate its 25th Anniversary at the January Joint Meetings in Orlando. Let me begin with our usual events. Professor Ol'ga Oleinik of Moscow State University will present the 1996 Noether lecture, "On some homogenization problems for differential operators," at 9 A.M. Thursday. The ONR-AWM Workshop for women postdocs and graduate students will take place from 9 A.M. to 5 P.M. on Saturday. The AWM panel discussion, "Affirmative Action, A Look Back and A Look Ahead," is scheduled for 3:20 P.M. Wednesday. Ingrid Daubechies, Rob Kirby and Cora Sadosky will be the panelists with views on both sides of the affirmative action issue, and the moderator will be Mary Gray.

The AWM reception is scheduled for 9:30 P.M. Wednesday, and a dinner in honor of the Noether Lecturer will take place on Wednesday (a sign-up sheet will be available at the AWM table in the exhibit area and at the panel discussion).

In addition there will be two special events to celebrate our Anniversary: the 25th Anniversary Special Lecture and the 25th Anniversary Luncheon. The Special Lecture will be given by Professor Kate Okikiolu of U.C. San Diego at 11 A.M. Friday on "Determinants of Elliptic Operators." The Luncheon will take place right after Kate's talk (tickets can be purchased through advance registration or on site if tickets are available). I would like to encourage AWM members who are attending the Orlando meeting to participate in these events.

The Selection Committee for the AWM 25th Special Anniversary Lecture consisted of Ruth Charney, Lenore Blum and Karen Uhlenbeck. They were asked to choose a women mathematician within 10 years of her Ph.D. to give this lecture. They were very pleased to find so many excellent young women mathematicans and happy to see that the competition was so stiff. Thanks to them for their hard work.

I would like to thank the Joint Meetings Committee for approving our late request to have our AWM 25th Anniversary special events at the Orlando meeting, and I would also like to thank Hope Daly, Donna Salter, Janet Balleto, Penny Pina, Wayne Drady, Heather McDonald and the rest of the meeting staff at AMS for their continued support of AWM.

Thanks to University of Maryland at College Park

I would like to thank the University of Maryland at College Park for its generosity in providing office space and support for AWM and also to thank the many women mathematicians there who interact with our office and give help when it is needed. The University of Maryland Women in Mathematics Group is large and active and is planning their second annual UMCP Women in Mathematics Month for this October. I wish them a very successful event.

Chuu-Lian Terng
September 24, 1995
Boston, MA

AWM ELECTION

As Chuu-Lian has mentioned above, we are having a contested election for Member-at-Large for the first time since 1980, so we would like to encourage you to vote. Statements and biographical data provided by the candidates follow. Those elected will take office on February 1, 1996.

You should find a postcard ballot attached inside this *Newsletter*. Also, family members who do not receive the *Newsletter* will receive a ballot by a separate mailing. Institutional, affiliate, and corporate memberships do not carry voting privileges. Please note that a validating signature is required on the reverse of the ballot; unsigned ballots will not be counted. Don't forget to affix a twenty-cent U.S. stamp (or appropriate air mail postage for foreign members). Ballots are due by **December 1, 1995**.

If by some mishap you do not receive a postcard ballot, a replacement ballot will be supplied on request and will be sent by first class or air mail. However, the deadline for receipt of ballots will not be extended to accommodate these special cases. For a replacement, contact Dawn Wheeler at awm@math.umd.edu or 301-405-7892.

Sylvia Wiegand, University of Nebraska, Candidate for President

I am running for president of AWM so that I can do something for this organization that has done so much for me and for other women. Many fundamental changes have taken place due to AWM's dynamic leadership. There have been enormous increases in the numbers of women mathematicians, in the visibility of women in mathematics and in the respect given to women mathematicians. Although these gains are impressive, our work is not completed. Women in mathematics still face obstacles, and there is still a need for programs for them. We need to continue to encourage and support each other and to work together on projects for the good of our discipline. We must nurture and support talent wherever possible. We must see that what we want for women and underrepresented minorities gets done and that our gains are not taken away.

AWM does not have a large budget, but with help it has been able to sponsor many important projects, including research travel for women, the Noether lecture, the graduate student workshops, the talks by new Ph.D.'s at the annual meetings, the undergraduate awards, and various celebrations and conferences. With its panels and parties the AWM has made mathematical meetings friendlier to women and minorities.

By taking on the presidency of AWM, I hope to pass on some of the assistance and inspiration I have encountered in my family, at Bryn Mawr College as an undergraduate, at the University of Wisconsin as a graduate student, and here at the University of Nebraska as a faculty member. For seventeen years I was the only woman on the faculty in the University of Nebraska mathematics department, but my male colleagues stood behind me, especially my husband Roger Wiegand and current department chair Jim Lewis. Mathematics was a tradition in my family; my grandparents (Grace Chisholm Young and William Henry Young), my father (Laurence Chisholm Young) and my aunt (Rosalind Cecily Tanner) all were mathematicians. About ten years ago I benefitted greatly from a special NSF grant for women, enabling me to get back into research after a period of child-rearing and committee work.

Presently I am a Member-at-Large of the Council of the AMS, the chair of the AMS policy committee on meetings and conferences, and editor for *Communications in Algebra* and the *Rocky*

Mountain Journal. My research specialty is commutative algebra; in addition to research papers, I have written several historical articles about my grandparents. I have co-organized two conferences for young women in science and mathematics at the University of Nebraska and contributed to many others. My hobby and obsession is long-distance running.

As president of AWM, I intend to work for women in our profession and to increase communication and understanding among all mathematicians.

Lynne M. Butler, Haverford College, Candidate for Member-at-Large

Biographical Information:

Lynne Butler has been Associate Professor of Mathematics at Haverford College since 1991, before which she was an Assistant Professor of Mathematics at Princeton and a Postdoctoral Fellow at the Institute for Mathematics and Its Applications. She received her B.A. in Mathematics from The University of Chicago in 1981 and her Ph.D. in Mathematics, under the direction of Richard P. Stanley, from M.I.T. in 1986. Her research in algebraic and enumerative combinatorics is supported by NSF's program for Research at Undergraduate Institutions. Her curriculum development efforts (in collaboration with a Princeton mathematician, a Haverford economist, and a Chicago chemist) are also funded by NSF. In the ten years since she earned her Ph.D., she has spent three summers working as a cryptanalyst at the IDA Centers for Communications Research in Princeton and La Jolla, and two leading seminars for the Summer Mathematics Institute for women undergraduates held at Mills College and the University of California at Berkeley.

For the last three years, Lynne Butler has served on the Joint Committee on Women in the Mathematical Sciences, which advises professional societies (AMS, ASA, AWM, IMS, MAA, NCTM, SIAM) on actions they should take to alleviate some of the disadvantages that women mathematicians now experience. She has just finished two years as an elected member of Haverford's Academic Council, which considers all reappointment, tenure and promotion cases and advises the president on matters of concern to the faculty (such as college policy on sexual harassment/consensual relations and confidentiality of letters solicited for personnel cases). At the end of her term on Academic Council, she began a three-year term as chair of Haverford's Department of Mathematics.

Statement:

At the close of my term on the Joint Committee for Women in the Mathematical Sciences, I would like nothing more than to be of increased service to the Association for Women in Mathematics. AWM's members, like Haverford's faculty, make the institution strong and worthy of their devotion because they share a commitment to excellence in teaching and research, and they decide what actions will promote full participation by thoughtful consideration of diverse perspectives.

My own perspective has been broadened over the years by my experience in academic, industrial and government research settings. It has been enlightened most recently by my transition to a wonderful liberal arts college. Haverford is a Quaker college whose diverse faculty makes decisions by consensus. Lengthy student letters are solicited in all faculty personnel cases, and students serve on hiring committees. Input from junior faculty is sought in tenure and promotion cases, and associate professors are elected to serve on academic council. We have a woman provost, and ten percent of our tenured faculty members are black. The atmosphere at Haverford is collaborative, not competitive. We encourage students to work hard to develop their talents in preparation for a lifetime of service in the cause of human advancement. Every student matters; every faculty member's contributions are valued.

To me, AWM is a potent force to change the mathematics community, and Haverford provides one example of excellence to emulate. I hope each Member-at-Large brings to the AWM a different and compelling example.

Teresa D. Edwards, Spelman College, Candidate for Member-at-Large

Graduating from Spelman College in 1976 with a Bachelor's in Mathematics, I headed to Cornell University's Ph.D. program in Operations Research. Being a young, single African American female (in fact, the only female and the only black in my entering class), the idea of staying in Ithaca for six years of my life was unthinkable. So I transferred to

Georgia Tech where I earned the Master's degree and reached A.B.D. status. I then entered the work force and gained valuable experience as an analyst during a six-year hiatus. Having returned to Spelman for my tenth year college reunion, my earlier interests in teaching resurfaced. I pursued the dream and joined the faculty in a temporary position that fall. My return to graduate school at Georgia Tech followed in the summer, and I received the Ph.D. three years later.

As you can imagine, above I made a long story short. There were many trials and joys hidden between the lines. Currently, I am Associate Professor and Chair of the Mathematics Department at Spelman College. One of my many missions is to help lessen the trials which students who leave Spelman College now have to face.

I enjoy the challenges of working with students both in and outside of the classroom. I try to help students understand that they need to take full advantage of their undergraduate studies and make wise informed decisions about graduate school and career choices. I make these efforts so that our students can realize their full potential and have meaningful lives and so that they, through their actions and accomplishments, can help reshape perceptions of women and minorities in technical areas, especially in mathematics. I would hope to make a broader impact by serving on the AWM Executive Committee.

Lee Lorch, York University, Candidate for Member-at-Large

Biographical data:

Professor Emeritus & Senior Scholar, York University (Toronto). Born Sept. 20, 1915. B.A. (Cornell 1935), M.A., Ph.D. (Cincinnati, 1936, 1941). L.H.D. [*hc*] (CUNY 1990), L.L.D. [*hc*] (York 1993). AWM Certificate of Achievement (1992). Lifetime Achievement Award, National Assn. of Mathematicians [NAM] (1995).

Awards for contributions to education of women and minorities from AWM (1977), NAM (1977), Howard (1976), Spelman (1988), Math. Sci. Educ. Board (1990). Prosecuted for "Contempt of Congress" (1955–56) on demand of House UnAmerican Committee, but acquitted by Federal District Court. Moved to Canada 1959.

Served on Councils of AMS, Canadian Math Soc., Royal Society of Canada. Taught at CCNY,

Penn State, Fisk, Philander Smith, Alberta and, as visitor, at Wesleyan, Howard, Spelman, Berkeley, Aarhus (Denmark), Royal Inst. Tech. Gothenburg (Sweden), Ilmenau (GDR). Lectured in various European countries, Ghana, Cuba and (pending) Mexico.

Claims: "I am not retired; unfortunately, my salary is."

Statement:

I am honored by the nomination. Whether elected or not, I shall continue to do what I can for AWM. Some specifics: Defense of affirmative action. Collaborative activity with other organizations similarly committed. Resistance to backlash. Careful attention to issues facing minority women. Collaboration with NAM to this end. Concern for Community Colleges and the rest of the school system. Attention to problems of students and curricula. (Female and minority input!) Continue poster sessions for new women Ph.D.'s, expand supportive environment. Develop mentoring programs for students and pre-tenured women faculty. Maintaining and developing ties and women's networks, including internationally.

Sara Robinson, U.C. Berkeley, Candidate for Member-at-Large

I did not find my way into mathematics until my last year as an undergraduate at Berkeley — partly because I had never been exposed to "real" mathematics, and partly because I got distracted by chemistry and physics along the way. However, I was so taken with the subject that I immediately changed my major and applied to the Berkeley graduate program. The transition wasn't easy because I had little to no background in math, but eventually I got up to speed. At the present time, I'm in my fourth year in the Berkeley Ph.D. program and working with Bill Arveson in Operator Algebras.

Rather than trying to give general opinions about the role of the AWM in the mathematical community, allow me instead to describe my experience with the Noetherian Ring,* an organization of women mathematicians at Berkeley. I perceive the role of the Noetherian Ring in the Berkeley math department as somewhat parallel to the role of the AWM in the mathematical community.

My involvement with the Noetherian Ring began in the spring of 1991. Since then, I've held several offices, with the most recent being that of vice-president. The group's activities center around our weekly meetings, where refreshments are followed by a math talk given by one of our members. Despite the simple format, the Noetherian Ring has had a profound effect on the women in the department. Within the often overwhelmingly large Berkeley mathematics department, the group functions as a small, intimate community where everyone knows each other both personally and mathematically. I've found membership in this community to be an incredibly empowering experience. An added benefit is the instinctive bonding that occurs between women in a predominantly male discipline. The proportion of women in the department is so low that we tend not to meet each other in classes or seminars. The Noetherian Ring prevents us from becoming too scattered in our various disciplines. What makes the group truly remarkable, however, is that it attracts an extremely diverse membership. Because of its essentially mathematical foundations, it forges bonds between women with a broad array of opinions on non-mathematical issues.

As I see it, the key to the Noetherian Ring's success is that it's not reacting to anything; rather, it is creating something positive.

---

* For more information on the Berkeley Noetherian Ring refer to the September-October issue of this *Newsletter*.

Kay Smith, St. Olaf, Candidate for Treasurer

AWM has traditionally sponsored programs that encourage women to study mathematics, provide support for graduate students, and recognize the achievements of women in mathematical research. With the creation of the Louise Hay Award, AWM acknowledged the importance of women's contributions to mathematics education. While continuing its traditional programs, AWM needs to identify ways to enable members to learn about and contribute to the current national efforts to improve mathematics education at all levels.

Background: I received my B.S. from Bucknell University and my Ph.D. from Yale University. I taught at Davidson College prior to coming to Saint Olaf College in 1980.

BERTOZZI IS 1996 GOEPPERT-MAYER SCHOLAR

Dr. Andrea L. Bertozzi has been named recipient of the 1996 Maria Goeppert-Mayer Distinguished Scholar award by Argonne National Laboratory. Her one-year visit to the Mathematics and Computer Science (MCS) Division at Argonne began in September 1995.

Bertozzi's areas of expertise are in nonlinear partial differential equations and applied mathematics. Her recent work includes the mathematical theory and modeling of physical processes that characterize thin films. She received her Ph.D. in mathematics from Princeton University in 1991 and has been on the faculty of the University of Chicago as an NSF Postdoctoral Fellow and L. E. Dickson Instructor in Mathematics. Dr. Bertozzi has recently accepted a position of Associate Professor of Mathematics at Duke University and is on leave from this position to spend a year at Argonne as the Maria Goeppert-Mayer scholar.

In announcing the award, Rick Stevens, director of Argonne's MCS Division, cites Bertozzi's exceptional record of achievement. She has given invited lectures at leading universities and international conferences and has a strong record of publication in both the applied mathematics and physics literature. Recently, she was awarded an Alfred P. Sloan Foundation Research Fellowship. Bertozzi will interact with MCS Division researchers in the areas of computational fluid flow and solidification.

The Maria Goeppert-Mayer Award is granted annually by Argonne to one or two outstanding women scientists or engineers early in their careers. The award provides full salary for the year and a cash award of $5,000 to enable these women to conduct innovative research using the exceptional resources of Argonne. Bertozzi would like to encourage other women mathematicians to apply for this award.

DUES! DUES! DUES! This is a reminder that dues were due on October 1st. Please renew or join if you haven't already. Convince your department to become an institutional member. DUES! DUES! DUES! DUES! DUES!

VIVIENNE MALONE-MAYES: IN MEMORIAM

Dr. Vivienne Malone-Mayes was born February 10, 1932, in Waco, Texas and died there on June 9, 1995. She leaves a daughter, Ms. Patsyanne Mayes Wheeler of Dallas, and other family members. Memorials may be sent to the Vivienne Lucille Malone-Mayes Scholarship Fund, c/o LaNelle McNamara, 501 Franklin Avenue, Suite 501, Waco, TX 76701.

An excellent student all her life, Vivienne graduated from the segregated A. J. Moore High School in Waco in 1948 at only 16 years of age. Starting at Fisk University (Nashville) immediately, she earned the B.A. in 1952 and the M.A. in 1954. It was at Fisk that her friendships with Dr. Charles G. Costley (recently retired from McGill), Dr. L. Joyce Venable Gould (Shaw), Dr. Gloria Conyers Hewitt (Montana), ourselves and others began.

At Fisk, she had courses from Dr. Evelyn Boyd Granville (Ph.D., Yale, 1949), one of the first two African-American women to receive the Ph.D. in mathematics. Of Dr. Granville, an inspiring and exacting teacher, she wrote: "I believe that it was her presence and influence which account for my pursuit of advanced degrees in mathematics." Vivienne has written in the American Mathematical *Monthly* (November 1976) and the AWM *Newsletter* (1975, 1988) of the general atmosphere in which this decision was made.

It was a hard decision to take, harder to implement. It could not be done all at once. First, she returned to Waco to serve (1954–61) as Chair of the Mathematics Department at Paul Quinn College, operated by the African Methodist Episcopal Church. Seeking as always to expand her knowledge, she applied to take some courses at Waco's Baylor University, only to be rejected explicitly on grounds of race (1961).

The University of Texas, already required by federal law to desegregate, had to admit her. It was a lonely and stressful time for her. Writing in 1988 in the AWM *Newsletter*, she observed that "it took a faith in scholarship almost beyond measure to endure the stress of earning a Ph. D. degree as a black, female graduate student." But earn it she did, drawing on her vast reserves of courage and determination as well as on her undoubted abilities.

Etta Z. Falconer, Spelman College; Lee Lorch, York University

In 1966 she became the fifth African-American woman to receive the Ph. D. in mathematics.

Her thesis, supervised by Dr. Don Edmondson, was entitled "A structure problem in asymptotic analysis." Part of this work was published in the *Proceedings of the American Mathematical Society* (v. 22, 1969) under a different title. Later her research interests shifted to summability theory, where she published jointly with Dr. B. E. Rhoades.

In graduate school she was very much alone. In her first class, she was the only Black, the only woman. Her classmates ignored her completely, even terminating conversations if she came within earshot. She was denied a teaching assistantship, although she was an experienced and excellent teacher. She wrote further: "I could not join my advisor and other classmates to discuss mathematics over coffee at Hilsberg's cafe.... Hilsberg's would not serve Blacks. Occasionally, I could get snatches of their conversation as they crossed our picket line outside the cafe." She "could not enrol in one professor's class. He did not teach Blacks."

As she commented, "opportunities which would have accelerated my mathematical maturity were withheld."

Overlooking all this, one of her professors, complaining against the civil rights demonstrations, said to her: "If all those out there were like you, hardworking and studious, we wouldn't have any problems." Her reply: "If it hadn't been for those hellraisers out there, you wouldn't even know me."

Mathematical talent was not enough for success even though Vivienne had this in abundance. It took enormous courage and determination as well. It took all these attributes together for her to become the second Black and the first Black woman to get a mathematics Ph.D. from the University of Texas.

Her invited addresses to AWM, published in the *Newsletter* (v. 5, no. 6, 1975, pp. 4–6; v. 18, no. 6, 1988, pp. 8–10), describe not only her own journey but that of the collective of Black women, indeed of all women and all Blacks. Written many years ago, they cast a penetrating light on the past and the present. They are must reading still today — and for everybody.

Surviving all this with her customary strength, good humor and stability, she became in 1966 the first Black faculty member at Baylor University, the institution which had rejected her as a student only

five years previously. There she spent the rest of her teaching career, retiring because of ill health in 1994.

For some years her path was smooth. In 1975 she described it in these words:

> I have never had any complaints about salary or promotions. I have received financial support from the administration for innovative and experimental projects.... An additional safeguard of my welfare has been yearly visits by representatives of the [federal] government. They have checked salaries and promotions to determine if I was being subjected to any discrimination. These reports have always been encouraging to me.

She was less satisfied beginning in the 1980's, especially within the Department. There were no longer any visits by federal inspectors. The Reagan-Bush years saw the budgets of the civil rights agencies cut drastically. Inspection visits fell victim. Vivienne felt that this weakened her position and cited several specific complaints.

Throughout the years, good and bad, she maintained a high level of activity in mathematical, community and religious organizations. She was the first Black elected to the Executive Committee of AWM and served on the Board of Directors of the National Association of Mathematicians (oriented toward the Black community in the mathematical world). She was a member of the American Mathematical Society, the National Council of Teachers of Mathematics and the Mathematical Association of America, where she was elected Director-at-Large for the Texas Section. In addition, she served as Director of the High School Lecture Program for the Texas MAA.

Her dedication to the community at large was just as great. We have already mentioned her anti-racist picketing; her articles situate her academic struggles within the broader anti-racist movement. She served on the Board of Directors for Goodwill Industries, the Board of Directors for Family Counseling and Children, the Texas State Advisory Council for Construction of Community Mental Health Centers, and the Board of Directors of Cerebral Palsy. She was Director of the Youth Choir (1960–75) and Organist at New Hope Baptist Church, establishing there in 1983 the first Boys Verse Choir.

She enjoyed her friends and kept in frequent telephone contact with many, however far-flung. Her poor health did not keep her away from the winter Joint Mathematics Meetings. There she saw a number of her friends and with them often phoned the absentees. Her last winter meeting was in 1983 in San Antonio. This was a particularly joyous reunion. It brought Vivienne together with Gloria Hewitt, the two of us, and, above all, with Evelyn Boyd Granville, whom she had not seen in many years but whose inspiration she had never forgotten. There had been frequent occasions for two or three of us to be together, along with other friends, but this made for a very special occasion which Vivienne enjoyed enormously, as did we all. Many snapshots were taken, many happy smiles were to be seen.

This was to be our last face-to-face contact with Vivienne, whose poor health, perhaps weakened by the accumulated racist and sexist induced stress of the years, soon worsened. But the telephone calls continued until just a few days before a heart attack claimed her life.

She had made of it a good life. She could well have said with Terence, "Nothing human is alien to me." All her life, to its very end, she was part of the struggle to make the path smoother for those who followed. She made her presence in the national mathematics community felt and respected. In the organizations embracing the entire mathematics community she was to be found and heard. In the organizations specifically devoted to the problems of minorities and women, there she was too. With skill, integrity, steadfastness and love she fought racism and sexism her entire life, never yielding to the pressures or problems which beset her path. She leaves a lasting influence. From her life, the world has gained much. In her premature death we have all lost. Inspired by her life, we are bereaved at the loss of a loving and beloved friend.

Bibliography

Mayes, Vivienne, *A structure problem in asymptotic analysis*, Dissertation, University of Texas at Austin, 1966.

Mayes, Vivienne, Some steady state properties of $\int_0^x f(t)dt/f(x)$, *Proc. Amer. Math. Soc.*, v. 22 (1969), pp. 672–677.

Mayes, Vivienne and Howard Rolf, *Pre-calculus*, Independent Learning Systems, San Rafael, 1977.

Mayes, Vivienne, David Soasta, and Patrick Conoley, Experiment with audio-tutorial pre-calculus, Amer. Math. *Monthly*, v. 82 (1975), pp. 510–514.

Mayes, Vivienne, Black and Female, AWM *Newsletter*, v. 5, no. 6 (1975), pp. 4–6.

Mayes, Vivienne, Lee Lorch at Fisk: A tribute, *Amer. Math. Monthly*, v. 83 (1976), pp. 708–711.

Mayes, Vivienne, Lucille Brigham, and Sarah Virginia McNeill, Student attitudes toward an audio-visual presentation of pre-calculus, *Math. Teacher*, v. 70 (1977), pp. 229–231.

Mayes, Vivienne and B. E. Rhoades, Some properties of the Leininger generalized Hausdorf matrix, *Houston J. Math.*, v. 6 (1980), pp. 287–299.

Mayes, Vivienne, untitled, AWM *Newsletter*, v. 18, no. 6 (1988), pp. 8–10.

Articles about Vivienne Mayes

Carswell, Catherine, BU math professor's life filled with firsts, Waco *Times-Herald*, February 26, 1986; reprinted, AWM *Newsletter*, v. 16, no. 4 (1986), pp. 8–9.

Kent, Nita Sue, Blacks at Baylor: After 20 years, *The Baylor Line*, November 1982, pp. 9–13.

Houston, Johnny, Spotlight on a mathematician, NAM *Newsletter*, 1995.

THE REAL MESSAGE FROM THE FORUM

I have recently returned from the NGO Forum in Huairou and the Fourth UN Conference on Women in Beijing. From what I've heard, press accounts have emphasized the difficulties there. But the real message is the commonality of the concerns and problems faced by women world-wide, differing more in intensity than in substance across countries.

At a basic level, women are usually mothers. We have families and treasure our children. As Hillary Clinton said, we talk about them whenever we get together, whether working at the office or washing clothes in the river near a village — or meeting at the Forum.

And at another basic level, independently earned money in the pockets and handbags of women is tremendously empowering. Everywhere, improving the economic position of our families increases our self-esteem and status in the family enormously, whether it be through a salaried job or by producing something beyond the immediate needs of the family which can be sold.

The difficulties inhibiting full participation are also universal: problems with good child-care options, having to work more hours than the average man because of doing most of the housework and child care within the home (women in the U.S. who have been successful both in their jobs and in raising families usually credit their husbands with being particularly understanding and doing half or more of the housework and child care), low expectations of our ability, insufficient education (particularly in science and technology), the opposition of some men.

Yes there were problems at the Forum. The bus situation was atrocious. A low point for six of us was being abandoned in a darkened bus after we refused to get off at a non-standard bus stop in a place we didn't recognize! For big events, like Hillary Clinton's speech at the Forum and early events at the UN conference, NGO representatives were often treated rather badly. And the police were sometimes a problem, although the many young Chinese volunteers, in their colorful identifying T-shirts, were very helpful and very pleasant indeed.

But even though these things occasionally dampened our spirits (the way the rain dampened everything else), they did not materially affect the general atmosphere of the Forum, which was one of tremendous energy, vitality, and enthusiasm. It was exciting meeting these fascinating women from all over the world, making either planned or random contacts, finding out just how universal our concerns are, and sharing strategies for dealing with them. We will remember it as a very positive experience for the rest of our lives.

Jean Taylor is a Professor of Mathematics at Rutgers University and a member of the Board of Directors of the American Association for the Advancement of Science. Internet: taylor@math.rutgers.edu.

OLGA TAUSSKY TODD

A great mathematician, Olga Taussky Todd, died Saturday, October 7, 1995, in her sleep at the age of 89 at home in Pasadena, California. We send our condolences to her husband, Jack, 84. It is a sad loss for the mathematics community, for Olga had been a major inspiration to her many colleagues, students, and friends.

TREASURER'S REPORT   FY 94–95

Category Description	AWM Operating Fund	Schafer Prize Fund	Grant Funds	TOTAL
BALANCE – 6/30/94	8811	54473	19500	82784
INCOME/EXPENSE				
INCOME				
Contributions	1805	30	0	1835
Dividends/Interest Earned	878	1541	0	2419
Dues	101211	65	0	101276
Grants	0	0	121355	121355
Miscellaneous Income	692	0	0	692
Publication Income	13064	0	0	13064
TOTAL INCOME	117650	1636	121355	240641
EXPENSES				
Advertising	-3933	474	3633	174
Dues & Fees	1317	0	0	1317
Entertainment	794	0	0	794
Equipment	188	0	0	188
Fund Transfers	3500	-3459	-41	0
Grant Overhead	-10467	0	10467	0
Honoraria	0	1450	1600	3050
Interest/Finance Charge	311	0	0	311
Meeting Expense	845	0	4178	5023
Miscellaneous	713	256	1007	1976
Office Expenses	14698	356	1985	17039
Participant Support	0	0	90740	90740
Payroll Transactions	46874	1650	26422	74946
Professional Services	5026	0	0	5026
Publication Expenses	33562	0	21243	54805
Travel (Non-Participants)	2001	0	4924	6925
TOTAL EXPENSES	95427	728	166158	262313
TOTAL INCOME/EXPENSE	22223	909	-44804	-21673
BALANCE – 6/30/95	31034	55382	-25304	61112

Respectfully submitted, Judy Green, Treasurer, Marymount University

BURLINGTON PANEL: DO WOMEN AND MEN HAVE DIFFERENT CAREER TRAJECTORIES?

Claudia Henrion, Dartmouth College

Introduction

In doing research for a book I have been writing on women in mathematics entitled *Women in Mathematics, The Addition of Difference*, I interviewed a dozen prominent women mathematicians around the country. One thing that struck me in these interviews is that almost every single one of the women felt that she had done her best work later in her life, typically in her forties, fifties, even sixties, depending on the person's age. This was surprising to me. I had always accepted the prevalent belief that mathematicians do their best work in their youth. Indeed, one of the things that motivated me to write this book was G.H. Hardy's book *A Mathematician's Apology*, in which he writes:

> If then I find myself writing, not mathematics, but "about" mathematics, it is a confession of weakness, for which I may rightly be scorned or pitied by younger and more vigorous mathematicians. I write about mathematics because, like any other mathematician who has passed sixty, I have no longer the freshness of mind, the energy, or the patience to carry on effectively with my proper job…. No mathematician should ever allow himself to forget that mathematics, more than any other art or science, is a young man's game. [1]

While I had questioned that mathematics was a young *man's* game, it hadn't occurred to me to question that mathematics was a *young* man's game. Hardy is not alone in this assumption; many other mathematicians have expressed similar views. Alfred Adler, in his essay "Mathematics and Creativity," is even more explicit about the time of life identified with productivity:

> Such consuming commitment can rarely be continued into middle and old age, and mathematicians after a time do minor work. In addition, mathematics is continually generating new concepts, which seem profound to the older men and must be painstakingly studied and learned. The young mathematicians absorb these concepts in their university studies and find them simple. What is agonizingly difficult for their teachers appears only natural to them. The students begin where the teachers have stopped; the teachers become scholarly observers. [2]

In a similar vein, Andre Weil wrote:

> Mathematical talent usually shows itself at an early age…. There are examples to show that in mathematics an old person can do useful work, even inspired work; but they are rare and each case fills us with wonder and admiration. [3]

And as Sylvia Wiegand recounts in an article about her grandmother, the mathematician Grace Chisolm Young:

> On his fiftieth birthday, Klein was honored in Turin where Grace [Chisolm Young] was then studying. At dinner he was seated next to Grace, said to be his favorite pupil, and he whispered to her: "Ah, I envy you. You are in the happy age of productivity. When everyone begins to speak well of you, you are on the downward road." [4]

The contrast between these words and the experiences of the women I interviewed led me to wonder: Is it true that mathematics is a young person's game? What does happen as mathematicians age? And how does age intersect with questions of gender?

Is Mathematics a "Young Man's Game?"

When we look at science more generally, the answer to this question is no, science is not a young man's game. Numerous studies have found that there is not a positive correlation between youth and productivity in science. [5]

But what about mathematics? In many experimental sciences, it could be argued, the need for expensive equipment, access to funding, and ties to research communities have a more powerful influence on productivity than they do in mathematics. Since these factors improve with age (as one becomes a more established scientist), these fields would be less prone to favoring youth. Mathematics, on the other hand, may be quite different. One can do research with virtually no funding or equipment, and mathematics is at least perceived to be solitary work, hence (at least in theory) one is less dependent on the math community. Is it true, then, that in mathematics, productivity is correlated with youth?

Despite the pervasiveness of this belief, few systematic studies have been done on this question.

One useful exception is the work by Nancy Stern, published in her article "Age and Achievement in Mathematics: A Case-Study in the Sociology of Science." [6] Stern studied the relationship between age and mathematical productivity as measured both by quantity and quality of research.

Quantity of research is fairly straightforward to measure — one can simply count the number of articles published by a mathematician. Though this may not correlate exactly with what we mean by quantity of research, it is certainly a reasonable measure of it.

But *quality* of research is somewhat more difficult to assess. A standard method used to evaluate quality is to determine the number of citations a mathematician has received for published literature. The more citations, at least in theory, the more important the work. As Stern points out, there are problems with this measure, and some have argued that it does not necessarily capture the most important work in a field. One problem cited, for example, is that in some cases an important mathematical idea can "finish off" a field. That is, the most important questions get answered, and little more is left to be done. In such a case, few new mathematicians would pursue that particular area, and over time, the field itself dies out, and the number of future citations may be minimal, thereby masking the importance of the result. [7]

Though these kinds of concerns are worth taking into consideration, Stern gives compelling evidence to suggest that the number of citations is a reasonable measure of significance. She analyzes the number of citations of leading mathematicians, in particular those who are members of the National Academy of Sciences, and compares them with a large sample of mathematicians at some of the most prestigious universities in the United States. While the mathematicians in the National Academy of Sciences, do not, on the average, have a higher number of publications than the average for the comparison group, the number of citations for their work is nearly double that of the comparison mathematicians. Thus there does seem to at least be a reasonably strong correlation between significance of work, as recognized by the general scientific community, and the number of citations. [8]

Using these measures, then, we return to the first question: do mathematicians indeed produce a greater quantity of research when they are young? Stern's findings match those of the work done on scientists more generally. She found no correlation between age and productivity:

Age and Mathematical Productivity 1970–74: Mean Number of Papers Published in 1970–74 by Mathematicians of Different Ages [9]	
Age	Mean Number of Papers
under 35	5.12
35–39	7.33
40–44	6.24
45–49	3.49
50–59	5.22
60+	6.11

In this study, the mathematicians who were most productive were between the ages of 35 and 39, and the number of articles published by mathematicians over the age of 60 was still quite high, superseding the amount published by those under 35! So much for the hypothesis that mathematicians are most productive before the age of 35. (These are amazingly close to the findings in science more generally.) One might first be tempted to argue that the number of papers published by those over 60 are primarily co-authored with younger and more vigorous mathematicians. But in fact, Stern's findings show that the average number of co-authored papers by mathematicians over the age of 60 is still relatively low, and the number of single authored papers by those in this age group remains high. [10]

The second natural challenge, then, is to argue that while quantity may still be high late in one's career, quality may steadily decline over time. Is that true? Here, again, Stern's findings were similar to the research done on scientists in general: there is no simple correlation between age and *quality* of research. Using citations as a measure of quality, Stern found that the number of citations for work done in a four-year period was almost double for mathematicians over the age of 60 than for mathematicians under the age of 35. As she says:

> In short, no clear-cut relationship exists between age and productivity, or between age and quality of work. The claim that younger mathematicians (whether for physiological or sociological reasons) are more apt to create important work is, then, unsubstantiated. [11]

What about women?

These findings are also corroborated by the interviews in this book. Again and again, the

women state that their best work was done later in their lives. If anything, these interviews suggest that for women, the relationship between age and productivity may in fact be inversely proportional. Indeed, one argument used for why age hurts mathematical productivity is that one becomes more distracted with age and loses the ability to be completely focused for hours at a time. But for many of these women the opposite was true. Those with children found that their research focus was much improved as their children aged and demanded less of their time. They often relished the opportunity to be more immersed in work without having as many domestic responsibilities to juggle. Thus women with children may become less distracted with age rather than more.

Some have speculated that women's mathematical peak may be about 10 years later than their male counterparts. While all of these comments are anecdotal, what is striking is the uniformity of the response. At this point more systematic studies are needed to understand in greater detail how gender interacts with age and productivity. [12]

Impact of the Ideology of Youth

Although scientific studies do not substantiate the belief that mathematics is a young person's game, this identification of productivity and youth has a powerful hold on the imagination of the mathematics community and can have a particularly detrimental effect on women. The ideology of youth affects practices and policies that shape graduate programs, hiring, and the granting of awards.

Graduate programs are typically geared towards a young, fresh-out-of-college population with no family commitments. Students are expected to be full-time and to have few other social or economic obligations. This intense focused period is supposed to coincide with the budding of one's mathematical creativity. However many women enter graduate school more tentatively, often initially juggling young children with graduate work. Some very successful women, such as Joan Birman, felt that they would not have been able to begin graduate work if they had not had the option of being part-time students initially. And yet most graduate programs are typically not designed to accommodate women's timelines. Most prestigious graduate programs do not look favorably on candidates who are older or on those who need to start on a part-time basis.

Similarly, in hiring, most universities prefer young mathematicians — the potential hot stars; youth is considered a sign of precocity and brightness. Once again this early period is seen as key to one's mathematical productivity. And even some of the most prestigious awards like the Field's Medal have an age limit on who can win the award. Field's Medal winners must be no more than 40 years of age. Given the findings of Stern's studies, it is clear that often a mathematician's greatest work would not fall under this stipulation.

These kinds of preferences in policies can be particularly problematic for women. For many reasons, women's professional timelines — what they accomplish when — may be markedly different from those of their male counterparts. Women are less likely to have a clear linear professional path, their lives are more likely to be interrupted for a period of time or to have a veering and tacking quality described by Aisenberg and Harrington in their book *Women of Academe*. Factors that affect women's time-lines include: having children, following spouses' careers, lack of confidence in mathematical ability, more difficulty envisioning themselves as mathematicians, less explicit advice and counseling on mathematical careers, less encouragement from teachers, peers and advisors to pursue mathematics professionally, and more difficulty integrating into the social fabric of the mathematics community.

Each of these topics is complex, and they effect different women to varying degrees (and at different times in their lives.) One must be careful in drawing conclusions. For example, to what extent, and in what way, does having children indeed affect women's mathematical lives? Does it, for example, make them less productive in their youth? Certainly in some cases, having children did have a significant bearing on timing and productivity. Joan Birman, for example, did not get her Ph.D. until the age of forty because she was raising three children (as well as working part-time and following her husband in his career moves). Mary Ellen Rudin maintained part-time positions because they were well-suited to her needs in having and raising a family. Although she was able to stay mathematically active as her children grew up, it is certainly plausible that she would have published more in her youth had she not had these additional responsibilities.

But other women, such as Lenore Blum, felt that having children did not slow them down

mathematically. If anything, it was the *assumption* among Lenore's peers and teachers that it would slow her down that was the problem. Is this assumption even accurate for women in general? Zuckerman and Cole have examined this question in science more generally. They found that contrary to popular beliefs:

> Married women publish more than single women, and mothers publish more than childless women. Furthermore, women's rates of publication, on average, do not decline following childbirth and during the years when they are caring for young children. [13]

This author knows of no comparable study for women in mathematics, but it is clear that at the very least, we cannot automatically assume that marriage or motherhood is incompatible with mathematical productivity. The relationship between the two is very complex. For example, timing is a critical factor — having children during the relatively flexible years of graduate school may be much easier than having them during the highly pressured early years of a tenure-track job. Support structures including family, live-in help, spouse support, quality of day care can all have significant bearing on productivity, as does the health and disposition of the child. Finally, the kinds of institutional and departmental support one receives can also make a tremendous difference in one's ability to balance work and family responsibilities.

However, even if having children does not translate into lower productivity, the reverence for youth can have a detrimental effect on women. For example, some women put off having children until later in their careers, for example, until after they have tenure or are well established in the mathematical community. Some find this choice ideal, others are disturbed to find they have more difficulty or are unable to conceive children later in their lives. Still other women may choose not to go into mathematics or to leave it prematurely because of the perceived difficulties in balancing having children with a mathematical career.

Conclusion

So what can we conclude from all this? The belief that mathematics is a young man's game is not substantiated by scientific studies. Nonetheless, many current policies and practices favor youth and may inadvertently discriminate against women in particular.

Some of the factors that influence women's professional timelines may well be different than those that affect men. But exactly how and to what degree those factors influence productivity is unclear. More studies need to be done to assess gender differences.

Equally important, however, is what the mathematics community does with this information. For example, if women's productivity is found to decline for a few years while their children are young, is this information used to discriminate against women, or is it used to determine ways the mathematical community can accommodate the having of children? Specific policies can make an big difference, e.g., tenure clock extensions for those who have a child during the pre-tenure years, flexible teaching schedules for parents of young children, and familial leave policies for men and women.

The ideology of youth can certainly be problematic for men as well as women. It leads to an atmosphere in which mathematicians often feel that they have little to contribute to mathematics once they have passed their supposed "prime." This kind of pressure can simply contribute to insecurity rather than cultivate productive development. It inhibits an appreciation of the contributions mathematicians can make at all stages of their lives. I believe that it is more useful to focus on how to maintain and increase productivity for both men and women as they get older. We know that in science, more generally, productivity is far more influenced by the atmosphere and incentives of one's work environment and community than it is by age. [14] It is likely that the same is true in mathematics.

Footnotes:

1. Hardy, G.H., *A Mathematician's Apology*, Cambridge University Press, 1967, p.63.

2. Adler, Alfred, "Mathematics and Creativity," *Mathematics: People, Problems, Results*, Vol. 2, p. 5. Belmont, CA: Wadsworth, Inc., 1984.

3. Weil, André, "The Future of Mathematics," American Mathematical *Monthly*, 57 (May 1950), p. 296.

4. Wiegand, Sylvia. "Grace Chisolm Young," AWM *Newsletter*, 7 (May–June 1977), p. 6.

5. See, for example, Jonathan Cole and Burton Singer, "A Theory of Limited Differences: Explaining the Productivity Puzzle in Science," in *The Outer Circle*, ed. by Harriet Zuckerman, Jonathan Cole, and John Bruer. New York: W.W. Norton & Co. 1991. This article focuses primarily on gender differences in cumulative productivity. In Stern's article, she cites Cole's study "Age and Scientific Performance," unpublished paper, SUNY at Stony Brook,

1976, and Wayne Dennis, "Age and Productivity Among Scientists," *Science*, Vol. 123 (1956), p. 724.

6. Stern, Nancy, "Age and Achievement in Mathematics: A Case-Study in the Sociology of Science," *Social Studies of Science* (SAGE, London and Beverly Hills), Vol. 8 (1978), pp. 127–40.

7. She gives as an example David Hilbert's proof of a general finiteness theorem, which essentially killed the subject of Invariant Theory.

8. Many other measures might be used to evaluate mathematical development or productivity: the number of students one has had, the number of ideas contributed to other people's research, quickness, the ability to develop new theories, connections made between different fields, or important questions posed. As far as this author knows, no studies have been done to determine the correlation between age and productivity with respect to these other measures.

9. Stern, Nancy, *op. cit.*, p. 134.

10. The mean number of single authored papers published during this five-year period (1970–74) for these age categories was 3.27, 3.97, 3.24, 2.37, 2.16, 3.43, while the mean number of co-authored papers was 1.73, 3.36, 2.94, 1.13, 3.03, 2.69. See Stern, p. 134. Thus mathematicians 60 and over were publishing, on average, more single authored papers than those under 35.

11. Stern, Nancy, *op. cit.*, p. 135.

12. This author knows of no studies that have analyzed this question to determine whether there is a difference between men and women with respect to the timing of their research (in terms of both quality and quantity) in mathematics.

13. Zuckerman, Harriet, Jonathan Cole, and John Bruer, eds., *The Outer Circle* (New York: W.W. Norton & Co. 1991), p. 17.

14. Ibid.

Joyce McLaughlin, Rensselaer Polytechnic Institute

Mathematics in Industry Studies

In industry, the culture, environment, and work experience differ substantially from that in academia. One study has been completed. Its goal was to obtain information that will help academics educate students, help students to prepare themselves for industry, and help mathematicians in industry succeed. This study was conducted by SIAM, jointly funded by NSF and NSA. A second activity has begun. This will be conducted jointly by AMS and SIAM, funded by the Sloan Foundation. One of the results of the second activity could be described as a career development tool. Here I'll describe briefly the findings from the SIAM study. I am a member of the steering committee; Paul Davis at WPI is the Chair.

In the beginning we asked three questions:

1. When people educated as mathematicians are employed in industry, what do they do? (The answer of course is a variety of jobs — not always mathematics.)

2. When mathematics is done outside of academia, who does it? (The answer is ... not always mathematicians, that is those educated in mathematics. Often physicists, engineers, etc. are doing the mathematics in industry.)

3. How useful is mathematics in solving industrial problems? (The answer is ... there are many success stories.)

These questions address the status quo. We needed that information to move forward, but the plan is to obtain information that provides perspective for the future. To achieve that, we set these goals:

1. Improving graduate education in mathematics to better match the demands of business, industry, and government;

2. Identifying opportunities for mathematics and mathematicians to contribute to national economic growth.

What we learned is that the primary demands of nonacademic employers were:

1. Commitment to the organization's mission, flexibility to work in new areas, and a genuine interest in applications demonstrated by knowledge of another discipline;

2. A broad technical background within mathematics and, especially for Ph.D.'s, depth in one area of mathematics;

3. Leadership, communication and interpersonal skills; the ability to work in teams;

4. In almost every case, computation skills.

Mathematics is valued as it contributes to the mission. Timely solutions are critical — even if they are incomplete by academic standards. Computing is almost always required.

Mathematicians are valued because they think rationally and because they are regarded as having the best tools for problem solving. Those mathematicians now working outside of academia that we talked to were positive about the way their education has prepared them to think logically and analytically, to deal effectively with complexity, to

conceptualize and abstract, and to develop models and to formulate and solve problems.

On the negative side, people educated as mathematicians and working outside of academia said they were not well enough prepared: to use the computer; to communicate at a variety of levels; to work in teams; to attack a diverse set of problems; and to work under pressure of deadlines. Business, rightly or wrongly, often views mathematicians as unwilling to become involved in real business issues. Breadth of scientific interest is also often a factor. And again, once on the job most mathematicians work in teams where communication skills are vital.

What does this mean to us if we are academics? Could we design curricula which would give the students the skills needed in a nonacademic environment? Here are some suggested design principles:

1. Formulating and solving practical problems on the user's terms; mastering the central ideas of a discipline outside of mathematics;

2. A broad technical background within mathematics as well as depth and excellence in a relevant area of mathematics;

3. Leadership; effective interpersonal and communication skills — reading, writing, speaking, and listening;

4. Computational skills;

5. Valuing work outside of academia: encouraging internships, industrial projects, etc.; supporting nonacademic career choices; encouraging faculty experience in industry/government; inviting nonacademic mathematicians into the intellectual life of the department.

So we learned a great deal. The AMS-SIAM study will learn more, particularly about career development. In this regard, from AWM we strongly encourage the organizers of this second study to seek the answers to the questions — How do the careers of women and men outside of academia differ? And if there *is* a difference, how can this difference be eliminated?

Carolyn Gordon, Dartmouth College

When Chuu-Lian asked me to participate in this panel discussion, she suggested that I describe my own experiences as a woman mathematician. I'm somewhat hesitant to do this for two reasons. First, my career path hasn't differed significantly from the "canonical" academic path (if such exists). Secondly, whenever I'm tempted to relate my own experiences to those of women starting out today, I'm reminded of a compliment I once received from a woman graduate student: "It must have been very difficult to get started as a woman in mathematics; I mean, in your century!" Nonetheless, since I don't have any expertise in the topic of the panel outside my own experience, I'll follow Chuu-Lian's suggestion and hope that some of my experiences may still be relevant in the current "century."

Perhaps the first question that comes to mind in asking whether women's career paths in mathematics are different from men's is how many are discouraged or lack the confidence to get started in the first place. In my case, I knew long before I started college that I would be a math major, but I had no idea what I would eventually do with a math degree. Indeed, it wasn't even clear to me whether I would pursue a career at all. My mother once said that she thought it would be very exciting to be married to a professor. It did occur to me that it would be even more interesting to be a professor myself, but I just couldn't imagine myself in that role. Then one day my algebra professor, Stephen Piper, called me to his office and asked if I had plans for graduate school and an academic career. Almost as soon as he posed the question, with its implicit encouragement, I knew that was what I wanted to do and began to believe that I really could. I mention this because, while we all realize the importance of encouraging our students, we sometimes don't realize how much difference a few words can make.

I'll relate just one incident from my graduate school days. I remember the shock I felt when I walked into my first AWM meeting and saw a room full of women mathematicians. I was amazed at my own reaction as well. I had never met a woman mathematician before and realized for the first time what I had missed.

After a one-year postdoc in Israel, I began a tenure track position. While a bit of encouragement got me started in an academic career in the first place, my career path has been substantially affected by further encouragement and mentoring from various sources as well as good fortune. To cite one instance, early in my career I gave a contributed talk at a regional AMS meeting. When I started speaking, there was no one in the small

audience even remotely connected to my area, differential geometry. Then halfway through the 10-minute talk, Rich Millman entered. Afterward, he suggested that the work I'd discussed might be relevant to the problem of "Can you hear the shape of a drum?" This began a whole new direction of research for me which I've pursued ever since.

This new research direction also affected my mobility, and a few years later I returned to my graduate school, Washington University, this time on the faculty. My two-body problem was solved before I even knew it existed. David Webb was hired at the same time; we met there and later married.

I became a parent for the first time last year. I'm still too overjoyed to have a good perspective on the question of balancing career and family. I was surprised to hear Claudia Henrion's remark that women with families actually tend to be more mathematically productive than single women. Perhaps this is because our careers tend to get underway at the time we are most aware of our biological clocks ticking away. For many of us there is considerable stress in wondering whether our intense involvement in our careers is preventing us from ever becoming parents.

Last night over dinner, Judy Green shared her experience with me: having children actually caused her to establish a mathematical career! Previously she had been teaching public school. After her second child was born, she decided that it would be too difficult to go back to teaching right away, so she began graduate school instead. She soon realized how much she enjoyed mathematics. After finishing her degree, she obtained a position several hours away and continued to commute until her children were grown, at which time she was finally able to find a position close to home!

I was pleased to hear a few years ago of a situation in which a woman on the tenure track was able to work part-time while her children were small, with the tenure clock slowed down accordingly. (Apparently this case is not unique.) Of course, such an arrangement poses some risks — most notably, at tenure time, there is a possible danger that the candidate will be compared with other people ten years out, say, rather than six.

It's not clear that I've really addressed the topic of this panel discussion thus far, so I'll end by mentioning one perhaps small difference between the career paths of women and men. Once women are established in their careers, they generally feel more pressure and/or obligation to become involved in service both in their institutions and in the professional societies. I don't know any statistics but would expect that a higher percentage of women than of men in academia eventually take on administrative positions.

NSF-AWM TRAVEL GRANTS FOR WOMEN

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

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

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

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

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

DID MARIE CURIE'S VISITS TO AMERICA OPEN DOORS FOR WOMEN OR SLAM THEM SHUT? (part II)

And so, allusions to Marie Curie's poverty — and greatness — were sprinkled liberally throughout Missy's inflated prose. "France is poor," she wrote, "and there is less than a gram of radium at the Radium Institute in Paris." And then, going to a wild extreme:

When Christ died on the cross, His name was not know five hundred miles from Calvary. And Madame Curie, who after long, hard years of struggle against resistant nature wrested from the earth the secret of radium, is too poor to purchase the precious stuff for further and much-needed experiments.[9]

To some extent, Marie Curie herself participated in this poverty myth. It was then, as it is now, one of the ways of raising money for the laboratory and for research. And when asked by Missy Meloney to outline all her needs, she responded with a long list.

During this period, Marie Curie also wrote a biography of Pierre which emphasized the poor working conditions of the early years and laid particular stress on the sad fact that Pierre died without the laboratory he dreamed of.

But as time went on, as her laboratory was enriched by foundation grants and her salary was supplemented by a special pension provided by the French government (partly in response to America's generosity), as she began to accumulate vacation properties around France, Marie Curie's poverty claims — and their perpetuation in the popular press — grew increasingly disconsonant with her situation. To some they came to seem ungrateful, or worse, hypocritical.

Yet another, more dangerous myth was promoted by Missy Meloney's campaign: that Marie Curie could find a cure for cancer. The April 1921 issue of the *Delineator* which orchestrated the campaign opened with an editorial headlined "That Millions Shall Not Die!" And Missy Meloney's hagiographic profile of Marie Curie in the same issue ended dramatically thus:

And life is passing and the great Curie getting older, and the world losing, God alone knows, what great secret. And millions are dying of cancer every year!

"The foremost American scientists," another *Delineator* editorial declared, "say that Madame Curie, provided with a single gram of radium, may advance science to the point where cancer to a very large extent may be eliminated."

Of course Marie Curie had never believed this or claimed it. On the contrary, she had made clear to Missy Meloney from the start that the American gift of radium was to be used in pure research. It would replace the radium she had isolated years before, much of which was now being used in radium therapy.

But once again, there was enough of an overlap between her goals and Missy's to contribute to the confusion. Unlike most of her colleagues, Marie Curie had taken a keen interest in the medical applications of her discovery. She believed in pure research, but she was also pragmatic, like the family she came from. She was, after all, the daughter of a man who said, when he learned of her discovery of radium, that it was "a pity ... that this work has only theoretical interest."[10] She had experienced the loss of her mother from a disease which scientists had since demystified. And she was the sister of two doctors.

All of this made it natural for her to promote, from early on, the establishment of an Institute in France for radium therapy, or curietherapy, as it was often called there.

If Marie Curie's reasons for involving the Institute in radium therapy were complex, Missy Meloney's motives for emphasizing radium's curative powers were obvious. It was much easier to raise a large sum of money for the purpose of curing cancer than for the purpose of probing the secrets of the atomic nucleus. "We may think," she wrote ingenuously in the *Delineator*, "that radium is too scientific for us to understand. And perhaps it is. But its uses and effects enter into our every-day life. Men on the battlefields and in the hospitals of France and all over the world bless the discoverer of radium."[11]

Missy Meloney turned out to be a brilliant fundraiser. Between May of 1920, when she left Marie Curie's office with the promise that "the women of America" would provide her with a gram

---

Talk delivered at Brandeis to the Women's Science Group by Susan Quinn, the author of Marie Curie: A Life.

of radium, and January of 1921, she managed to raise the $100,000 required to buy a gram of radium. Her fundraising methods were a faithful mirror of the story she had chosen to tell about Marie Curie. She formed two committees, one male and one female. The female committee was made up of civic-minded non-professional women. The male committee was composed primarily of medical men, many of them leaders in cancer research. Only a few of those on the male committee were engaged in the basic research for which Marie Curie's gram of radium was destined. Even more importantly, there was not a single working woman scientist anywhere to be seen. "The women scientists of America," as historian of science Margaret Rossiter has pointed out, "were caught invisibly between two almost mutually exclusive stereotypes — that of 'women' and that of 'scientists.'" [12]

Marie Curie insisted from the start that she wanted to have nothing to do with soliciting funds. "I don't feel justified in asking unknown people in your country so far abroad," she wrote Meloney in November of 1920, "and I would not like to do it." but if Missy were successful, "I would of course do all I could to arrange for coming to America to receive the gift." [13]

Right from the start, however, there was a huge gap between the way Marie Curie envisaged her tour of the United States and the way Missy Meloney did. Marie wanted few engagements and only those which were absolutely necessary. Missy Meloney imagined, and had promised, innumerable appearances, including the ultimate spectacle, the presentation of the gram of radium by President Harding at the White House.

Convincing Marie Curie to go along with her program was one of Missy Meloney's hardest fought battles.

In March, Marie Curie sent a partial capitulation. She would come in the spring, and she would stay a month. Her daughters would accompany her. "After all that you have written me," she wrote, "I don't doubt that my trip will be of the greatest usefulness to me and to my Institute." She would like to see parts of America where "nature is particularly beautiful," and she warned against too many meetings, since "prolonged conversation and noise" were very tiring for her. [14]

But the closer Marie Curie got to the day of her departure for America, the more Missy Meloney's campaign snowballed. Everyone in America, it seemed, wanted to genuflect before the "great Curie." And news that the President of the United States was going to present her with a gram of radium even mobilized a French magazine, *Je Sais Tout*, which organized a gala to celebrate "one of the glories of French science, the discovery of Radium." On April 28, shortly before her departure for America, the highest dignitaries of France, including President Aristide Briand, gathered at l'Opéra to hear Jean Perrin and others discourse on the accomplishments of Marie Curie and the promise of her discoveries. The great Sarah Bernhardt read an "Ode to Marie Curie":

> No, you have never lead an army,
> No voices whispered stern commands.
> But your sincere consuming ardor
> Far outshines the burning brands. [15]

The "foreign woman" of the Langevin scandal was forgotten; Marie Curie was now France's modern Joan of Arc.

By May 4, when Marie Curie, along with Missy Meloney and her daughters, departed Cherbourg on the *Olympic* of the White Star line for the ocean voyage to America, Missy had committed her to a seven-week stay, during which she would receive ten honorary degrees from colleges and universities as well as numerous medals and honorary memberships and attend untold numbers of luncheons and dinners and assemblies. In between, there was time for some of the things that truly interested her: visits to laboratories, to Niagara and to the Grand Canyon. Missy assured that all was being arranged "with the least possible pressure on your time and your strength." [16]

Even on the boat coming over, Marie Curie had misgivings. The large crowds gathered at the pier to welcome her to New York could not have been reassuring, nor could the noise of bands playing three national anthems at the same time. Polish and women's organizations had waited for hours to greet her. Emerging from her cabin a half hour after the boat docked, Marie Curie, dressed in her usual black and sporting a round-brimmed taffeta hat which she no doubt thought a concession to fashion, was seated in an armchair on the deck so that two dozen or so photographers could take her picture. The beauty Missy had insisted on in the *Delineator* was less evident to the daily press than her plainness. She was a "motherly-looking scientist in plain black frock," declared the *Times*, although at 53 she was still "energy personified."

The headline on the story that day was "Mme. Curie Plans to End All Cancers." According to the *Times*, the visitor said that "radium is a positive cure for cancer" and that she intended to use the radium she was given "to continue experiments to find better methods for the treatment of cancer." The claim about ending cancer was a clear distortion, and the next day, the *Times* printed her retraction. "Radium Not a Cure for Every Cancer," the *Times* headline read. But while the initial story ran on the front page, the retraction appeared on page sixteen.

So began a tour during which Marie was continuously assigned the familiar woman's role of healer rather than that of scientist. Typical were the remarks of Dr. Francis Carter Wood, head of Crocker Cancer Research Laboratory of Columbia University, who told an audience of chemists:

> I do not welcome her as a scientist, but as the woman who has done more to comfort human beings than any one who has made important discoveries in this generation.[17]

— to be continued —

CONFERENCES

The Russian Association of Women-mathematicians and the association Women in Science and Education are organizing three conferences next year. The Conference on Mathematics, Computers, and Education will be held in Dubna, January 29 through February 3, 1996. "Women-mathematicians: Mathematics, Modeling, Ecology" will be held in Volgograd, May 27–30, 1996. A conference on Mathematics and Art will be held in Suzdal, September 23–28, 1996.

Contributions to the conferences are invited. Abstracts of communications will be published before each conference, and proceedings will be published thereafter. The official languages of the conferences are Russian and English.

For more information, contact: Professor G. Riznichenko, Chair of Biophysics, Biological Department, Moscow State University, 119899 Moscow, Russia; Phone/Fax: (095) 939-19-63; Fax: (095)-939-11-15; e-mail: riznich@orgmath.msk.su, riznich@biophys.bio.msu.su.

The Spanish National Committee for the ICME-8, on behalf of the International Commission on Mathematical Instruction and the Federacion Espanola de Sociedades de Profesores de Matematicas, is pleased to announce that the Eighth International Congress on Mathematical Education will be held in the city of Sevilla (Spain), July 14–21, 1996. The objective of the congress is to increase the development of mathematics education in order to improve the learning and teaching of mathematics. Most sessions will be conducted in English. Contact: ICME-8, Apartado de Correos 4172, 41080 Sevilla, Spain; fax: +34 5 421 8334; WWW: http://icme8.us.es/ICME8.html.

The Seventh South East Asian Conference on Mathematics Education will be held at Hanoi University of Technology, Hanoi, Vietnam, June 3–7, 1996. The organizing institutions include the Hanoi University of Technology, the Hanoi Pedagogical Institute No. 1, the Hanoi University, the Research Institute of Education Science, and the Vietnamese Mathematical Society. The themes of SEACME 7 are mathematics education in upper secondary schools and mathematics education for mathematicians, scientists and engineers, social scientists, and mathematics teachers. The conference languages will be English and French. Contact: Nguyen Dinh Tri, the Organizing Committee of SEACME 7, Hanoi University of Technology, Dai Co Viet Road, Hanoi, Vietnam.

MAW 1996

"Mathematics and Decision Making" is the theme for Mathematics Awareness Week 1996. Using this theme, MAW materials and activities will focus on forecasting, prediction, uncertainty, probability and analysis. Mathematics Awareness Week provides an excellent opportunity to convey this message through local events during a week-long celebration from Sunday, April 21 through Saturday, April 27, 1996. Mark your calendars now and plan to observe Mathematics Awareness Week in your area, institution or organization. Look for further information from the Joint Policy Board for Mathematics, national sponsor of Mathematics Awareness Week.

AFFIRMATIVE ACTION: WHAT IS IT AND WHAT SHOULD IT BE?

We continue our forum with contributions from two male mathematicians.

Making Choices in Mathematics

Mathematics is the most objective discipline, or that is what many people believe both within and without the community. This fact is often cited as one of its underlying strengths. A mathematical result is either true or false, proven or not proven, and important mathematics, like cream, rises to the top and those responsible for creating it receive appropriate credit. Although a little too idealized, this view of mathematics explains the disdain many mathematicians have for affirmative action of any kind. It is simply unnecessary. However, choices are always being made and "affirmative action" is a part of the mathematics culture, only we often don't recognize it as such.

No mathematics department is uniformly strong in all areas. Some may have unusual strength in analysis while being weak in algebra, or it might be the reverse. When such a department recruits and seeks to hire, special effort is often necessary to attract candidates of equal ability in its weaker areas. If no such effort is made, a one-dimensional department will result. This is a common practice, although few mathematicians recognize the practice as involving affirmative action. But we go out of our way to contact people working specifically in targeted areas to seek tips and recommendations, inquire about their students, or recruit them directly. And that is the essence of affirmative action.

We go to even greater lengths when choosing speakers for national meetings and international conferences. For example, we wouldn't think of inviting only topologists to speak or mathematicians limited to any other single sub-discipline. A conscientious effort is made to achieve balance. Perhaps this is due to the difficulty in comparing results or mathematicians in different fields. However, often the principal motivation is to maintain the unity of mathematics, which can be described as a "political reason," but one internal to the field. Few

mathematicians would look forward to a time, for example, when algebra and analysis are viewed as separate disciplines.

Still other political reasons enter into decision-making in the mathematical sciences. In selecting speakers or committee members an effort is often made to achieve geographical balance. This is true whether the balance is with regard to the two coasts versus Middle America in the United States or countries or continents in the International Mathematical Union. Again, the justification for taking such balance into account is essentially to maintain the unity of the field and ensure the inclusion of all mathematicians. And it seldom occurs to anyone that people chosen in part for these reasons might feel insulted or second-class citizens. We understand and support the reasons, believe them important, and proceed accordingly.

Affirmative action in making choices is routinely practiced, usually without comment, in mathematics to achieve aims or goals with which the community is in agreement. The main goal I have mentioned so far is the maintenance of the unity of mathematics, both with regard to sub-disciplines and geography. A secondary goal is to maintain the openness and inclusiveness of mathematics to all people. For instance, we regularly discriminate in favor of younger mathematicians for certain awards and prizes, positions, or funding possibilities. Opportunities are provided to visit institutes and centers for mathematicians working away from established centers, whether in provincial institutions or countries with a less well-established mathematical tradition. We do this, in part, because we want to maintain the universality of mathematics. And we understand this requires that people everywhere feel a part of it, not believe that mathematics is something that is done by other people. We also do it because history shows that talented mathematicians come from all countries and all peoples, and we don't want to miss or thwart a talented person. These are the reasons, I believe, that motivate our actions.

Thus we arrive at a paradox: in light of these practices, why do many mathematicians rebel against the notion of affirmative action in the mathematical sciences? It is, I believe, because they think of affirmative action as referring only to activity intended to promote balance with respect to

Ronald G. Douglas, Professor of Mathematics and Vice-Provost of Undergraduate Studies, SUNY at Stony Brook

gender or ethnic or racial character. Now, while other reasons can be given for seeking such balance, let me point out that the arguments and goals described above apply here also. Action to advance the goal to ensure recognition and development of all mathematical talent and to promote the inclusiveness of the community doesn't have just geographical and disciplinary dimensions. While it might be true that choosing representatives from one country, one continent or one sub-discipline would accomplish some immediate purpose, we recognize the need in making choices for all to see people they identify with easily for the larger good of the subject. The same should be true when it comes to other differences such as gender, ethnicity and race. The fulfillment of goals upon which we all agree — unity, openness, and inclusiveness — requires that we exercise affirmative action across the broad spectrum of criteria in making choices.

Remarks on Affirmative Action

I have accepted an invitation to appear on the panel on "Affirmative Action: A Look Back and A Look Ahead," sponsored by the AWM for the Orlando meeting in January. It is difficult to get one's ideas across clearly in a panel, so I would like to take this opportunity to put in print some thoughts about affirmative action.

One might imagine a math community in which discrimination against women was significant and common, and that affirmative action was the vehicle used solely to achieve equal and fair treatment of women.

On the other hand, one might imagine a math community in which there was no significant amount of discrimination against women but affirmative action was used to increase the number of women and enhance their stature beyond that which generally fair treatment would lead to.

I expect people would have quite different views of affirmative action according to which math community they thought fit reality, although presumably most people would not be found at either extreme. However, I almost never see affirmative action supporters who make clear whether they are trying to rectify discrimination or increase numbers or some combination of the two. And yet it seems to me that it is very hard to think clearly about the subject until one has made one's case about the

extent of discrimination, decided what form of affirmative action would best overcome discrimination, and then decided what form of affirmative action would increase the number of women in math beyond that occurring in a fair environment.

My own view is that mathematicians are innocent until proven guilty, and that there is, in print, nothing remotely close to evidence or argument that women are discriminated against in the math community. There are of course examples of men discriminating against women, but the issue is whether this is more common, given the numbers of each, than men treating men badly, or women women, or women men. We have little in the way of statistics, and essentially no charge of discrimination that I know of is ever dispassionately investigated, with both sides being heard, and the results published for the edification of the rest of us. I am writing at length on this subject (possibly for the *Notices*), so I won't say more here.

For the next few paragraphs, let me assume that there is no significant discrimination on the basis of sex in mathematics, and consider the virtues and defects of conventional affirmative action in admissions to graduate school, hiring, and awarding prizes or prestigious invitations to speak. I will assume that the issue is not whether to cast the net widely and break ties in favor of women (about which there is not much argument these days), but to go significantly beyond that in choosing women.

Imagine a hypothetical world in which math departments were ordered linearly by prestige and affirmative action worked without friction; each woman would move upward under affirmative action until she reached a department in which she was some amount (which depends on the strength of the affirmative action) below the standard at which men were hired. Except at the top schools, all women would be located in departments in which they were the weakest members (otherwise they would move higher). I suppose we all agree that this would be a very unattractive model, but then it seems to me that a good argument is required to justify why it is that taking a few steps in the direction of this bad model is a good idea.

It may be that we have already taken more than a few steps towards this model when admitting seniors to graduate school. For example, in the late sixties, Berkeley voluntarily decided to set aside ten percent of its admissions for women and minorities. One committee admits, in a gender blind way, 90 percent of our quota, and then another committee

Rob Kirby, University of California, Berkeley

admits the remaining 10 percent from the pool of women and minorities who were turned down by the first committee. Statistics are hard to come by, but the first committee seems to admit about 10 to 15 percent women, and the second committee usually uses more than half their slots for women; thus the number of women beginning grad school in math at Berkeley is sometimes doubled and often increased by half by this sort of affirmative action. Is this good?

If women's applications undervalued their true mathematical worth, so that the extra women had just as good a chance as the typical admittee, then the answer would probably be yes; but I know of no evidence for this. In fact, I think it is probably not true, for our admissions criteria, although far from perfect, do have some predictive value. Instead, one has to weigh two possibilities: out of 10 women (admitted by the 10 percent committee), maybe four would successfully get their Ph.D. at Berkeley, but five would at a department ranked in the second ten (using the typical rating system). Which is a better outcome, four slightly better Ph.D.'s from Berkeley or five from the other school? Graduate school can be tough; does it help more to increase the number of women in a given department, or does it hurt more to increase the number of women who are really struggling?

I don't know the answers to these questions, but I recall thinking, as my son and daughter approached college age, that all other things being equal, I preferred having them go to college where they would be in the second quartile academically. They would have the first quartile to challenge them, but being in the top half they would get the positive feedback of doing comparatively well compared to their classmates. Individuals are individuals; some at the top will work just as hard and others will slack off and take it easy; some at the bottom will work all the harder while others will get discouraged.

But where is the case that this sort of affirmative action is good for women? (It is definitely good for the institutions who can crow about how they are doing the right thing, while satisfying pressures from higher up and fending off the critics.) Suppose a Martian took a look at our society and claimed that affirmative action was a devious plot to keep women down; is the Martian obviously wrong?

A better argument could be made for affirmative action if it were clear that society had discriminated against women before they met the math

community so that extra opportunity for women would result in their fulfilling their inherent talents. I see three possibilities: discrimination has somewhat prevented women from utilizing their talents to the fullest before entering the math community, and (1) the effects of this discrimination can be reversed in not too many years in math, or (2) this past discrimination has taken its toll and is mostly irreversible, or (3) this past discrimination has not affected those women whom we can induce to join the math community. We don't know what combination of these three possibilities reflects reality; it would be nice to know after a few decades of affirmative action if there is any evidence for (1), i.e. for women doing better than their files would indicate compared to men, but I doubt if there is any such evidence that would stand up under scrutiny. Furthermore, this sort of argument is a double-edged sword, for it allows for the possibility that (2) holds some of the time, which is the same as saying that because of earlier discrimination, being female is an indicator of not doing as well as a mathematician.

I think that women would be served best if the math community were truly gender blind. On the face of it, affirmative action takes us away from that ideal world, so I believe it takes careful argument to make a case that affirmative action of the sort above is good for women.

In a different vein, one often hears the call for child care and a longer amount of time before the tenure decision for math mothers (perhaps fathers also). I only know one argument, quite elitist but quite satisfactory, to support this call.

First consider child care. Our country is quite good at providing a product if people are willing to pay the cost plus a bit for that product. So I assume that the call for child care means a call for child care that is to some extent subsidized. Remember the economic arguments regarding free or subsidized parking for faculty on campus. If parking costs the University $100 per year, then free parking amounts to an extra $100 salary to those who wish to park on campus. This only makes sense if the University wishes to increase driving compared to walking, bicycling, busing or carpooling. It also makes sense in that the professor gets a full untaxed $100, whereas if the University gave drivers $100 extra in salary and told them to pay for parking, then roughly $30 would disappear in taxes. (The latter point accounts for many sorts of fringe benefits, and the tax collectors, when it is politically possible, try to put a stop to such benefits.)

The same discussion applies to subsidized child care. We might believe that the U.S. needs more children or that children need better care, in which case a country-wide policy of child care would make sense. But only if we believe that the country has enough people, but not enough children that are highly likely to be good and productive citizens, would we be inclined to pick institutions like universities where good and productive people are commonly found, and make it financially easier to raise children. If we only want egalitarian policies, then we would first subsidize child care for the poor, and only at the very last would we subsidize it for the typical academic couple with two salaries who is comparatively very well off (even if not so compared to their childless friends).

Sometimes child care is thought to be a women's issue, helping them to hold careers while having children, but in most cases in math, it only saves them money, which benefits husband and wife more or less equally. And asking the university to organize, but not subsidize, child care is likely to be a way of muddying the issue, for organization costs money, often a lot of it.

In thinking about lengthening the time to tenure for mothers, it is useful to consider a male assistant professor who wishes to climb Everest, an endeavor likely to take a half year or more of his time when preparation is included. Is there any reason to lengthen his time to tenure? What about other sorts of activities, such as a very talented musician who wants to keep a side career in music going? In general, we don't pay much attention to these side activities when promoting to tenure, and we certainly don't have any policies about giving these people extra time. Instead, we evaluate the work already accomplished and make the best guess we can as to future productivity in math, taking into account things like teaching and service to the math and university community, and then make the best tenure decision we can.

Once again, the only case for elevating raising of children above these other endeavors is that we think that above all it is important for female mathematicians to be encouraged to have children. It is awkward and politically incorrect for a female mathematician to ask for a special deal because her children are likely to be more wonderful than the average child, so instead let me say that I think this elitist argument is a good one and that universities ought to make some efforts (involving cold cash) towards encouraging math couples to have children.

AWM AT ICIAM 95

AWM established its presence at the International Congress for Industrial and Applied Mathematics (ICIAM 95), held in Hamburg, Germany, July 3–7, 1995, by jointly sponsoring with SIAM a symposium of research talks by young women postdocs. Joyce McLaughlin of the Rensselaer Polytechnic Institute and Mei Kobayashi of IBM Japan organized the symposium, in which four talks on various areas of applied mathematics were presented by women who were within five years of having received their doctorates. The speakers were outstanding, and attendance was excellent. Among the attendees were members of European Women in Mathematicians as well as women from Eastern Europe and Russia.

The list of speakers and the titles of their talks are given below:

Rachel A. Ruske, Stanford University with T. Erneux, ULB, Brussels, Belgium: "Localization in Systems of Non-identical Oscillators";

Mary Ann Horn, Vanderbilt University/University of Minnesota: "Boundary Control of Distributed Parameter Systems";

Ann C. Morlet, Ohio State University with Y. Kodama, Ohio State University: "Analysis of NRZ Pulse Propagation in an Optical Communication System";

Jennifer Zhao, University of Michigan-Dearborn: "Federal Bumper Standards and Fuel Economy for Automobiles."

The talks were followed by a lively discussion on ways for women in applied mathematics to actively participate in professional meetings. All agreed that participation in high quality events is essential for increasing visibility and for establishing a strong and positive image of women in mathematics. Some supported events in which all speakers would be women, to highlight accomplishments of women as a group, while others felt that integration of greater numbers of women speakers in the general program would be better, since the talks would be in sessions in which research topics are closely related. Regardless of which approach is taken, all agreed that women researchers should be encouraged to actively participate in ICIAM 99 to ensure strong, high-quality representation.

Joyce McLaughlin, Rensselaer Polytechnic Institute

"PLUGGING IN" TO THE PROFESSION: PROJECT NEXT BEGINS ITS SECOND YEAR

Greetings from the Sunshine State! I'm now at Saint Leo College (near Tampa) after finishing my year at Bradley University in Illinois. Now that the dust has settled a bit, I wanted to take this opportunity to fill those of you in who are not in the know about Project NExT. I was invited to participate in Project NExT as a fellow for the 95–96 academic year and traveled to Vermont for its first meeting, along with the Mathfest. In some ways, I find it difficult to describe, as the Project involves practically every phase of one's development as a professional mathematician, hence my choice of title for this piece.

First, some history is in order. The two principal organizers of Project NExT, where NExT is an acronym for "New Experiences in Teaching," are Christine Stevens at St. Louis University in Missouri and Jim Leitzel at the University of Nebraska-Lincoln. Together, they obtained funding for part of the costs involved through a grant from the Exxon Education Foundation. The MAA provides support as well, and most importantly, the home institutions of the prospective participants must also guarantee a measure of travel support. Last year, 66 fellows from a variety of schools nationwide took part, and this year 80 new fellows were accepted into the program.

What exactly is Project NExT? It's an excellent way for new or recent Ph.D.'s in the mathematical sciences to learn about nationwide reforms in collegiate math education, how to keep up one's research, how to work towards tenure, and many other items as well. With a large group of fellows from all over the country, you meet a cross section of your peers who are also attempting to find their niche within the profession. When you're first starting out, it's quite easy to feel overwhelmed by a full-time teaching load and all the other expectations associated with a position as a professor. For me, it was comforting to know I was not alone ... and the electronic discussion list gives us a chance to resolve problems we face each day. In addition to the Fellows, the discussion list includes the two Project NExT co-directors and about 30 "consultants" — seasoned professionals in

the mathematical community who are always willing to share their expertise on any topic of concern to us.

Now for some specifics. Once accepted, a fellow is expected to attend three major meetings during the year: two Mathfests in consecutive years and the AMS-MAA Joint Meetings in January. At these meetings, NExT Fellows participate in a variety of programs, designed to educate and support new (or relatively new) full-time teachers of college mathematics. At first, we had opportunities to meet all the other new fellows, including small group discussions, organized by individual fellows' places of employment. We attended presentations on a variety of calculus reforms, use of technology in courses other than calculus, how to implement and assess writing, projects and group work in your courses, just to name a few. These and all the other sessions were run by highly regarded teacher-scholars; for me, it was a wonderful opportunity to see what "excellence in teaching" is all about. I must say those experiences have already impacted very favorably on my current classes.

Many sessions ran simultaneously, so fellows had to choose in advance the presentations/discussions which they found most useful to them. We also had a choice of four-hour short courses from cooperative learning to grant proposal writing, undergraduate research in mathematics, using computers in D.E.'s, preparation of K–12 teachers, and on modernizing a precalculus course. I attended the grant-writing workshop and learned about the hierarchy at the NSF and criteria which all proposals must meet. We looked at sample proposals, working in groups to decide whether they met the guidelines. We heard about other sources of funding for teaching-oriented projects, as well as pure research.

The days and evenings were packed with activities, and though I was exhausted by each day's end I somehow found the energy to carry on late-night conversations with other fellows. Getting to talk to other young mathematicians about dealing with students, trying to get papers out, departmental politics, etc. provided a much-needed outlet to vent some of the anxieties associated with the day-to-day existence of a faculty member. I'm really looking

Kevin Charlwood, Saint Leo College

forward to the upcoming meetings in Orlando where we'll get to share our first semester/quarter experiences ... it'll definitely be a blast!

So how can you potentially join in? For application information, keep your eyes peeled for announcements in the *FOCUS* of the MAA and the *Notices* of the AMS early next year. The application basically involves the usual relevant personal data, along with a statement of purpose, i.e.., what do you expect to get out of your participation in Project NExT? You will also need a letter from your department chair or dean, guaranteeing financial support for the year's meetings. More application information can be obtained at the Project NExT booth in the exhibit area at the Joint Meetings in Orlando, or you can contact Jim Leitzel directly at jimleitz@unlinfo.unl.edu. So, if you are a new or recent Ph.D. (or expecting to finish this year), and think that your career could use the "shot in the arm" that Project NExT provides, go for it! I highly recommend it! See you in Orlando....

U.S. – CEE INITIATIVES

The Office for Central Europe and Eurasia of the National Research Council, the operating arm of the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, offers grants to individual American specialists who plan to establish new research partnerships with their colleagues from Central/Eastern Europe (CEE) and the Newly Independent States (NIS). This program is designed primarily to prepare these new partnerships for competition in NSF programs. Short-term project development grants (two-week visits; $2,200–$2,500) and long-term grants (one to six months; $3,000–$15,300) are available.

For more information and application materials, contact: Office for Central Europe and Eurasia, National Research Council, 2101 Constitution Avenue NW, Washington, DC 20418; phone: 202-334-3680; fax: 202-334-2614; email: ocee@nas.edu.

LEE LORCH: A TRIBUTE

Mathematician and activist — both aspects of the career of Lee Lorch were celebrated at the conference in honor of his 80th birthday last month at York University. Many of his collaborators and others, including Cora Sadosky, Past President of AWM, spoke of Lee's wide-ranging contributions to mathematics. The last three speakers of the conference addressed Lee's work on behalf of women, African-Americans and others whom Lee worked to include in the mathematical community.

Chandler Davis, AWM member from the University of Toronto, told of Lee's odyssey from institution to institution — fired from City College of New York for his efforts to desegregate housing in lower Manhattan, fired from Penn State for being fired from CCNY, fired from Fisk University for his commitment to desegregation and social justice and from Leander Smith College for the same reason — until he found a more hospitable climate in Canada. Lee's ongoing battle with the U.S. mathematical establishment continued, however — over segregated meeting facilities, over reciprocity agreements with the South African mathematical society, over military funding, over the legacy of fascism.

I spoke of how Lee was one of the first to join AWM and how he worked tirelessly on behalf of women in mathematics — going to battle for blind refereeing, for affirmative action, for human rights, and against discrimination and injustice. Johnny Houston, of Elizabeth City State University and executive secretary of the National Association of Mathematicians, related Lee's persistence in the struggle to gain access, acceptance, and recognition for African-Americans in mathematics. Combining Professor Houston's theme and mine is the story of how Lee was the inspiration and support for so many Fisk students to go on for Ph.D.'s in mathematics — a majority of them women.

Mathematicians came from all over the world to honor Lee — for his mathematics, for his humor, for his compassion, and for prodding us all to *do something* about the injustices we see around us.

Mary Gray, first president of AWM, American University

EDUCATION COMMITTEE

Programs in the Metropolitan New York Region

Family Math is a popular academic-year program of after-school classes for children (grades K–8) and their parents. The program, which stresses problem solving through family game playing, had its beginnings with Project Equals at the Lawrence Hall of Science, Oakland, CA. At present there are Family Math programs in twenty-four states and six foreign countries. Contact Virginia Thompson at Lawrence Hall (510-642-6859) to find directors in specific areas.

In New Jersey the program is run by the Consortium for Educational Equity at Rutgers University with director Arlene S. Chasek and family involvement coordinator Jeannette Corris (908-405-2071). It has continued to expand to a majority of NJ school districts with about 800 trained teachers. The training sessions are held several times a year at Rutgers on a fee-for-service basis.

In New York City, Stan Bodsky at CASE (Center for Advanced Study in Education, CUNY Graduate Center, 212-642-2938) is in charge. All but one NYC school district has a Family Math program, with 600 teachers trained free of charge. There is concern, however, that budget cuts will eliminate the free training.

In New Rochelle, Rutgers-trained Charlotte Stadler (914-632-3145) has started Family Math programs in six elementary schools. Other programs in New York State are run by Myong Hi Kim (SUNY, Stony Brook, 516-751-2953), Loretta Knuth (Central Valley, 914-928-2321), Michael Moon (New York State Education Department, Albany, 518-474-3934) and Virginia Perrego (Washingtonville, 914-496-2323). Pennsylvania contacts include Dr. Joanne Darken in Philadelphia (215-387-1035) and Susan Brunquell in Wallingford (215-874-5235).

Gelfand Outreach Program in Mathematics is a program for any interested student in grades eight through twelve. Each student receives about six assignments per year which, upon completion, are mailed to and corrected by members of the Rutgers University Department of Mathematics. The student's cost is $60 which includes all books and materials. Last year 450 students participated. The associate director of the program is Harriet Schweitzer at the Center for Mathematics, Science and Computer Education (908-445-0669) at Rutgers.

Women in Engineering and Science Network is a group of over 100 female scientists and engineers who give presentations to students, counselors and teachers at high schools in New Jersey and New York. The network is sponsored by the Office of Women's Programs of the Stevens Institute of Technology.

Some programs during the academic year take place on one day only. For instance, the Stevens Office of Women's Programs sponsors two such programs. *Math: A World of Options* is a one-day program for seventh and eighth graders. There are presentations, hands-on work and informal discussions with Stevens students. The primary focus is on how math courses taken in high school can affect career choices. *Engineering and Science: Opportunities Unlimited* is a one-day program for high school students which discusses different science career choices and the academic preparations necessary for such careers.

Futures Unlimited is a one-day program for seventh through tenth grade female students held once a year at Burlington County College, NJ. This program has remained the same since the last report. About 240 participants meet with women who work in mathematically related fields. The day is divided into large-group, small-group, and hands-on sessions. Betsy Bunting is coordinator (609-894-9311, ext. 350 or 598).

A number of programs are available during the summer months. For freshman and sophomore women of the College of Staten Island, *Women and Girls in Computing: Improving the Transition Process* is a special program started by four women faculty members in the Computer Science Department of the college. Their aim is to encourage more women to enter and stay in computer science and related fields. Eight students are selected for the program in which each student works at a research project during the summer. There is an "Expo" of the finished work in the fall. The program is funded by the National Science Foundation and is run by Deborah Sturm in the Department of Computer Science (718-982-2848).

Young Scholars Program in Discrete Mathematics is a four-week summer residential program for New Jersey students entering the eleventh or

twelfth grades. The courses are sponsored by the Center for Mathematics, Science and Computer Education at Rutgers University and are held at the Busch campus. Four Saturday follow-up classes are held during the school year. The coordinator is Michelle Bartley-Taylor (908-445-4065).

Eureka is a three-year program for girls entering eighth grade. Each summer there is a four-week intensive session with math and computer science for one half of each day and sports for the other half. The program is free, but space is limited. This past summer there were 350 applications for 45 openings. The program started in 1987; Eureka graduates receive newsletters and get together for trips. Eureka runs out of the Women's Center of Brooklyn College with Kim Taps as the coordinator (718-951-5777).

ECOES (Exploring Career Options in Engineering and Science) is a two-week residential summer program at Stevens Institute of Technology open to all eleventh graders (formerly open to females only). Run by the Office of Women's Programs, this program still stresses hands-on activities, teamwork, problem-solving and interaction with female role models. ECOES is in its seventeenth year; about 87% of participants (nearly 1600 women) have majored in math/science related fields in college. The director for all Office of Women's Programs is Susan Staffin Metz (201-216-5245).

Douglass Science Institute, sponsored by Douglass College, is a one-week residential summer program for girls entering ninth grade (this program used to be for tenth grade girls). The girls have the opportunity to reapply for an expanded session during their tenth, eleventh, and twelfth grade summers. Students enjoy lab activities, career panels and field trips. For information, contact Michelle Rosynsky at the Office of the Douglass Project for Rutgers Women in Math and Science (908-932-9197).

FELLOWSHIPS AVAILABLE

Several AAUW fellowships are available. Selected Professions Fellowships ($5,000 – $9,500; deadline **December 15**) assist women in the final year of their degree programs in fields including mathematics, computer science, and statistics.

American Fellowships ($20,000 – $25,000; deadline **November 15**) are open to women with doctorates who are citizens or permanent residents of the U.S. and have achieved distinction or show promise in their fields. Dissertation Fellowships ($13,500; deadline **November 15**) are available to women who have completed all required course work and examinations for the doctorate except the dissertation defense; applicants must be U.S. citizens or permanent residents with promise or distinction in their fields and should complete their degrees by the end of the fellowship year. For more information, contact: American Association of University Women, Attention: Educational Foundation, 1111 16th St., NW, Washington, DC 20036; 202-728-7603.

The National Research Council plans to award approximately twenty Ford Foundation Postdoctoral Fellowships for Minorities. The program is open to citizens of the U.S. who are Native American Indians, Alaskan Natives (Eskimo or Aleut), Black/African Americans, Mexican Americans/Chicanos, Native Pacific Islanders (Micronesians or Polynesians), and Puerto Ricans. Candidates should be engaged in or planning a teaching and research career and should have held the Ph.D. or Sc.D. degree for not more than seven years. The deadline for submissions is **January 5, 1996**. For more information, contact: Fellowship Office, TJ 2039, National Research Council, 2101 Constitution Ave., Washington, DC 20418; email: infofell@nas.edu; WWW: http://www.nas.edu/fo/index.html; phone: 202-334-2872.

Charles Phelps Taft Fellowships of three types are available from the University of Cincinnati: Postdoctoral Fellowships ($25,000 stipend; deadline **January 15**), Graduate Fellowships for Minority Students ($11,000 cash stipend and a scholarship; deadline **February 1**) and Graduate Fellowships for Graduate Study (same). Postdoctoral Fellowships are for scholars who have demonstrated unusual ability for creative research and who have received the Ph.D. within the past five years or who will have completed all the requirements for the degree by September 1 of the fellowship year. The Minority Fellowships are awarded to underrepresented minority students who are beginning graduate study. For more information, contact: Taft Fellowships, M.L. 0037, University of Cincinnati, Cincinnati, OH 45221.

AWM IN BURLINGTON

Schafer Honorees with Alice and Chuu-Lian: Karen Shuman, Ruth Britto-Pacumio, Wung Kum Fong, Alice Schafer, Chuu-Lian Terng, Jessica Wachter, Nancy Heinschel (Tara Brendle not in attendance)

Laury Shea

AWM Panel: Organizer Chuu-Lian Terng; Panelists Joyce R. McLaughlin, Claudia A. Henrion, Diane Spresser, Carolyn S. Gordon

AMS President Cathleen Morawetz,
Alice T. Schafer, AWM President Chuu-Lian Terng

Laury Shea

AWM Past President Cora Sadosky,
AWM Treasurer Judy Green

Schafer Honorees: Honorable Mention Karen L. Shuman,
Winner Ruth A. Britto-Pacumio

ADVERTISEMENTS

BOISE STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - The department anticipates up to three tenure-track assistant professorships to begin August 1996, subject to funding and administrative approval. Earned doctorate by starting date and strong evidence of research potential and teaching ability required. Specialties sought are as follows: **Applied Mathematics:** Ph.D. in any mathematical science; preference in areas of current faculty interest -- numerical methods in control theory, modeling with ODE's, optimization, statistics. Experience working with scientists or engineers desirable. **Mathematics Education:** Doctorate may be in math, math education, or related field, with minimum of strong bachelor's in math. Ability to make impact on pre-college education crucial; must be able to work with NCTM, teachers, Eisenhower programs, etc. **Computer Science:** Ph.D. in computer science required. Expertise in database or graphics preferred; software engineering or parallel algorithms also considered. To apply send an AMS Application Cover Sheet, letter of application, vita, graduate transcripts, and 3 letters of reference (at least one on teaching) to **the appropriate Search Committee (CS, Math Ed, or Applied Math), Department of Mathematics and Computer Science, Boise State University, Boise, ID 83725.** Screening begins January 15, 1996. BSU is an EEO/AA institution; applications from women and minorities encouraged. Questions: 208-385-1172 (tty 208-385-1436) or e-mail office@math.idbsu.edu.

BOSTON COLLEGE - DEPARTMENT OF MATHEMATICS - Full Professor position - Boston College invites nominations and applications for a position in the Department of Mathematics at the level of full professor, effective as early as September 1, 1996. Necessary qualifications include a distinguished research record and a substantial continuing research program; a strong commitment to teaching at the undergraduate and master's levels; and a strong desire to contribute to the development of mathematical activity in the department. Boston College is a Jesuit university enrolling approximately 9,000 undergraduate and 4,000 graduate students. The Department of Mathematics includes twenty-one full-time faculty. It grants approximately sixty BA degrees in mathematics, and approximately ten MA degrees and five MST degrees (in the teaching of mathematics), annually. Current research interests include algebra, analysis, applied mathematics, dynamical systems, geometry, logic, mathematics education, number theory, probability, statistics, and topology. The department anticipates hiring one or more junior faculty in the next few years. Applicants should submit a curriculum vitae, along with a cover letter and names of at least three references. Send all materials to: **Richard Jenson, Department of Mathematics, Boston College, Chestnut Hill, MA 02167-3806.** E-mail inquiries may be directed to: Search-MT@hermes.bc.edu Review of applications and nominations will begin on January 1, 1996, and continue until the position is filled. Boston College is an Affirmative Action/Equal Opportunity Employer.

BOWLING GREEN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Mathematics Education - The Department of Mathematics and Statistics at Bowling Green State University invites applications for a full-time, tenure-track position in Mathematics Education at the Assistant Professor level. The position begins August 1996 and requires a Ph.D. in Mathematics Education or Mathematics, mathematics courses at the master's level, and strong potential for research and teaching. The successful candidate will have a commitment to research in secondary school and/or collegiate mathematics education and be expected to publish in refereed journals of the discipline. Usual semester duties consist of teaching two courses, involvement in curriculum design for the secondary mathematics education program, and student advising. Eventual supervision of graduate students is expected. Salary competitive. To apply send a letter of application, vita, official transcripts and a list of publications along with three letters of recommendation (one concerning teaching) by February 1, 1996 to: **Professor John L. Hayden, Chair, Department of Mathematics and Statistics, Bowling Green State University, Bowling Green, Ohio 43403-0221 USA** or Internet: math-stat@bgnet.bgsu.edu. AA/EOE

BROWN UNIVERSITY - MATHEMATICS DEPARTMENT - One professorship at the Associate Professor level, with tenure to begin July 1, 1996. Preference to be given to applicants with research interests consonant with those of the present members of the Department. We are especially looking for candidates in the general area of geometry, broadly construed, but exceptional candidates in all fields will be seriously considered. Candidates should have a distinguished research record and a strong commitment to teaching. Qualified individuals are invited to send a vitae and arrange for at least five letters of recommendation to be forwarded to: **Professor Joseph Silverman (Senior Search Committee), Department of Mathematics, Brown University, Box 1917, Providence, Rhode Island 02912.** Applications must be received by January 15, 1996, in order to receive consideration. Brown University is an Equal Opportunity/Affirmative Action Employer and encourages applications from women and minorities.

CALIFORNIA POLYTECHNIC STATE UNIVERSITY, SAN LUIS OBISPO - MATHEMATICS DEPARTMENT - Lecturer, full-time, two-year position, beginning Fall 1996. Salary range: $32,712 to $37,560. Candidates should show a strong commitment to teaching and scholarship. Duties include teaching (normal load, 12 units per quarter) and scholarship. A doctorate in mathematics is required. Areas preferred are computational mathematics and operator theory. For computational mathematics, areas of interest are dynamical systems, numerical analysis, topology, applied mathematics or more generally any area which uses computational mathematics in a significant way. For operator theory, areas of interest are control theory, mathematical physics, and traditional topics in operator theory. Send letter of application, resume, statement of professional goals, three letters of reference, and transcript to: **Screening Committee Chair, Mathematics Department, California Polytechnic State University, San Luis Obispo, CA 93407** (Fax: 805-756-6537). (Please refer to recruitment code 63017 on all correspondence.) Closing date: January 24, 1996. Cal Poly is strongly committed to achieving excellence through cultural diversity. The university actively encourages applications and nominations of women, persons of color, applicants with disabilities, and members of other underrepresented groups. AA/EEO.

CALIFORNIA STATE UNIVERSITY, SACRAMENTO - DEPARTMENT OF MATHEMATICS AND STATISTICS - One tenure-track position (Assistant or Associate Professor) for Fall 1996 at a step appropriate to the applicant's experience. Must have Ph.D. in Math or Statistics by Sept. 1, 1996. Salary range from $35,868 to $49,632. Applicants should be committed to excellence in teaching (12 units/semester) and must have knowledge, experience, and a willingness to work in the area of elementary and secondary teacher preparation. Send vita, graduate transcripts, and three letters of recommendation (at least one commenting on teaching ability and one referring to experience in teacher preparation), by 1/31/96 to: **Hiring Committee, Math and Statistics Dept., 6000 J Street, Sacramento, CA 95819-6051.** AA/EOE.

CALVIN COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - The Department of Mathematics and Computer Science invites applications for two possible tenure-track openings (one in computer science and one in mathematics) and a one-year position in mathematics, all to begin September 1996. A Ph.D. is required for each position. Two areas of special need in mathematics include applied mathematics and mathematics education but applicants from all areas of mathematics are encouraged. Evidence of teaching effectiveness, an active research program, and a religious commitment compatible with the mission of a Christian liberal arts institution are essential. Completed applications should be submitted by December 31, 1995 to ensure full consideration and must include a resume, three letters of reference (including at least one which addresses the candidate's teaching abilities), a graduate transcript, and a letter of interest addressing specifically the qualifications listed above. Calvin is a liberal arts institution of about 4,000 students and is affiliated with the Christian Reformed Church. It is an Equal Opportunity Employer. Applications from women and underrepresented minorities are strongly encouraged. Respond to: **Chair, Search Committee, Department of Mathematics and Computer Science, Calvin College, Grand Rapids, MI 49546.**

CARNEGIE MELLON UNIVERSITY - DEPARTMENT OF MATHEMATICS - Richard J. Duffin and Zeev Nehari Visiting Assistant Professorships - The Richard J. Duffin Visiting Assistant Professorship and the Zeev Nehari Visiting Assistant Professorship were established to honor Professor Emeritus Duffin and to honor the memory of Professor Nehari, both of whom had long and distinguished careers in the Department of Mathematics. Each position is available for a period of three years, beginning in September 1996, and carries a reduced academic year teaching load of six hours a week during one semester and three hours a week during the other. Applicants are expected to show exceptional research promise, as well as clear evidence of achievement and should have research interests which intersect those of current faculty of the Department. Applicants should send a vita, list of publications, and a statement describing current and planned research, and arrange to have three letters of recommendation sent to the committee. All communications should be addressed to: **Appointments Committee, Department of Mathematics, Carnegie Mellon University, Pittsburgh, PA 15213.** Carnegie Mellon University is an Affirmative Action/Equal Opportunity Employer.

-more-

ADVERTISEMENTS

CARNEGIE MELLON UNIVERSITY - CENTER FOR NONLINEAR ANALYSIS - DEPARTMENT OF MATHEMATICS - The Center for Nonlinear Analysis expects to make several Post-Doctoral appointments for 1996-97 in the area of applied analysis. This is a one-year (twelve-month) joint appointment by the Center and Department of Mathematics. Recipients will teach at most two courses per year. Applicants should send a vita, list of publications, a statement describing current and planned research, and arrange to have at least three letters of recommendation sent to the committee. The deadline for application is January 19, 1996; late applications may be considered on a space-available basis. All communications should be addressed to: **Post-Doctoral Appointments Committee, Department of Mathematics, Carnegie Mellon University, Pittsburgh, PA 15213.** Carnegie Mellon University is an Affirmative Action/Equal Opportunity Employer.

CARNEGIE MELLON UNIVERSITY - DEPARTMENT OF MATHEMATICS - Assistant Professorships - The Carnegie Mellon Department of Mathematics seeks to make two tenure-track appointments at the Assistant Professor level, although applications at a more senior level will be considered. These positions will commence in the Fall of 1996. One appointment will be made in Stochastic Analysis and candidates for this position who can support the Department's educational programs in Mathematical Finance are strongly preferred. The second appointment will be made in Discrete Mathematics or Mathematical Programming and candidates who can support the Department's educational program in Algorithms, Combinatorics, and Optimization are strongly preferred. Applicants should send a vita, list of publications, and a statement describing current and planned research, and arrange to have at least three letters of recommendation sent to: **Appointments Committee, Department of Mathematics, Carnegie Mellon University, Pittsburgh, PA 15213.** Carnegie Mellon University is an Affirmative Action/Equal Opportunity Employer.

CASE WESTERN RESERVE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Postdoctoral Fellowships in Mathematics - We are looking for four people with a passion for mathematics and a passion for improving mathematics instruction and student learning in urban school classrooms. Case Western Reserve University will award postdoctoral fellowships to four candidates who show promise of excellence in both mathematics research and educational activities. Fellowships extend over a three-year period with an annual stipend of $35,000, made possible by a grant from the National Science Foundation. Recipients will spend half of their time doing research in their discipline, the other half working on education projects under the supervision of the Cleveland Collaborative for Mathematics Education. Starting date is June 1, 1996. Candidates must have earned a Ph.D. in mathematics between June 1991 and August 1996. Send vitae, statement of research interests, statement of education interests, and four letters of recommendation to: **Educational Postdoctoral Fellowships, Professor David Singer, Department of Mathematics, Case Western Reserve University, Cleveland, Ohio 44106-7058.** For further details, send e-mail to: math-postdoc@po.cwru.edu or consult the world wide web (URL) http://www.cwru.edu/ CWRU/ Dept/Artsci/math/singer/postdoc.html. Case Western Reserve University, an Equal Opportunity/Affirmative Action employer, welcomes applications from women and minority candidates.

COLBY COLLEGE - DEPARTMENT OF MATHEMATICS - Tenure Track Position in Applied Mathematics - We have a tenure-track opening in mathematics at the assistant professor level, commencing September 1, 1996. Ph.D. required. We are looking for someone with credentials and/or experience in applied mathematics. Individuals working in one of the areas of control theory, game theory, mathematical modeling, mathematical visualizations, numerical analysis, operations research, ordinary differential equations, or partial differential equations are preferred. 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. Therefore, candidates who are able to demonstrate excellence in teaching are likely to be ranked higher in our selection process. The annual teaching load is 5 courses. The largest class size is approximately 30. We will be interviewing at the Joint Mathematics Meetings on January 10-13, 1996, in Orlando, Florida. Send a cover letter, a current curriculum vitae, and separate statements on teaching and research in hard copy to: **Fernando Gouvea, Applied Math Hiring Committee, Department of Mathematics and Computer Science, Colby College, Waterville, ME 04901 (fqgouvea@colby.edu).** Please include your e-mail address. Also, arrange for three letters of reference to be sent to the same address. Theses letters should deal with both your research and your teaching abilities. Review of applications will begin on December 1, 1995. To guarantee full consideration, all application materials must be received by December 1, 1995. Colby actively encourage applications from women and minority candidates. We are an EO/AA employer.

Summer Program for Women Undergraduates

Carleton and St. Olaf Colleges will, if funded by the NSF, continue their successful, intensive, four-week summer program to encourage talented undergraduate women to pursue advanced degrees in the mathematical sciences.

Students will take two challenging courses in exciting areas of mathematics not normally offered in an undergraduate curriculum with female instructors who are active professionals and outstanding teachers. The students will receive instruction in the latest in mathematical computation and everyday electronic communication, participate in recreational problem-solving, visit the Geometry Center, receive information about graduate schools and careers in mathematics, and attend twice-weekly colloquia.

Participants in the 1995 program reported:
This experience has revived my mathematical soul and charged me up.
The program has given me the confidence that I can succeed in math, both as a student and as a woman.
I feel like a future in math was opened for me through the program.

Please announce this to your talented first- and second-year female mathematics students. For information or application materials, E-MAIL: Dr. Deanna Haunsperger at dhaunspe@carleton.edu, WRITE TO:

Summer Math Program, Math Dept., Carleton College, Northfield, MN 55057

or visit the program's home page at:
http://www.stolaf.edu/stolaf/depts/math/Summer Program.html.

Loyola University of Chicago
Department of Mathematical & Computer Sciences

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

-more-

ADVERTISEMENTS

COLBY COLLEGE - DEPARTMENT OF MATHEMATICS - Tenure Track Position in Statistics - We have a tenure-track opening in statistics at the assistant professor level, commencing September 1, 1996. Ph.D. in statistics or equivalent experience required. Candidate must be able to teach some mathematics courses as well as statistics courses. 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 are a young, active department, which places a high value on both teaching and research. We have major and minor programs in mathematics and computer science, but not in statistics. The annual teaching load is 5 courses. The largest class size is approximately 30. The typical annual teaching assignment for the person filling this position will consist of 3 or 4 statistics classes and 1 or 2 mathematics classes. Candidates who are able to demonstrate excellence in teaching mathematics and statistics are likely to be ranked higher in our selection process. Send a cover letter, a current curriculum vitae, and separate statements on teaching and research in hard copy to: **H.T. Hayslett, Jr., Chair, Statistics Hiring Committee, Department of Mathematics and Computer Science, Colby College, Waterville, ME 04901,** (hthaysle@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. Please include your e-mail address with your application and indicate whether you are planning on attending the Joint Mathematics Meetings on January 10-13, 1996, in Orlando, Florida. Review of applications will begin January 1, 1996. To guarantee full consideration, all application materials must be received by January 1, 1996. Colby actively encourages applications from women and minority candidates. We are an EO/AA employer.

COLGATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Colgate University invites applications for a tenure-track Assistant professorship beginning Fall 1996. A Ph.D. is required. Our preference will be or applicants specializing in an area of applied mathematics, though applications from particularly strong candidates in other areas of mathematics are also welcome. Colgate University is a highly selective liberal arts college with 2,700 students. Faculty members normally teach five semester-courses per year and are expected to maintain an active program of original research. They are also encouraged to participate in all-university programs. Applicants should send vita and three letters of recommendations by December 15, 1995, to: **The Hiring Committee, Department of Mathematics, Colgate University, 13 Oak Drive, Hamilton, NY 13346.** Colgate is an equal opportunity, affirmative action employer. Applications from women and minorities are encouraged.

COLUMBIA UNIVERSITY and BARNARD COLLEGE - DEPARTMENT OF MATHEMATICS - (1) Possible openings for Ritt Assistant Professor at Columbia - for new PhD's regardless of age. One-year appointment, normally renewable for three more years. **(2)** Anticipated Assistant Professor position in mathematics at Barnard; full-time college teaching experience preferred. Teaching load, two courses per semester with possible graduate course in specialty. Send vitae and (p)reprints and have at least three letters of recommendation sent by people familiar with your research and teaching. Please submit "AMS Application Cover Sheet" with application. ONLY ONE APPLICATION SHOULD BE SUBMITTED. Applicants will be considered for both the Columbia and Barnard positions. First consideration will be give to applicants whose folders are complete by January 10, 1996. Send applications to: HIRING COMMITTEE, **Department of Mathematics, Columbia University, New York, NY 10027.** 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 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 20, 1995. 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.

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

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

DUKE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Tenure Track Position in Pure or Applied Mathematics - Applications and nominations are invited for one tenure track position as assistant professor in pure or applied mathematics. Salary is open; the position is to start September 1, 1996. Applicants please send (a) a completed application cover sheet (available in the September 1995 edition of the Notices of the AMS); (b) a vita; (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, 1995; early application is advisable. The applicant should have at least three letters of recommendation, including one which evaluates teaching, sent directly to Duke by mid-January. All correspondence, including references, should be addressed to: **Faculty Search Committee, Department of Mathematics, Box 90321, Duke University, Durham, NC 27708-0321** (e-mail: search@math.duke.edu). Duke is an affirmative action/equal opportunity employer.

DUKE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Assistant Research Professorship of Mathematics - Applications are invited for a position as Assistant Research Professorship of Mathematics. Candidates should have completed a doctorate as of September 1, 1996 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 $37,000 covering work in the regular two-semester year. Applicants please send (a) a completed application cover sheet (available in the September 1995 edition of the Notices of the AMS); (b) a vita; (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, 1995; early application is advisable. The applicant should have at least three letters of recommendation, including one which evaluates teaching, sent directly to Duke by mid-January. All correspondence, including references, should be addressed to: **Appointments Committee, Department of Mathematics, Box 90320, Duke University, Durham, NC 27708-0320,** e-mail: appts@math.duke.edu. Duke is an affirmative action/equal opportunity employer.

EMORY UNIVERSITY - MATHEMATICS AND COMPUTER SCIENCE DEPARTMENT - The Department of Mathematics and Computer Science, Emory University, invites applications for two anticipated appointments effective 1996-97. **Position 1:** A tenure track Assistant Professorship or a tenured appointment at the rank of Associate Professor or Professor; applicants must have a research program in numerical analysis/computational science and hold a Ph.D. in Mathematics or Computer Science. **Position 2:** A tenure track Assistant Professorship; applicants must have a research program in Analysis and hold a Ph.D. in Mathematics. As the department supports several undergraduate programs within Emory College, a Ph.D. in Mathematics, and M.S. in Computer Science/Mathematics, applicants are expected to have strong records, or promise, as undergraduate and graduate teachers. Applicants must specify one of Positions 1 and 2, and include CV's (with at least three recommenders' names). Please see that recommendation 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, 1996. Emory University is an Affirmative Action/Equal Opportunity Employer.

-more-

ADVERTISEMENTS

-more-

ADVERTISEMENTS

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

MACALESTER COLLEGE - MATHEMATICS AND COMPUTER SCIENCE DEPARTMENT - Applications are invited for two tenure-track positions in Mathematics beginning Fall 1996. Candidates must have the Ph.D. and a commitment to teaching and research in an undergraduate liberal arts environment. Preference will be given to candidates with post-graduate teaching experience and research interests in applied mathematics, dynamical systems, geometry, or algebra. Macalester is a premiere liberal arts college located in the twin cities of Minneapolis-St. Paul. Part of a vigorous science presence on campus, the Mathematics and Computer Science Department has traditionally attracted strong students. Applicants should send résumé, statements of research and teaching interests, and have three letters of reference sent to: **David Bressoud, Math/CS Dept., Macalester College, St. Paul, MN 55105.** Evaluation of applications will begin December 1, 1995 and continue until the positions are filled. Macalester is an Affirmative Action/Equal Opportunity employer. Women and members of minority groups are especially encouraged to apply.

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

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

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

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

MICHIGAN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department is seeking applicants for tenure track positions to begin in the Fall 1996, pending approval. The positions are expected to be at the Assistant Professor level, but exceptional applicants for a higher rank may be considered. Excellence in research and teaching is essential, and two or more years beyond the Ph.D. is expected. **Application via e-mail is strongly encouraged; contact: jobs@math.msu.edu with a message containing "send application-info".** Applicants must submit a résumé and arrange for at least three letters of recommendation to be sent. Application materials can also be addressed to: **The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027.** Application should be made as soon as possible since candidate screening will begin in October. Completed applications received by November 1, 1995 are assured of consideration. Women and minorities are strongly encouraged to apply. MSU is an Affirmative Action/Equal Opportunity Institution.

MICHIGAN STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Pending funding, several two-year positions will be available beginning Fall 1996, for new or recent Ph.D.s The teaching load is four semester courses per year and participation in the research activities of the department is expected. An applicant should send a vita a well as a brief statement of research interests and arrange to have sent at least three letters of recommendation commenting on the applicant's research and teaching abilities. **Application via e-mail is strongly encouraged. Contact jobs@math.msu.edu with a message containing "send application-info".** Application materials can also be mailed to: **The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027.** The deadline is December 1, 1995. MSU is an Affirmative Action/Equal Opportunity Institution.

MILLERSVILLE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Mathematics Education - Assistant Professor. Full-time, tenure-track position to begin Fall 1996. Annual teaching load of 24 semester hours will include teaching mathematics courses in elementary and secondary teacher education, teaching a wide variety of undergraduate mathematics service courses, student advisement, teaching and curriculum development in mathematics education both at the undergraduate and MEd levels, scholarly activity, participation in departmental and university committees, 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 will be 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 19, 1996. Send letter of application, curriculum vitae, copies of all transcripts and three current letters of recommendation (at least two letters must attest to recent teaching effectiveness) to: **Dr. Bernie Schroeder, Search Chair, Dept. of Mathematics/AWM95, Millersville University, P.O. Box 1002, Millersville, PA 17551-0302.** EO/AA Institution.

-more-

ADVERTISEMENTS

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 1996-1997. 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, the American Mathematical Society's Application Cover Sheet (limited to one page), a curriculum vitae, and three letters of recommendation. The AMS form must clearly identify the candidate's research area and interest in tenure-track or visiting positions. The letters of recommendation should document abilities in both teaching and research. For tenure-track positions, the applicant's letter, vita and AMS form must be received by December 1, 1995. Letters of recommendation received by January 2, 1996 will be used in the screening process. 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.** New Mexico State University is an Equal Opportunity/Affirmative Action Employer.

NORTHERN MICHIGAN UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Computer Science - The Department of Mathematics and Computer Science invites applications for two tenure-track positions in computer science at the rank of Assistant Professor beginning with the 1996-97 academic year. The successful applicants must possess a Ph.D. in computer science prior to employment, be prepared to teach the range of courses in an undergraduate curriculum as well as some undergraduate mathematics courses, and demonstrate the potential to become an effective teacher and an active scholar. Applicants with specialized interests in any area of computer science are encouraged to apply; however, preference will be given to applicants whose special interest are in one or more of the following areas: networking, computer systems, and software design and engineering. Additional desirable qualifications include a willingness to contribute to the development of our computer science program and work with business and industry to develop career opportunities for our graduates. Applications should include a complete resume, letter of application, transcript, and names, address, and telephone numbers of three references. Nominations are welcomed, and should be submitted as early as possible. Application material should be sent to: **Terrance L. Seethoff, Head, Mathematics and Computer Science Department, Northern Michigan University, 1401 Presque Isle, Marquette, Michigan 49855-5340,** (906) 227-2020. E-mail Address: tseethof@nmu.edu. Applicant review will begin November 1, 1995, and will continue until the positions are filled. Applicants may be considered for appointment to one of the tenure-track position beginning with the winter semester 1996. NMU is an AA/EOE.

NORTHWESTERN UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for an anticipated tenure-track assistant professor position starting September 1996. 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 encourage to apply. Candidates should arrange to have the application material sent to: **Chairperson, Personnel Committee, Department of Mathematics, Northwestern University, Evanston, Illinois 60208-2730.** Applications should include: (1) the American Mathematical Society's Application Cover Sheet for Academic Employment in Mathematics, (2) a curriculum vita, and (3) at least three letters of recommendation. 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, 1995.

NORTHWESTERN UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Mathematics Department will sponsor an Emphasis Year in algebraic topology. This program will include two two-year assistant professorship positions starting September 1996 and possible visiting positions for more senior mathematicians for part of the academic year 1996-97, contingent upon availability of funds. Applications should be sent to: **The Emphasis Year Secretary, Department of Mathematics, Northwestern University, Evanston, Illinois 60208-2730,** and include: (1) the American Mathematical Society's Application Cover Sheet for Academic Employment in Mathematics, (2) a curriculum vitae, and (3) three letters of recommendation. Inquiries may be sent via e-mail to "hiring@math.nwu.edu." In order to ensure full consideration, applications should be received by January 15, 1996. Northwestern University is an affirmative action, equal opportunity employer committed to fostering a diverse faculty; women and minority candidates are especially encouraged to apply.

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 1996. Candidates in all areas of applied and pure mathematics are invited to apply. Significant mathematical research accomplishments or exceptional promise, and evidence of superior teaching ability, will be expected. 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 résumés will begin immediately. The Ohio State University is an Equal Opportunity/Affirmative Action employer. Women and minority candidates are encouraged to apply.

PURDUE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Several tenure-track or two-year research assistant professorships beginning August 1996. Ph.D. by August 1996, exceptional research promise, and excellence in teaching required. Possible positions at the Associate Professor/Professor level beginning August 1996. 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, 1995. Send curriculum vitae 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.

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, 1995 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.** Submitting the AMS Application Cover Sheet (available in Notices, EIMS, or e-math) would be greatly appreciated.

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

ADVERTISEMENTS

SAINT OLAF COLLEGE - MATHEMATICS DEPARTMENT - Tenure-track assistant professor beginning September 1996. Requires Ph.D. in the mathematical sciences, demonstrated excellence in undergraduate teaching, commitment to liberal arts education, and promise of continued scholarly activity and professional growth. Send vita, statement of teaching philosophy, summary of research interests and goals, graduate transcripts, and three letters of recommendation (at least one focused on teaching effectiveness) to: **Search Committee, Mathematics Department, St. Olaf College, 1520 St. Olaf Avenue, Northfield, MN 55057-1098.** St. Olaf is EOE/AA and affiliated with the Lutheran church (ELCA). Women and minorities encouraged to apply and are invited to identify themselves voluntarily. Review of completed applications will begin on November 15, 1995.

SIMON FRASER UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Position in Applied and Computational Mathematics - The Department of Mathematics and Statistics of Simon Fraser University invites applications for a tenure-track position in Applied and Computational Mathematics at the Assistant Professor level starting September 1st, 1996. At this time our emphasis is on complementing current strengths in mechanics (fluids and solids) and scientific computing, and developing new expertise in industrial and environmental modeling. Applicants are expected to have completed a Ph.D. degree at the time of appointment, have post-doctoral experience or a proven research record, and be able to demonstrate strong potential in both research and teaching. Applications, including curriculum vitae, descriptive statements on research plans and teaching activities should be sent, by 15 December 1995, to: **Dr. Katherine Heinrich, Chair, Department of Mathematics and Statistics, Simon Fraser University, Burnaby, British Columbia V5A 1S6, Canada.** Please arrange for three letters of reference to be sent directly from the referees. Further information on the department and the university can be found on the WWW site http://www.cecm.sfu.ca/mast_home.html. The position is subject to final budgetary approval. Simon Fraser University is committed to the principle of equity in employment and offers equal employment opportunities to all qualified applicants. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada.

SIMON FRASER UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Faculty Appointment in Statistics - Tenure-track Assistant Professor in Statistics requires Ph.D., strong teaching/research; applications/statistical computing assets. Subject to budgetary approval. Send c.v., names/addresses of three referees to: **Katherine Heinrich, Chair, Dept. of Mathematics & Statistics, Simon Fraser University, Burnaby, BC V5A 1S6.** SFU is committed to the principle in employment and offers equal employment opportunities to all qualified applicants. This advertisement is directed to Canadian citizens and permanent residents of Canada.

SONOMA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Sonoma State University invites applications from Ph.D.s (Applied Mathematics or Mathematics) for tenure-track faculty position starting AY 1996-97 in Applied Mathematics. Request announcement from: **William Barnier, SSU Mathematics Department, Rohnert Park, CA 94928-3906**; phone-(707) 664-2368; FAX-(707) 664-3012; E-mail: Ann.Hearty@Sonoma.Edu. Review begins 1/22/96. AA/EOE.

SONOMA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Sonoma State University invites applications from Ph.D.s (Mathematics Education or Mathematics) for tenure-track faculty position in Mathematics Education starting AY 1996-97. Request announcement from: **William Barnier, SSU Mathematics Department, Rohnert Park, CA 94928-3906**; phone-(707) 664-2368; FAX-(707) 664-3012; E-mail: Ann.Hearty@Sonoma.Edu. Review begins 1/22/96. AA/EOE.

TRINITY COLLEGE, HARTFORD - DEPARTMENT OF MATHEMATICS - Applications are invited for a tenure-track assistant professorship, duties of which commence late August 1996. Requirements: Ph.D. in mathematics, strong evidence of research potential, demonstrated success in classroom instruction, and a commitment to undergraduate instruction in a liberal arts setting. Preference given to specialists in logic or geometry. Computer expertise and experience in laboratory calculus are desirable. Send a cover letter, a curriculum vita (listing a winter-break phone number and an e-mail address if possible), statements on teaching and research interests, and three letters of reference (one of which addresses teaching) to: **Search Committee Chair, Mathematics Department, Trinity College, Hartford, CT 06106.** We also anticipate filling a one-year position, specialization open. Interested parties should so indicate in their cover letter or on the AMS cover sheet. Review of applications will begin December 1, 1995 and will continue until positions are filled. Trinity College is an Equal Opportunity/Affirmative Action employer. Women and minority members are especially encouraged to apply.

UNIVERSITY OF AKRON - DEPARTMENT OF MATHEMATICAL SCIENCES - Assistant Professor - An Assistant Professor (tenure-track) position available in Fall 1996. Primary responsibilities involve curriculum development and coordination of general education multiple-section courses and the teaching of courses such as Math for Elementary Education and Math for Liberal Arts. Applicants with experience in these areas and showing potential for external funding in areas related to mathematics education given preference. Applicants should possess a Ph.D. in Mathematics or Mathematics Education and are expected to establish and maintain a research program. The University offers competitive salaries and excellent fringe benefits. The University of Akron is the third largest state university in Ohio. The department offers a Bachelor and Master degrees in Mathematics, Applied Mathematics, Statistics, and Computer Science. All materials (application letter, curriculum vitae, unofficial copy of graduate transcripts, and three letters of reference) should be sent to: **General Education Mathematics Search, Department of Mathematical Sciences, The University of Akron, Akron, OH 44325-4002.** Initial review of completed applications will begin December 1, 1995. Women and minorities are encouraged to apply. The University of Akron is an equal education and employment institution.

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 1996. **Tenure track positions.** Ph.D. and 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 interests are encouraged to respond. In addition, special Center of Excellence Awards in nonlinear optics and fluid mechanics are available. The Mathematics Department may also have several visiting positions for next year, Ph.D. required. We encourage early application. Application review begins November 30, 1995 with applications accepted until January 1, 1996 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, 617 N. Santa Rita, University of Arizona, Tucson, Arizona 85721.** The University of Arizona is an Affirmative Action/Equal Opportunity/ADA Employer.

UNIVERSITY OF CALIFORNIA AT BERKELEY - DEPARTMENT OF MATHEMATICS - Tenured or Tenure Track Position - We invite applications for one or more positions effective July 1, 1996 at either the tenure-track (Assistant Professor) or tenured (Associate or Full Professor) level, subject to budgetary approval, in the general areas of pure or applied mathematics. **Tenure track** applicants are expected to have demonstrated outstanding research potential, normally including major contributions beyond the doctoral dissertation. Such applicants should send a resume, and reprint or preprints, and the names and addresses of three references. **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. All material should be sent to: **The Vice Chair for Faculty Affairs, Department of Mathematics, University of California at Berkeley, Berkeley, CA 94720.** All applicants are requested to use the AMS standardized application form and to indicate their subject area using the AMS subject classification numbers. The form is the Academic Employment in Mathematics, Application Cover Sheet, it is available courtesy of the American Mathematical Society. We should receive this material no later than January 1, 1996. Applications postmarked after the deadline will not be considered. The University of California is an Equal Opportunity, Affirmative Action Employer.

-more-

ADVERTISEMENTS

UNIVERSITY OF CALIFORNIA, DAVIS - DEPARTMENT OF MATHEMATICS - Regular and Visiting Faculty Position in Mathematics - Applications are invited for two anticipated positions at either the Assistant Professor or Associate Professor level and Visiting Research Assistant Professorship (VRAP) positions in the Department of Mathematics, University of California, Davis, effective July 1, 1996. These positions are contingent on budgetary approval. Appointments of the Assistant or Associate Professor positions will be made commensurate with qualifications. Minimum qualifications include a Ph.D. degree in mathematical sciences and great promise in research and teaching. Duties include mathematical research, undergraduate and graduate teaching, and service. For these positions, the Department of Mathematics is recruiting in 1) Geometry/Topology, and 2) Mathematical Physics. Candidates for the Associate Professor position must have demonstrated outstanding attainment in research and teaching. 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 1992. The Department of Mathematics is interested in applicants in the following areas for the VRAP positions: 1) Algebra, 2) Analysis/PDEs, 3) Applied Mathematics, 4) Computational Mathematics, 5) Geometry/Topology, 6) Mathematical Physics. The tenure-track positions are open until filled, but to assure consideration, applications should be received by December 15, 1995. The application deadline for the VRAP positions is February 1, 1996. **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 - Regular Positions in Pure and Applied Mathematics - The UCLA Department of Mathematics invite s applications for three or more tenure track positions in pure or applied mathematics. Exceptional promise in research and teaching is required. Positions are initially budgeted at the assistant professor level, but sufficiently outstanding candidates will be considered at higher levels. Specific search areas are: algebra, algebraic geometry, number theory and combinatorics; mathematical developments arising from physics; geometry, topology and dynamical systems; analysis probability, and partial differential equations; logic; and computational and applied mathematics. Teaching load is an average of 4.5 quarter courses per year. Positions subject to availability of resources and administrative approval. To apply, **send electronic mail to: search@math.ucla.edu, open "http://www.math.ucla.edu" on the World Wide Web, or write to: John Garnett, Chair, Department of Mathematics, University of California, Los Angeles, CA 90095-1555, Attention: Staff Search.** UCLA is an Equal Opportunity/Affirmative Action Employer.

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

UNIVERSITY OF CALIFORNIA, SANTA BARBARA - DEPARTMENT OF MATHEMATICS - The University of California, Santa Barbara, invites applications for the following positions in the Department of Mathematics, beginning Fall 1996. **(1) Tenure Track Position in Numerical Analysis/Applied Mathematics:** The Department of Mathematics at the University of California, Santa Barbara seeks a numerical analyst/applied mathematician for a tenure track assistant professorship beginning July 1, 1996. Applicants should have substantial expertise relevant for the numerical resolution of nonlinear problems arising in an applied science such as electromagnetics, fluid dynamics, material science, and semiconductor theory. The successful candidate will have demonstrated excellence in research and have a promising record in teaching. Potential for interaction with research efforts in the department and across the university will be taken into account and candidates must possess a Ph.D. by September 1, 1996. Applications which are complete by December 22, 1995, will receive full consideration. **(2) KY Fan Assistant Professorship:** Candidates will be considered in the following mathematical areas: algebra, theoretical computer science, differential geometry, numerical analysis/applied mathematics, and topology. The Ky Fan Assistant Professorship is a special two-year nonrenewable position which carries a research stipend and a course load of 4 one quarter courses per year. Appointment is effective July 1, 1996 and candidates must possess a Ph.D. by September 1996. Selection will be based primarily on research achievement , but evidence of satisfactory teaching is necessary and departmental research priorities will be taken into account. Applications which are complete by January 2, 1996, will receive full consideration. **(3) Special Visiting Positions:** Subject to availability of funds. One or more special one-year visiting assistant professorships in the research areas mentioned under (1) and (2) above, with possibility of a second year, carrying a teaching load of 5 or 6 one quarter courses per year. Applicants for the Ky Fan and the tenure track positions will automatically be considered for the visiting positions. Excellence in research, potential for interaction with other faculty and evidence of good teaching required. Candidates must possess a Ph.D. by September 1996. Applicants should send a vita, a publication list, a one-page statement of research interests and arrange to have four letters of recommendation and a completed AMS Application Cover Sheet sent to: **the Ky Fan Committee** for the Ky Fan position; to the **Numerical/Applied Committee** for the tenure track position and to the **Visiting Appointment Committee** for the special visiting positions (but only if not otherwise applying) at the address: **Department of Mathematics, University of California, Santa Barbara, CA 93106.** UCSB is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF DELAWARE - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department of Mathematical Sciences invites applications for a tenure-track assistant professor in discrete mathematics beginning September 1996. Preference given to applicants whose research is compatible with current faculty (finite geometry, general combinatories and graph theory, computational number theory and cryptography). Solid background in algebra is mandatory. An interest in the areas of application is strongly desirable. The use of computing in teaching/research is expected. Applicants must have commitment to quality instruction at both undergraduate and graduate levels. It is desirable that the candidate be able to secure outside funding. Send vita and 3 letters of reference by January 1, 1996 to: **Search Committee for Discrete Mathematics, Department of Mathematical Sciences, University of Delaware, Newark, DE 19716.** The University of Delaware is an equal opportunity employer which encourages applications from qualified minority group members and women.

Want to advertise a position ADVERTISING RATES and INFORMATION on PAGE 4

-more-

ADVERTISEMENTS

UNIVERSITY OF DELAWARE - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department of Mathematical Sciences invites applications for a tenure/tenure track position in applied mathematics to begin September 1, 1996. Candidates will be considered at all levels up to entry level full professor but strong preference will be given those with an established record both in publication and funded research. Extensive computational experience in the areas of wave propagation, fluid dynamics, and/or inverse problems as well as experience and interest in establishing links with industry and other academic disciplines will weigh heavily in the candidates' favor. Evidence of effective teaching is essential. Applicants should send a curriculum vitae (including funding history), reprints and/or preprints and arrange to have 3 letters of recommendation sent to: **Search Committee-Applied Mathematics, Department of Mathematical Sciences, University of Delaware, Newark, DE 19716** by December 1, 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/Assistant Professor level starting September 1, 1996. 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 in mathematics or equivalent in course work and have a distinguished publishing record in educational research. Candidates may have the opportunity to work with doctoral candidates in the College of Education who have an interest in mathematics education at the secondary level. Candidates are expected to help support our preservice program. 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, 1996 to receive full consideration. University of Delaware is an equal opportunity employer which encourages applications from qualified minority group members and women.

UNIVERSITY OF GEORGIA - DEPARTMENT OF MATHEMATICS - Applications are invited for two postdoctoral positions, starting in Fall 1996, with the title: part-time instructor temporary post doctoral associate. Duties consist of teaching one course per quarter and conducting original research. One of these positions will be in number theory. The other may be in any other area, although applicants are suggested to identify a member of the current faculty with whom they would like to work. Both appointments will be for two years. Applicants must exhibit potential for significant research and the skills necessary to be an excellent teacher. Women and minorities are especially encouraged to apply. To apply send a vita with a list of publications and four letters of recommendation to: **John G. Hollingsworth, Head, Department of Mathematics, The University of Georgia, Athens, GA 30602.** The deadline for applications is February 1, 1996. The University of Georgia is an Equal Opportunity/Affirmative Action employer.

UNIVERSITY OF ILLINOIS AT CHICAGO - DEPARTMENT OF MATHEMATICS, STATISTICS, AND COMPUTER SCIENCE - Applications are invited for the following two positions, effective August 21, 1996. First, a **tenure track Assistant Professorship**. We prefer candidates in probability, stochastic analysis, control theory, computational statistics, and related areas of applied and computational mathematics. However, if a suitable candidate in these areas is not found, excellent candidates in all areas of mathematics, statistics and computer science will be considered. Applicants must have a Ph.D. or equivalent degree 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 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 96-97 for this position is expected to be $40,000. Applicants must have a Ph.D. or equivalent degree in mathematics, computer science, statistics, mathematics education or related field, and evidence of outstanding research potential. The Department has active research programs in all areas of pure mathematics, computational and applied mathematics, combinatorics and computer science, statistics, and mathematics education. **See http://www.math.uic.edu for more information.** Send vita and direct 3 letters of recommendation, indicating the position being applied for, to: **Henri Gillet, Interim Head, Dept. of Mathematics, Statistics, and Computer Science, University of Illinois at Chicago, 851 S. Morgan (M/C 249), Chicago, IL 60607.** To ensure full consideration, materials must be received by January 5, 1996. Minorities, persons with disabilities, and women are particularly encouraged to apply. UIC is an AA/EEO employer.

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN - DEPARTMENT OF MATHEMATICS - Applications are invited for one or more full-time tenure track assistant professor positions to commence August 21, 1996. Suitable applicants may be considered for a more senior position. The department will consider applicants in all fields of mathematics. Salary and teaching load are competitive. Applicants should send a letter of application, curriculum vitae and publication list, and arrange to have three letters of reference sent directly to the address below. We encourage use of the application cover sheet provided by the American Mathematical Society. Send to: **Gerald J. Janusz, Chair, Department of Mathematics, University of Illinois at Urbana-Champaign, 1409 West Green Street, Urbana, IL 61801,** telephone (217) 333-3352, e-mail: search@math.uiuc.edu. All materials, including letters of reference, should be received by December 8, 1995. All completed applications received by that date will receive 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 in research and teaching. Applications from women and minority candidates are especially encouraged. The University of Illinois is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF IOWA - DEPARTMENT OF MATHEMATICS - The Department of Mathematics of The University of Iowa invites applications for the following positions: **1.)** Tenure-track beginning or early assistant professorship, starting in August 1996, in the broadly interpreted area of partial differential equations and related areas. Extraordinary candidates at higher rank may be considered. Selection will be based on evidence of outstanding research accomplishments or potential, and teaching ability. A Ph.D. or equivalent training is required. **2.)** Pending availability of funds, one or more visiting positions for all or part of the 1996-97 academic year. Selections will be based on research expertise and teaching ability. Preference will be given to applicants whose scholarly activity is of particular interest to members of the current faculty. Women and minority candidates are especially urged to apply for the above positions. The University of Iowa welcomes the employment of professional couples on its faculty and staff, permits the appointment of faculty couples within the same department, and permits the sharing of a single appointment by a faculty couple. Formal screening will begin December 15, 1995; applications will be accepted until the positions are filled. To apply, send a complete vita and have three letters of recommendation sent to: **Professor Bor-Luh Lin, Chair, Department of Mathematics, The University of Iowa, Iowa City, Iowa 52242.** The University of Iowa is an Equal Opportunity and Affirmative Action Employer.

UNIVERSITY OF KENTUCKY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics at the University of Kentucky invites applications for at least one tenure-track assistant professorship to begin in the Fall 1996. In case of exceptional candidates, senior appointments would be considered. In particular, we are interested in applicants in the areas of numerical analysis, combinatorics/combinatorial optimization, and algebra. However, applications in other areas are also welcome. We encourage applications from women and minority groups. Using the application cover sheet available from the AMS if possible, apply to: **Chair of the Recruiting Committee, Department of Mathematics, 715 POT, University of Kentucky, Lexington, KY 40506.**

-more-

ADVERTISEMENTS

UNIVERSITY OF LOUISVILLE - DEPARTMENT OF MATHEMATICS - Tenure-track position at the Assistant Professor level beginning July 1, 1996, pending budgetary approval. In order to build our expertise in applied mathematics and to compliment our existing strength, we will limit our attention to candidates in applied areas of analysis and statistics. Ability to teach both undergraduate and graduate Mathematics, and a Ph.D. in Mathematics or Mathematical Sciences are required. Applicants are requested to send the following items: Application letter, curriculum vitae, and graduate transcripts; names and full addresses of four references, two of whom can attest to the candidate's teaching skills (candidates placed on the short list will be asked to provide the actual letters of reference); completed American Mathematical Society Application Cover Sheet for Academic Employment in Mathematics. The address for the above, and any other correspondence should be mailed to: **Search Committee, Department of Mathematics, University of Louisville, Louisville, KY 40292.** E-mail address for inquiries is: mathsrch@homer.louisville.edu, and our homepage is: http://www.louisville.edu/groups/math/-www/ (we regret that e-mail applications cannot be accepted). Consideration of applications will begin January 5, 1996, and continue until the position is filled. Proof of eligibility for U.S. employment and an official graduate transcript will be required prior to employment. Women, minorities, and African-Americans are especially encouraged to apply.

UNIVERSITY OF MARYLAND, BALTIMORE COUNTY - DEPARTMENT OF MATHEMATICS AND STATISTICS - We invite applications for a tenure-track faculty position in Numerical Analysis, rank of assistant professor, starting Fall 1996. Excellence in both research and teaching is essential, and a doctorate is required. Only candidates in the area of NUMERICAL ANALYSIS FOR PARTIAL DIFFERENTIAL EQUATIONS need apply. The department offers a graduate program leading to the Ph.D. degree in applied mathematics and statistics. The major research concentration areas are numerical analysis, differential equations, optimization theory and algorithms, and theoretical and applied statistics. Applicants should arrange for a curriculum vitae, (p)reprints and three letters of recommendation to be sent to: **Numerical Analysis Search Committee, Department of Mathematics and Statistics, University of Maryland, Baltimore County, Baltimore, MD 21228-5398.** To ensure full consideration, please submit applications by December 15, 1995. Women and minority candidates are encouraged to apply. UMBC is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF MASSACHUSETTS, LOWELL - DEPARTMENT OF MATHEMATICS - The University of Massachusetts Lowell anticipates several tenure-track positions in applied mathematics beginning with the 1996-97 academic year. We are interested in recent PhD's with the ability to carry out a strong research program in an interdisciplinary environment, as well as senior people with well-established ability to secure substantial research funding. Located within the high-tech environment of northeastern Massachusetts, Lowell is a technologically oriented institution whose mission is to enhance regional economic competitiveness. In addition to excellence in research and teaching, applicants must demonstrate the ability to conduct a research program which will advance this mission. The University has a number of interdisciplinary research centers in such areas as materials science, environmental science, energy engineering, and work environment (occupational health and safety) which offer unusual opportunities for cutting-edge research in applied mathematics. Areas of particular interest to the department include materials science, signal processing, combinatorics, applied statistics and operations research. We are also interested in candidates who can take a leadership role in education and curriculum development with the Lowell/Lawrence school systems as well as at the University level. Applications must include a vitae, three letters of recommendation and a statement of research interests which explains how the candidate's program will contribute to Lowell's mission. For questions and additional information, contact **bruskai@cs.uml.edu; Prof. M.B. Ruskai, Chair, Hiring Committee, Department of Mathematics, University of Massachusetts, Lowell, Lowell MA 01854.**

UNIVERSITY OF MEMPHIS - DEPARTMENT OF MATHEMATICAL SCIENCES - Chair (Search Re-opened) - 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 December 15, 1995 and may continue until the position is filled. The term as chair will begin in Fall 1996. The successful candidate must meet Immigration Reform Act criteria. Applicants should submit a curriculum vitae and names of references to: **Chair-Search Committee, Department of Mathematical Sciences, The University of Memphis, Memphis, TN 38152.** E-mail: Jamisonj@hermes.msci.memst.edu. 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 1996. 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 5, 1996.

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 1996. 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 MICHIGAN - DEPARTMENT OF MATHEMATICS - Expect to have 2 Assistant Professorships in the area of Number Theory. Positions supported by NSF award to Michigan Research Group in Number Theory: 3 year appointment, teaching load reduced by 1 course per year, and by additional 1 course during 3 years. Positions include summer support, travel and supply expenses. Preference given to new doctorates of any age. Applicants should have a strong research program and serious commitment to teaching. Salary competitive. Non-discriminatory affirmative action employer. Starting date: September 1996. 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 5, 1996.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - Dunham Jackson Instructorship - This is a three-year appointment from Fall, 1996 to Spring 1999 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, 1995, and no later than September 15, 1996. Summer School teaching may be available during summer of 1997 and 1998 to supplement regular stipend. Salary competitive. Consideration of applications will begin December 1, 1995. Send letter of application, current curriculum vitae, minimum 3 letters of recommendation, and description of research to: **Naresh Jain, Head, School of Mathematics, University of Minnesota, 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

-more-

ADVERTISEMENTS

UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - **Post-doctoral Associate** - Post-Doctoral Associate positions may be available to conduct research and teach in all areas of mathematics. Duration of appointments for short terms only, typically 1 or 2 Quarters. Applications will remain active for twelve months. Next round of evaluations will begin December 1, 1995. Ph.D. by beginning date of appointment required. Preference will be given to applicants whose research interests are compatible with those of the School. Submit letter of application and current curriculum vitae to: **Naresh Jain, Head, School of Mathematics, University of Minnesota 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - The School of Mathematics may have available one or more tenure track Assistant Professor or tenured Associate or Full Professor positions starting Fall 1996. Ph.D. 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. Salary competitive. Consideration of applications will begin December 1, 1995. Send letter of application, current curriculum vitae, minimum 3 letters of recommendation, and description of research to: **Naresh Jain, Head, School of Mathematics, University of Minnesota, 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS - 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 1996. 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, 1995. Send letter of application, current curriculum vitae, minimum 3 letters of recommendation and description of research to: **Naresh Jain, Head, School of Mathematics, University of Minnesota, 206 Church Street S.E., 127 Vincent Hall, Minneapolis, MN 55455.** The University of Minnesota is an equal opportunity educator and employer.

UNIVERSITY OF MINNESOTA, MINNEAPOLIS - SCHOOL OF MATHEMATICS and the **MINNESOTA CENTER FOR INDUSTRIAL 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. Send current curriculum vitae and description of research experience and arrange to have three letters of recommendation sent by January 15, 1996 to: **Professor Mitchell Luskin, Chair, Search Committee for Industrial Mathematics, 206 Church Street, S.E., 127 Vincent Hall, School of Mathematics, University of Minnesota, Minneapolis, MN 55455.** Salary will be commensurate with background and experience. 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 MONTANA - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department has openings for two tenure track Assistant Professors and one Visiting Assistant Professor beginning Fall 1996. One tenure-track position in each of algebra and mathematics education and one visiting position in mathematics education are available. Research must be compatible with interests of current faculty members in the Department in algebra or mathematics education. The Department offers B.A., M.A., M.A.T., and Ph.D. degrees. A job description and information about the Department of Mathematical Sciences may be obtained on the World Wide Web at http://www.umt.edu/math/jobs/ or via anonymous ftp from ftp.math.umt.edu in /pub/jobs or by phoning (406) 243-5311. Applications (including resume, graduate transcripts, and 3 letters of recommendation) should be sent to: **Johnny Lott, Chair, Mathematics Education Search Committee, or Merle Manis, Chair, Algebra Search Committee, Department of Mathematical Sciences, The University of Montana, Missoula, MT 59812.** Telephone: (406) 243-5311, e-mail: ma_jwl@selway.umt.edu (questions only for mathematics education). Screening of applicants will begin January 26, 1996 and continue until positions are filled. The University of Montana is an equal opportunity/affirmative action employer and encourages applications from women, minorities, Vietnam era veterans, and persons with disabilities.

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

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

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL - DEPARTMENT OF MATHEMATICS - Applications are invited for one anticipated faculty appointment in mathematics effective Fall 1996, pending the approval of the Dean. 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. Send curriculum vitae, abstract of current research program, and four letters of recommendation to: **Search Committee Chairman, Mathematics Department, CB #3250 Phillips Hall, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3250.** EO/AA Employer. Women and minorities are encouraged to identify themselves voluntarily. Completed applications received by December 15, 1995 are assured of full consideration. We also request that you send us a completed Application Cover Sheet (Fall issues of the AMS Notices).

-more-

ADVERTISEMENTS

UNIVERSITY OF OREGON - DEPARTMENT OF MATHEMATICS - Assistant Professor tenure track position in statistics or probability beginning September 1996. Qualifications are a Ph.D. in statistics or mathematics, a record of research accomplishment, and evidence of teaching ability. Competitive salary with good fringe benefits. Send complete resume and at least three letters of recommendation to: **Gary Seitz, Head, Department of Mathematics, University of Oregon, Eugene, OR 97403.** Closing date is January 5, 1996. Women and minorities are encouraged to apply. An EO/AA/DA/Institution committed to cultural diversity.

UNIVERSITY OF PENNSYLVANIA - DEPARTMENT OF MATHEMATICS - Tenure positions in Mathematics - We anticipate that commencing July 1, 1996, there may be one or more tenure positions available in the following areas: algebra, analysis, geometry/topology and discrete mathematics. These positions are for candidates with outstanding, internationally recognized research achievements who are successful teachers of undergraduate and graduate students. Rank and salary will depend upon experience. Write to the **Personnel Committee, Department of Mathematics, University of Pennsylvania, Philadelphia, PA 19104-6395.** The University of Pennsylvania is an equal opportunity, affirmative action employer.

UNIVERSITY OF PENNSYLVANIA - DEPARTMENT OF MATHEMATICS - Junior positions in Mathematics - Several positions will be available beginning July 1, 1996. Candidates should have strong research credentials and be recognized as potentially successful teachers of undergraduate and graduate students. Send resume and three letters of reference to the **Personnel Committee, Department of Mathematics, University of Pennsylvania, Philadelphia, PA 19104-6395.** These are due by December 15, 1995. The University of Pennsylvania is an equal opportunity, affirmative action employer.

UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES - DEPARTMENT OF MATHEMATICS - The Department of Mathematics anticipates several visiting, postdoctoral, and possible tenure-track 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 Cover Sheet, and a curriculum vitae. Candidates should also arrange for three letters of recommendation to be sent. Mail all materials to: **Chair of Appointments Committee, Department of Mathematics - DRB 155, University of Southern California, Los Angeles, CA 90089-1113.** Review of applications will begin December 1, 1995. Additional information about USC can be found on the Web at http://www.usc.edu/ AA/EOE.

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

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

UNIVERSITY OF WISCONSIN, MADISON - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for possible Van Vleck Assistant Professorships to begin August 1996. 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 vita 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 completed applications is January 31, 1996. 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.

URSINUS COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Anticipated one-year position as Assistant Professor starting Fall 1996. Independent four-year liberal arts college near Philadelphia. Salary commensurate with qualifications. Ph.D. in mathematics required. Applied mathematics or analysis preferred. Excellent teaching credentials essential. Experience with a computer algebra system desirable. Teach three courses per semester. Standard benefits. Send letter of application, resume, and three letters of recommendation to: **Search Committee, Department of Mathematics & Computer Science, Ursinus College, Collegeville, PA 19426;** or e-mail jshuck@acad.ursinus.edu. Apply by January 15, 1996 to receive full consideration. E-mail accepted in plain text only. EOE/AA.

ADVERTISEMENTS

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 1996. Ph.D. in math desired, required for tenure. Teaching experience preferred; background in combinatorics or experience in preparing secondary teachers a plus, as is familiarity with calculus reform. 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 application, statement of teaching philosophy, summary of research plans and vita by January 15, 1996 to: **Patrick Sullivan, Chair, Valparaiso University, Department of Math and Computer Science, Valparaiso, IN 46383.** E-mail: PSULLIVAN@EXODUS.VALPO.EDU

WASHINGTON STATE UNIVERSITY - DEPARTMENTS OF PURE AND APPLIED MATHEMATICS AND GENETICS AND CELL BIOLOGY - Mathematical/Computational/Statistical Geneticist, tenure track **Assistant Professor,** to begin Fall 1996. We seek applicants with a strong background in mathematical/ statistical/computational genetics. Ph.D. in relevant biological or physical science or mathematics is required. Postdoctoral or equivalent experience is essential. Theorists as well as those pursuing both theoretical and empirical research will be considered. Record of collaboration with experimentalists is preferred. Evidence of successful extramural research support is an asset. Teaching at both the undergraduate and graduate levels in genetics and mathematics is expected. A record of classroom teaching experience is preferred. The appointment will be half-time in the Department of Genetics and Cell Biology and half-time in the Department of Pure and Applied Mathematics. Screening of candidates will begin December 22, 1995 and continue until the position is filled. Successful candidate will be expected to obtain extramural support. Highly qualified candidates committed to a career in research and teaching are invited to send curriculum vitae, a statement of research and teaching interests and have three letters of recommendations to: **Chair, Mathematical Biologist Search Committee, Department of Genetics and Cell Biology, Washington State University, Pullman, WA 99164-4234.** E-mail omoto@alpha.math.wsu.edu., fax: (509)335-1907. More information about the university can be obtained at http://www.wsu.edu. Washington State University is an Equal Opportunity/Affirmative Action Educator and Employer. Protected group members encouraged to apply.

WASHINGTON UNIVERSITY IN ST. LOUIS - DEPARTMENT OF MATHEMATICS - Tenure track position in analysis opening beginning Fall 1996. Salary and rank will depend on experience and qualifications. Although all applications will be considered, the Department especially encourages applications from analysts in the early stages of their careers who have both traditional and interdisciplinary research interests. Selection criteria are teaching ability and scholarly achievements in a field compatible with Departmental interests. Applicants should submit a personal letter, curriculum vita and ask at least three referees to send letters to the following address: **Department of Mathematics, Washington University in Saint Louis, Campus Box 1146, One Brookings Drive, St. Louis, MO 63130. Contact Person: Edward N. Wilson, chairman.** E-mail Address: terri@math.wustl.edu. Applications received after January 1, 1996 will be considered until the position is filled. Washington University is an affirmative action/equal opportunity employer and specifically invites and encourages women and minorities. Employment eligibility verification required on hire.

WASHINGTON UNIVERSITY IN ST. LOUIS - DEPARTMENT OF MATHEMATICS - One- or two-year visiting position, to begin August 1996. Salary at assistant professor level. Teaching load: two courses one semester, one course the other. Applicants should have research interests which are close to those of our faculty. These include certain types of analysis, geometry, topology and algebra. To apply, send vita and research plan and ask three persons to send letters of recommendation directly to us at the following address: **Department of Mathematics, Washington University in Saint Louis, Campus Box 1146, One Brookings Drive, St. Louis, MO 63130.** If possible, at least one of the letters should report on teaching performance. To insure full consideration, materials should reach us by February 2, 1996. Washington University is an affirmative action/equal opportunity employer and specifically invites and encourages women and minorities. Employment eligibility verification required on hire.

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

WESTERN MICHIGAN UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Western Michigan University seeks applications for three tenure-track Assistant Professor positions in Mathematics for Fall 1996, pending budgetary approval. **1) Analysis with interest in applied and computational mathematics.** Ph.D. degree in mathematics or evidence of imminent award required, as well as demonstrated potential for teaching, scholarship, and publication. **2) Combinatorics/graph theory.** Ph.D. degree in mathematics or evidence of imminent award required, as well as demonstrated potential for teaching, scholarship, and publication. **3) Mathematics education.** Position requires a Ph.D. in mathematics education with substantial background in mathematics. Teaching experience at the elementary or secondary level is required. Candidates must have demonstrated potential for college 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, vita, statement of research plans, academic transcripts and three letters of recommendation to: **Ruth Ann Meyer, Chair, Mathematics and Statistics Department, Western Michigan University, Kalamazoo, MI 49008.** FAX (616) 387-4530; INTERNET ruth.a.meyer@wmich.edu. For information about Western Michigan University see http://www.wmich.edu. Review of applications will begin November 1, 1995 and applications will be accepted until the position is filled.

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS - Two anticipated tenure-eligible positions in mathematics or applied mathematics, beginning Fall 1996, probably at the ranks of assistant professor; in exceptional cases, however, more advanced appointments may be considered. Excellence in both teaching and research is essential. For both positions, a Ph.D. in hand or a completed dissertation by September 1996 is required. For one of the positions, experience and strong interest in teaching pre-calculus/quantitative skills is a plus. Please have a vita and three letters of recommendation on teaching and research sent to: **Hiring Committee, Department of Mathematics, Williams College, Williamstown, MA 01267.** Evaluation of applications will begin November 15, 1995 and continue until the position is filled. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

YALE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications accepted for Gibbs Instructorships/Assistant Professorships for Ph.D.'s with outstanding promise in research. Two-year appointments starting July 1, 1996. Light teaching load. Applications and supporting materials must be received by January 1, 1996. Offers will be made during February. Salary at least $40,500. Request applications from: **Ms. Teresa Bowen, Administrative Assistant, Gibbs Committee, Department of Mathematics, Yale University, P.O. Box 208283, New Haven, CT 06520-8283.**

YORK UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Faculty Position in Statistics - Applications are invited for a tenure track appointment at the Assistant Professor level in the Department of Mathematics and Statistics, to commence July 1, 1996, subject to budgetary approval. The successful candidate will be expected to have established a record of research excellence in statistics, and must have a completed Ph.D. and proven teaching abilities. The application deadline is 30 January 1996. Applicants should send resumes and arrange for at least three letters of recommendation to be sent directly to: **George L. O'Brien, Chair, Department of Mathematics and Statistics, York University, 4700 Keele Street, North York, Ontario, Canada M3J 1P3.** FAX: (416) 736-5757, E-MAIL: chair@mathstat.yorku.ca. York is implementing a policy of employment equity, including affirmative action.

# # #

ASSOCIATION FOR WOMEN IN MATHEMATICS

1995/1996 MEMBERSHIP FORM

AWM's membership year is from October 1, 1995 to September 30, 1996. Please fill-in this information and return it along with your DUES to:

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

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

LAST NAME   FIRST NAME   M.I.

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 MEMBERSHIP (circle one)............................. $ 20 _____

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

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

INSTITUTIONAL DUES SCHEDULE

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

INSTITUTIONAL MEMBERS RECEIVE TWO FREE JOB ADVERTISEMENTS (up to 8 lines) IN OUR NEWSLETTER PER YEAR. Ad deadlines are the 1st of every EVEN month. All institutions advertising in the *Newsletter* are Affirmative Action/Equal Opportunity Employers. Also, Institutions have the option to nominate students to receive the newsletter as part of their membership. NOTE: List names and addresses of student nominees on opposite side or attach separate page. [ADD $10 ($18 for foreign members) for each additional student add-on over initial 10 students for Category I; over initial 3 students for Category II]

TOTAL DUES ENCLOSED $ _____

N/D 95

AWM 25th Anniversary

As AWM is about to kick-off our 25th year in 1996, we would like to invite you to help us celebrate by joining us at the Joint Mathematics Meetings in Orlando, January 10-13, 1996. Below is a Preliminary Schedule of the AWM Events that will be held in Orlando, Florida.

AWM Events

at the Joint Mathematics Meetings -- Orlando, Florida -- January 10-13, 1996

Preliminary Schedule as of October 20, 1995

Wednesday, January 10th

3:20 p.m. **Panel Discussion:** *"Affirmative Action: A Look Back and a Look Ahead"*
Moderator: **Mary Gray.** *American University*
Panelists: **Ingrid Daubechies**, Princeton Univ.; **Robion Kirby**, Univ. of California, Berkeley; and **Cora Sadosky**, Howard Univ.

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

6:00 p.m. **Noether Dinner**
As in the past, AWM will have a get-together with the Noether Lecturer for a casual dinner. If you would like to join us, a sign-up sheet will be at the AWM Table in the exhibit area. Separate checks will be requested.

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

Thursday, January 11th

9:00 a.m. Seventeenth Annual **Emmy Noether Lecture** presented by **Ol'ga Oleinik**, Moscow State University
Title: *"On some homogenization problems for differential operators"*

4:25 p.m. Presentation of the Sixth 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.

Friday, January 12th

11:00 a.m. Special **25th Anniversary Lecture** presented by **Kate Okikiolu**, University of California, San Diego
Title: *"Determinants of Elliptic Operators"*

12:00 noon **25th Anniversary** LUNCHEON will immediately follow the 25th Anniversary Lecture. Tickets are $21 and can be purchased through the AMS registration.

Saturday, January 13th

9:00 a.m.-5:00 p.m. **AWM Workshop** for Graduate Students and Postdoctoral Mathematicians
Selected 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 Office of Naval Research. The selected participants are:

Postdoctorals	Graduate Students
Megan Kerr. Dartmouth College	**Katrina Barron.** Rutgers University
Elizabeth Kochneff. Eastern Washington University	**Elizabeth A. Brooks**, Duke University
Bryna Kra. Hebrew University of Jerusalem	**Yue Chen**, University of Connecticut
Ruth Michler. University of North Texas	**Elizabeth L. Grossman**, University of Chicago
Claudia Polini. Michigan State University	**M. Jeannette Kelley**, Rutgers University
Chandni Shah. University of California, Riverside	**Meeyoung Kim**, University of Notre Dame
Wenzian Shen. Auburn University	**Naomi Klarreich**, Rutgers University
Katherine F. Stevenson. Univ. of Maryland, College Park	**Naváh Langmeyer**, University of Michigan
	Loredana Lanzani, Purdue University
	Tamara R. Lefcourt, University of Pennsylvania
	Margaret Symington, Stanford University
	Judy L. Walker, Univ. of Illinois, Urbana-Champaign

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*.

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

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

Printed in the U.S.A.