

AWM

ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 30, Number 1

NEWSLETTER

January–February 2000

PRESIDENT'S REPORT

At the top of this issue's agenda we find the Joint Mathematics Meetings. Look at our program for the meetings, and you will see that we have some activity scheduled nearly continuously throughout the meetings. I hope to say hi to as many of you as possible at the AWM reception, the culmination of the first day with its panel, business meeting, and Noether dinner, and then to see you the next morning at the Noether lecture, the next afternoon at the excellent program arranged by the AWM Education Committee.

AWM's online advertising has begun; if your institution finds itself eager to hire someone or to publicize a product or an event in a hurry, consider advertising on AWM's site. Details can be found online at our website www.awm-math.org. And AWM members should check out the ads regularly; here are people particularly eager to connect with the AWM readership.

A major recent accomplishment is the launching of the AWM Institutional Sponsors program. Institutional sponsors will contribute a minimum of \$1,000 to AWM and in return get recognition on the web site and in the *Newsletter*, free and discounted advertisements on the web site and in the *Newsletter*, free memberships, and so forth. Sponsors that contribute \$5,000 or more may even submit a profile of one of their female mathematicians for inclusion in the Biographies section of our web site! We encourage our members to help recruit Institutional Sponsors. Thanks to the Corporate Task Force for putting together this plan.

Also, deadlines are fast approaching for various AWM programs: the AWM workshop at the SIAM annual meeting, travel grants, mentoring travel grants, and Sonia Kovalevsky Days. Details are given elsewhere in this *Newsletter*.

Jenny Baglivo has served us faithfully for many years as Clerk and as our Massachusetts resident officer (required by our incorporation there). We offer her our hearty thanks for this service! These two functions have now been split by the Executive Committee. Jenny will continue to serve as our

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AWM

ASSOCIATION FOR WOMEN IN MATHEMATICS

The Association was founded in 1971 at the Joint Meetings in Atlantic City. The purpose of the association is to encourage women to study and to have active careers in the mathematical sciences. Equal opportunity and the equal treatment of women in the mathematical sciences are promoted.

The *Newsletter* is published bi-monthly.

The Editor welcomes articles, letters, and announcements.

Circulation: 4,000. © 2000, AWM

EXECUTIVE COMMITTEE

President

Jean Taylor
Department of Mathematics
Rutgers University
New Brunswick, NJ 08903
taylor@math.rutgers.edu

Past President

Sylvia Wiegand

Treasurer

Amy Cohen

Members-at-Large

Lynne Butler
Teresa Edwards
Gail Ratcliff
Paulo Russo
Tilla Weinstein

Clerk

Sue Geller

Meetings Coordinator

Bettye Anne Case; case@math.fsu.edu

Newsletter Editor

Anne Leggett; leggett@math.luc.edu

AWM OFFICE

Director of Membership, Meetings and Marketing

Dawn V. Wheeler; awm@math.umd.edu

Financial and Grants Administrator

Douglas L. Farquhar; awm@math.umd.edu

4114 Computer & Space Sciences Building
University of Maryland
College Park, MD 20742-2461
301-405-7892; awm@math.umd.edu

Massachusetts representative, for which we are grateful. But now AWM has a new Clerk, Sue Geller of Texas A&M University. She will have begun her new duties (by the time you read this) by counting election ballots and will serve as secretary at the January Executive Committee meeting. Welcome aboard, Sue!

The AWM election deadline has not yet been reached as I write this, so I do not know the outcome of the voting for Members-at-Large. However, I believe that all the candidates were absolutely excellent, and however it has turned out, AWM will have an able and dedicated leadership for the next two years. Amy Cohen will continue doing her excellent work as Treasurer. We bid a fond farewell to our departing Past President Sylvia Wiegand and a warm welcome to our incoming President-Elect Suzanne Lenhart.

As I am about to enter the second half of my service to AWM as President, it seems appropriate for AWM, along with most other organizations, to take stock of itself and where it is going. AWM has a lot of potential. Its mission is to encourage women to study and have active careers in the mathematical sciences, and that can be interpreted quite broadly. We could just sit back and continue doing what we've done well since the beginning of the organization, which is to bring the presence of women in mathematics to prominence in the public eye and to publish the *Newsletter* to keep us all in touch, or we can look for new opportunities. Historically, it has been up to the Presidents to initiate new programs; many have, although sometimes they have found themselves simply struggling to keep the ship afloat. The primary resource of the organization continues to be its devoted membership.

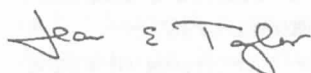
AWM's web site, established as a permanent presence a year and a half ago, continues to expand, adding resources that are attracting practicing mathematicians and students alike. A major new venture is the on-line advertising, mentioned above, plus the on-going forum. I am enormously grateful to our web editor, Tamara Kolda, and her assistant Ruth Pfeiffer for their excellent work.

AWM's central office has undergone a major upgrading, thanks to an infrastructure grant from NSA. There are new computers and new software (just in time, I hope, to have avoided any Y2K problem!), new chairs and new printers.

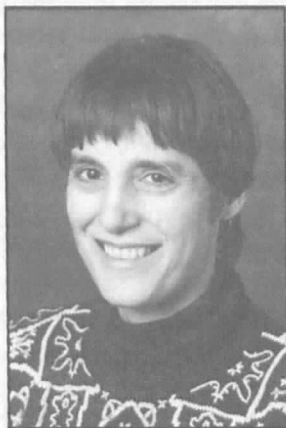
In terms of new programs, the mentoring travel grant program is in operation. The Sonia Kovalevsky High School Mathematics Days for women program is expected to receive a major grant from the outreach efforts of the International Mathematical Olympiad 2001 organization. The AWM Scholars program at the AAAS annual meeting should shortly get off the ground; it was started late in 1999, so we hope that there are enough good applicants. (Check the web site to see if the application period has been extended, and if so, consider nominating your students.) AWM has joined the Combined Membership List; sometime this year

AWM members and volunteers will be able to start reaping the benefits of this.

My hopes for the remaining year of my presidency are to continue to put the running of AWM on a sound basis, both organizationally and financially. If we can increase the membership, advertising, and grants basis, we can continue to increase AWM's programs. The incoming President, Suzanne Lenhart, has said she intends to make AWM's activities in the K-12 arena a main focus of her efforts, and I am delighted to have her taking over that aspect. We need to push ahead on all fronts, until the time that women's presence in academic and corporate mathematics, in research and teaching and administration, is so widespread and culturally accepted that it is unremarkable.



Jean E. Taylor
Princeton, NJ
November 20, 1999



IN MEMORIAM

Anneli Cahn Lax, a professor and editor who was a leader in the publishing of mathematical literature, died on Friday at her home in Manhattan. She was 77. Anneli Lax had pancreatic cancer, said her husband, Peter Lax. She retired in 1992 from New York University, where she had been a professor for 31 years after holding other posts there for 18 years.

In her dissertation at NYU and in later publications, she made significant contributions to the theory of hyperbolic equations....

excerpted from an obituary by Eric Pace, The New York Times, September 29, 1999

MEMBERSHIP AND NEWSLETTER INFORMATION

Membership dues

Individual: \$50
Family (no newsletter): \$30 Retired, part-time: \$25
Student, unemployed, developing nations: \$15
Contributing: \$100
All foreign memberships: \$8 additional for postage
Dues in excess of \$15 and all contributions are deductible from federal taxable income.

Institutional Members:

Level 1 (one free basic job ad and up to ten student memberships): \$150 (\$230 foreign)

additional student memberships: \$15 (\$23 foreign) for next 15; \$11 (\$19 foreign) for remainder

Level 2 (one free basic job ad and up to three student memberships): \$95 (\$120 foreign)

Institutional Sponsors:

Friend: \$1000+ Patron: \$2500+
Benefactor: \$5000+ Program Sponsor: \$10,000+

Subscriptions and back orders

All members except family members receive a subscription to the newsletter as a privilege of membership. Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for \$50/year (\$58 foreign). Back orders are \$6/issue plus shipping/handling (\$5 minimum).

Payment

Payment is by check (drawn on a check with a U.S. branch), U.S. money order, or international postal order. Cash payment will be accepted if necessary, but only in U.S. currency.

Ad information

AWM will accept advertisements for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership and other appropriate subjects. The Director of Marketing, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the newsletter must be Affirmative Action/Equal Opportunity designated.* A basic ad is four lines of type. Institutional members receive one free basic job ad as a privilege of membership. For non-members, the rate is \$60 for a basic ad. Additional lines are \$6 each.

Deadlines

Editorial: 24th of January, March, May, July, September, November

Ad: 1st of February, April, June, August, October, December

Addresses

Send all **Newsletter material except ads and material for book review and education columns** to Anne Leggett, Department of Mathematical and Computer Sciences, Loyola University, 6525 N. Sheridan Road, Chicago, IL 60626; email: leggett@math.luc.edu; phone: 773-508-3554; fax: 773-508-2123. Send all **book review material** to Marge Murray, Department of Mathematics, 460 McBryde Hall, Virginia Tech, Blacksburg, VA 24061-0123; email: murray@calvin.math.vt.edu and all **education column material** to Ginger Warfield, Department of Mathematics, University of Washington, Seattle, WA 98195; email: warfield@math.washington.edu. Send everything else, **including ads and address changes**, to Dawn V. Wheeler, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461; phone: 301-405-7892; email: awm@math.umd.edu.

AWM CHALLENGE GRANT

January is the last month for us to improve our finances by enrolling new members: an anonymous donor will give AWM \$2 for each new member joining in January. Encourage your colleagues to join, or give a membership (only \$15) to the most promising student you know. Be sure to write "challenge grant" at the top of the membership form.

AWM ONLINE**Web Editor**

Tamara G. Kolda; kolda@sandia.gov

Associate Web Editor

Ruth Pfeiffer; prfu@math.umd.edu

Web Page

<http://www.awm-math.org>

AWM-Net Editor

Dianne O'Leary; oleary@cs.umd.edu

AWM-Net

send mail to awm-net-request@cs.umd.edu and include your email address; AWM members only

AWM DEADLINES

AWM Workshop, Rio Grande, Puerto Rico:
January 25, 2000

NSF-AWM Travel Grant: February 1,
May 1, October 1, 2000

NSF-AWM Mentoring Travel Grant:
February 1, 2000

Sonia Kovalevsky High School Days
(pending funding):
February 4, 2000

AWM-AAAA Scholars: see web page

AWM Workshop, New Orleans:
September 1, 2000

Louise Hay Award: October 1, 2000

Alice T. Schafer Prize:
October 1, 2000

AWM CALENDAR

AWM at the Joint Meetings, Washington,
DC, January 13-19, 2000

2000 Noether Lecturer: Margaret Wright,
Bell Labs, Lucent Technologies,
"The Mathematics of Optimization"

AWM Workshop, SIAM meetings,
Puerto Rico, July 9-11, 2000

She may be best known, however, for her contributions to the understanding of mathematics by both students and lay people, especially as the editor of the Mathematical Association of America's New Mathematical Library Series. The series ... was planned, by Lax and others, to make mathematics accessible to the general reader without stinting on technical accuracy. Its first two books, *Numbers: Rational and Irrational* by Ivan Niven and *What Is Calculus About?* by W.W. Sawyer, are still in print....

In addition, Lax "led the way in changing mathematical pedagogy, in exploring the connections of mathematics to the larger curriculum, in understanding the interplay between language and mathematics," Joanne V. Creighton, president of Mount Holyoke College, said in awarding her an honorary degree in 1997....

"There is a misconception among people and schoolchildren about the nature of mathematics," [Lax] said in a 1979 interview. "They consider it a matter of rules and regulations instead of thinking." The pressure, she said, was for pupils to come up with the right answer quickly, without time to analyze....

Lax was born in Kattowitz, Germany. She and her family fled Hitler's Germany in 1935 and settled in New York. She received a bachelor's degree in 1942 from Adelphi College and her doctorate in 1956.

Besides her husband of 51 years, who is also a professor of mathematics at NYU, she is survived by a son, Dr. James D. Lax of Manhattan, and three grandsons.

STARTING OUR CAREERS

In the six-year history of the Young Mathematicians Network many articles have appeared in its electronic newsletter *Concerns of Young Mathematicians* discussing professional development issues. The best of these articles have been collected in the AMS publication *Starting Our Careers: A Collection of Essays and Advice on Professional Development from the Young Mathematicians' Network*.

Edited by Curtis D. Bennett, Bowling Green State University, OH, and Annalisa Crannell, Franklin & Marshall College, Lancaster, PA, this "how-to" book addresses all aspects of a young mathematician's early career development: How do I get good letters of recommendation? How do I apply for a grant? How do I do research in a small department that has no one in my field? How do I do anything meaningful if all I can get is a series of one-year jobs? The articles paint a broad portrait of current professional development issues, from finding jobs to organizing special sessions. There are chapters on applying for positions, working in industry and in academia, starting and publishing research, writing grant proposals, applying for tenure, and becoming involved in the academic community. See <http://www.ams.org> for ordering info.

AWARDS AND HONORS

Maria Mitchell Women in Science Award

Who says good things don't happen to good people and good organizations? When Professor Barbara LiSanti of the Mills College Math and Computer Science Department nominated the Math/Science Network for the Maria Mitchell Women in Science Award for Expanding Your Horizons in Science and Mathematics™ (EYH™), we had no idea that the MMWISA would be the catalyst for so much generosity.

Astronomer Maria Mitchell, the first person to identify a comet visible only through a telescope, was a professor at Vassar in the nineteenth century. Her teaching, her discoveries, and her dedication to understanding the cosmos became a catalyst for encouraging women to pursue scientific careers over a century later.

The Maria Mitchell Women in Science Award, given annually by the Maria Mitchell Association in Nantucket, Massachusetts, was presented on October 2 at the Atheneum in Nantucket. The Award went to Lucent Technologies Bell Labs Graduate Research Program for Women, but the cash award of \$5,000 went to the first runner-up for the award, the Math/Science Network for EYH. Responding to a challenge from the MMWISA jurors, Lucent Technologies matched the award money, with Dr. Alice White of Bell Labs presenting an additional \$5,000 to the Network.

Accepting on behalf of the Network, Executive Director Betty Levitin paid tribute to the grassroots nature of the program, pointing out that each EYH conference is customized to the local community and that most are organized primarily by volunteers. She noted that EYH does what works for girls with its emphasis on hands-on activities, single sex settings for non-traditional activities, and interactions with women role models.

Pointing out that both the Network and the Bell Labs Graduate Research Program began in 1974, she emphasized the continuing need for efforts at all levels to encourage girls and women to persevere in math and math-based careers. As reported by the evening's Guest Speaker, Dr. Paula Rayman of the Radcliffe Public Policy Institute, the highest levels of science are still bereft of women: across the country only 3% of National Institutes of Health labs are headed by women. And too many girls still report that they will take math only so

long as it is required of them.

But, she noted, girls leave EYH with a documented better sense of what classes they should take and why. They take more math and science than they planned on before attending EYH, and they gain new ideas for future careers. It can be years later that an EYH alumna checks in with EYH with news of the direction she found, and the great career, at a long ago EYH.

Congratulations to the women listed below for their meritorious achievements, and to Lee Lorch for his honorary degree.

In 1998, the Department of Mathematics and Statistics at the University of Montreal created a prize to be awarded annually to the best graduating B.S. student in statistics or actuarial science. This prize is named the PRIX CONSTANCE VAN EEDEN in recognition of Constance's instrumental role in the development of statistics at the University of Montreal. The prize, consisting of a certificate and a monetary award, was won in 1998 by Christian Coté and in 1999 by Alexis Gerbeau, both students in actuarial science.

An honorary degree was conferred on LEE LORCH at the Spelman College commencement on May 16, 1999. The citation reads:

Dr. Lee Lorch, Professor Emeritus and Senior Scholar at York University in Toronto, Canada, has not only made significant contributions to the field of mathematics but also has been a tireless fighter for human rights and educational opportunities for minorities and women. His more than 75 mathematical publications have illuminated several difficult problems and have generated international interest. Dr. Lorch is a Fellow of the Royal Society of Canada, a Fellow of the American Association for the Advancement of Science and has been elected to the Councils of the Canadian and American Mathematical Societies. He served as Chair of the Mathematics Department at Fisk University and Philander Smith College, and as a Visiting Professor at Spelman College and Howard University. Dr. Lorch, who has held positions at seven international universities and several other institutions in the United States, has waged a long, courageous and continuing struggle for civil rights and equal educational opportunities for minority groups. His struggle was

carried on at great personal cost including loss of employment. In the early 1940s he was dismissed from the City College of New York for attempting to end racial segregation in Stuyvesant Town, a large housing development in New York City. He later lost his position at Pennsylvania State University for subletting his apartment in Stuyvesant Town to a black family. He lost his position at Fisk University after attempting to force the Mathematical Association of America to admit his black mathematics department colleagues to a banquet at the regional meeting in Nashville and after attempting to enroll his daughter in the neighborhood school in the black neighborhood surrounding Fisk University. He has provided invaluable encouragement to women and African American women, in particular, to pursue higher degrees in mathematics. His teaching style, encouragement and mentoring have been immensely influential in producing African American mathematicians who are currently working at colleges and universities across the nation. Three of his Fisk students are among the first 10 African American women to earn the Ph.D. in mathematics. He has been recognized for his contributions to human rights through awards from several universities and national organizations.

The Thirteenth Annual Program Honoring African American History Month, held in February 1999 and sponsored by the National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and the National Research Council, was entitled "Celebrating African American Women in Science, Engineering, and Medicine: A Commitment to Excellence." EVELYN BOYD GRANVILLE was a portrait inductee. Her citation reads:

Evelyn Boyd Granville is a mathematician who has divided her career between mathematics and computer programming, primarily in the U.S. space program, and teaching. Dr. Granville graduated from Dunbar High School, at that time a segregated high school in Washington, D.C. that had gained a national reputation for the quality of its educational program. Dr. Granville then attended Smith College, graduating in 1945 summa cum laude with honors in mathematics, and Yale University, where she received an M.A. (1946) and Ph.D. (1949). Years later she learned that her Ph.D. from Yale was the first doctoral degree in mathematics received by a Black woman in the United States.

After spending a year as a research assistant at New York University, Dr. Granville taught for two years at Fisk University in Nashville and returned to Washington, D.C., to work on mathematical analysis of problems related to missile fuses for what later would become the Diamond Ordnance Fuse Laboratories of the Department of the Army. In 1956, Dr. Granville joined IBM Corporation where she was introduced to computer technology and programming. At IBM she was part of a team of mathematicians and scientists responsible for the formulation of orbit computations and computer procedures, first for NASA's project Vanguard and later for Project Mercury. After moving to California in 1960, she held positions at Space Technology Laboratories and North American Aviation, specializing in orbital computations and digital computer techniques in support of NASA space projects. She later rejoined IBM as a mathematician in the company's Federal Systems Division. In 1967, Dr. Granville returned to academia, joining the faculty at California State University, Los Angeles. In addition to courses in computer programming and numerical analysis, she taught a mathematics course for prospective elementary school teachers. Dr. Granville later co-authored a college textbook on the teaching of mathematics.

After teaching for 17 years in Los Angeles, Dr. Granville moved to East Texas in 1984 with the intent of retiring. Instead, she spent 3 1/2 years as a professor of mathematics and computer science at Texas College, a historically Black college in Tyler, Texas. In 1990, she was appointed to the Sam A. Lindsey Chair at the University of Texas at Tyler and served there as a visiting professor of mathematics until her retirement in 1997.

She remains active in the field of education through visits to encourage the study of mathematics and the presentation of workshops to strengthen the teaching of mathematics.

Dr. Granville was also awarded an honorary doctorate by Lincoln University in May, 1999. That citation reads:

This month marks the 50th anniversary of your becoming the first African American woman to be awarded a Ph.D. in mathematics. This you achieved at Yale University where Professor Einar Hille, member of the National Academy of Sciences and a President of the American Mathematical Society, had accepted you as a doctoral student.

In 1945 you graduated from Smith College summa cum laude — with highest honors —

accomplishing this feat while working as a college waitress to help finance your education. In 1989 Smith College expressed its pride in your subsequent career by conferring on you its highest honor, Doctor of Science, *honoris causa*.

You had been well prepared for Smith College at the justly celebrated Dunbar High School in your home town of Washington, D.C., and have always acknowledged with affection and pride your teachers there.

Your professional career has spanned academia, government and industry, and academia again. At its onset, you were Associate Professor at Fisk University (1950–52). Several of your students there, men and women alike, inspired by your example and your teaching, challenged by your uncompromising insistence on high standards, and encouraged by your support, subsequently themselves earned Ph.D.'s in mathematics.

As one example of your exemplary support, we recall your participation in the first ever demand by African American mathematicians to participate fully in the Southern meetings of the Mathematical Association of America. When the organizers of that meeting refused admission of African American mathematicians to the official banquet, you demonstrated integrity and courage in facing the President of that Association to demand an end to such discrimination. This you did in the face of opposition from that very influential mathematician as a young scholar at the very outset of your career. Your unwavering stance on that occasion serves as an example for young people of all generations.

You persisted with your colleagues in exposing what had happened and helped force the Mathematical Association to address its own racism, leading — after some delay — to formal rulings outlawing discriminatory practices at its meetings, wherever held.

Dr. Granville, over a long career you have ever conducted yourself with courage, dignity, honesty, and kindness. You have promoted the highest professional standards. By the authority vested in Lincoln University by the Commonwealth of Pennsylvania, and with the consent of the Board of Trustees of Lincoln University, it is with appreciation, affection and pride that I hereby confer upon you our highest honor, the degree of Doctor of Science, *honoris causa*, with all the rights and privileges pertaining thereto.

PROFESSOR GUDRUN KALMBACH, H.E., has received a number of honors for her scientific work this century.

Her election in 1999 to the Order of International Ambassadors by the American Biographical Institute earned her the right to append “H.E.” to her name. The International Biographical Centre of Cambridge, England has included her in its list of Outstanding People of the 20th Century “in honour of an Outstanding Contribution to Mathematics, Sciences, Talent Development and Equal Rights for Women.” An article by Anatolij Dvurecenskij lauding her achievements appeared in *Tatra Mountains Mathematical Publications* 15 (1998), pp. 9–11, in celebration of her 60th birthday.

Professor Kalmbach received her degree in mathematics in 1966 from Göttingen and her habilitation from the University of Ulm in 1975. She worked in several U.S. departments of mathematics from 1967 to 1975 and came to the University of Ulm, her current institution, in 1975. Her most important mathematical contributions are in the area of orthomodular lattices.

Professor Kalmbach initiated a Day of Mathematics program in 1984 for high school students in Baden-Württemberg. She has also founded two scientific unions, the Union of Mathematically Talented Youth and the Emmy-Noether-Union for Women in Maths.

LENORE J. COWEN is one of the 38 distinguished scholars, writers, artists, scientists, and activists who are 1999–2000 Fellows at the Bunting Institute at Radcliffe College. Cowen will continue her research using the Approximate Distance Clustering (ADC) method for her project “Approximating High-dimensional Datasets with Applications in Computational Biology.”

Cowen is currently an assistant professor of math science with a joint appointment in computer science at Johns Hopkins University. She has also served as a post-doctoral fellow at Rutgers University’s Center for Discrete Mathematics and Theoretical Computer Science and at the Institute for Mathematics and Its Applications, University of Minnesota.

Cowen earned her B.A. in mathematics from Yale University in 1987 and her Ph.D. in applied mathematics from the Massachusetts Institute of Technology in 1993 after completing a dissertation on network and graph algorithms.

The first Kovalevskaja Scholar at the University of Western Cape, Cape Town, South Africa, is MOBONE PRESCILLA MAMABOLA, a third-year undergraduate in mathematics and mathematical statistics. She came to

the university from one of the poorest regions of the country with major deficiencies in her mathematical preparation. She entered the Bridge Program, designed for students in her situation, and is now one of the Program's great success stories. The Scholarship is funded by the Kovalevskaia Fund (email koblitz@math.washington.edu for more information on the Fund, which "aims to encourage women in science and technology in developing nations through appropriate forms of support)."

The *Kovalevskaia Fund Newsletter* also brings the following news from Uldarico Malaspina, Professor of Mathematics, Pontifical Catholic University of Peru:

LIZ VIVAZ [a 16-year-old Peruvian girl who started competing in math olympiads at age 13] is already

a university student in Pure Mathematics at the Catholic University, having won first place in the admissions competition for the Science Faculty. She also won first place at the National Engineering University, where she entered the program in Electrical Engineering.... It has been many years since the last time a woman won first place at the National Engineering University! She is now studying at both universities (with a full scholarship at Catholic University), but she says that eventually she will study only mathematics.

We are preparing now for the Tenth Mathematical Olympiad of Southern Cone Countries, which will be held from May 17–24 in Cordoba (Argentina). One of the youngsters selected for our team is 15-year-old BETSY ARANA CADILLO....

The Kovalevskaia Fund paid for half the airfare for Cadillo and CECILIA GAITA to attend the olympiad.

CALL FOR NOMINATIONS: LOUISE HAY AWARD

The Executive Committee of the Association for Women in Mathematics has established the Louise Hay Award for Contributions to Mathematics Education, to be awarded annually to a woman at the Joint Prize Session at the Joint Mathematics Meetings every January. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense.

The nomination documents should include: a one to three page letter of nomination highlighting the exceptional contributions of the candidate to be recognized, a curriculum vitae of the candidate not to exceed three pages, and three letters supporting the nomination. It is strongly recommended that the letters represent a range of constituents affected by the nominee's work. *Five* complete copies of nomination materials for this award should be sent to: The Hay Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. Nominations must be received by **October 1, 2000**. For more information, phone (301) 405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.

CALL FOR NOMINATIONS: ALICE T. SCHAFFER MATHEMATICS PRIZE

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schaffer Mathematics Prize to be awarded to an undergraduate woman for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize. The nominee may be at any level in her undergraduate career. She must either be a U.S. citizen or have a school address in the U.S. The eleventh annual Schaffer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in New Orleans, Louisiana, January 10–13, 2001.

The letter of nomination should include, but are not limited to, an evaluation of the nominee on the following criteria: quality of performance in mathematics courses and special programs, demonstration of real interest in mathematics, ability for independent work in mathematics, and performance in mathematical competitions at the local or national level, if any.

With letter of nomination, please include a copy of transcripts and indicate undergraduate level. Any additional supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, recommendations letters from professors, colleagues, etc.) should be enclosed with the nomination. Send *five* complete copies of nominations for this award to: The Alice T. Schaffer Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. Nominations must be received by **October 1, 2000**. If you have questions, phone 301-405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.

BOOK REVIEW

Patricia Clark Kenschaft, **Math Power: How to Help Your Child Love Math, Even If You Don't**, Addison-Wesley, Reading, MA 1997. x+310. ISBN 0-201-77289-2 (paper), \$15.00.

Reviewed by: Bridget Arvold, Department of Curriculum and Instruction, College of Education, University of Illinois at Urbana/Champaign, Champaign IL 61820; arvold@uiuc.edu.

Many reports and articles lead Americans to believe that mathematics education in the United States is a sad state of affairs. Textbook publishers, program developers, teachers, and teacher educators have become targets for attack. In *Math Power: How to Help Your Child Love Math, Even If You Don't*, Patricia Clark Kenschaft not only offers her perspective on a plethora of issues in mathematics education but invites parents to become involved in their children's mathematics education. She addresses parents "who are willing to play with math for the sake of their children." Kenschaft is motivated by her work with children and her concern for the future of mathematics. "As real mathematics struggles for survival in our culture," Kenschaft writes, "it becomes increasingly urgent that parents share real mathematics with their children." She describes *Math Power* as a guide to parents who, as she noted, "may or may not possess 'mathematical minds.'"

Kenschaft shares her perspectives on the nature and value of mathematics, and on mathematical ability and development. In some cases, however, her incorporation of outside perspectives confuses rather than clarifies matters. She emphasizes the need for parental involvement in the school community and urges parents to promote enjoyable mathematical experiences at home. She suggests that parents help their children view failure and frustration as a natural part of learning. Although the mixed messages about the enjoyable and frustrating nature of doing mathematics might confuse some readers, her messages speak to the complexity of learning mathematics.

Kenschaft reveals how her teaching experiences brought her to the realization that the basics of school mathematics often leave children confused. Her

involvement with PRIMES, the Project for Resourceful Instruction in Mathematics in the Elementary School, provided her with insights into early childhood education. She describes the nature of context-free mathematics terminology and shares her feelings: "Pity the poor children trying to figure out the meaning of basic mathematical words." Her frustration spilled over into her graduate level classes and became an important topic of discussion there. Convinced of the power of understanding the basic concepts in mathematics, she pours her convictions about developing math power into this resource for parents.

Although Kenschaft supports the organizational and relational nature of mathematics, her book focuses on coping with conventional school mathematics and downplays mathematical enjoyment. Statements such as, "You must have a resilient ego to live with yourself while learning math" reflect little of the natural "enjoyment" she claims as necessary in parent-child activities. Remarks like, "The U.S. system is so unreliable, we must give our children every possible advantage to endure it," reveal her feelings of frustration with the present system. Parents, especially those who were unsuccessful with school mathematics, might trust the author and follow the suggestions to make their children "smart kids." But they are likely to be confused by messages such as, "Simple math is harder than you thought," and "We all learn that failure is inevitable — but followed by success." While such statements might be true within given contexts, the mixed messages they offer parents may be debilitating. In her effort to help parents thwart children's confusion, she may also incite parental confusion.

The mathematics education literature offers a host of rationales for supporting early mathematical development. Turback (1999) shares a biological research perspective that posits that although babies may be born with neural wiring, most connections form during infancy and childhood. He adds that even while in the womb, humans begin to build connections that form the foundation of language. Moreover, he reports that the analysis of data collected from monitoring human brain activity indicates that specific types of connections are made within small time periods. Findings suggest that if children are not appropriately stimulated during this

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

time, they may never be able to learn a specific concept or skill. From these findings, we might hypothesize that the foundations for the language of mathematics are also formed in a child's earliest years and therefore parental nurturing is crucial to their mathematical development.

In *The Language Instinct*, Steven Pinker (1994) describes language not as a cultural artifact that is learned — as, for example, we learn to tell time — but as a distinct piece of our biological makeup. From this perspective, mathematical language is integral to our very being and complements a natural penchant for organization and inquiry. Pinker adds that much of formative human experience relies on touch, sound, and sight. Thus the construction of the language of mathematics might be enhanced by distinguishing shapes by touching, hearing the cadences of number patterns, and noting similarities and differences. Kenschaft incorporates such approaches to language acquisition — despite the fact that her perspective on child development is quite different from Pinker's. For example, she believes that newborns are filled with mathematical potential at birth and that diminished potential is due to our corruptive culture. Thus Kenschaft provides parents with a quite different basis for creating a positive learning environment for their children.

Although books of elementary mathematics activities abound, relatively few authors direct attention toward helping parents nurture the mathematical development of their children. Kenschaft approaches this task by focusing on preparation for conventional school mathematics activities. A focus on counting and recognition of number patterns and polygonal shapes, for instance, offers children cultural artifacts that prepare them for conventional school activities. Kenschaft's suggested activities *connect* to children's worlds, but few *build* from children's worlds or their parents' worlds. Such building is based on fundamental mental and intuitive processes that are distinct pieces of a child's biological makeup. For example, enhancing story time with children's mathematics literature (see Bresser 1995; Burns 1992) provides parents with subtle ways to expand children's ways of thinking. The mathematics within existing family practices provides learning opportunities for both children and parents.

In a description of mathematics programs involving parents, Kliman (1999) suggests that adults build from natural mathematical processes that are often hidden from view. She describes how the matching and sorting

that accompany laundry chores can serve as a basis for subtle mathematical discussion. Kliman, like Kenschaft, promotes skill and concept development — but Kliman emphasizes relational thinking, reasoning, and problem solving as embedded within story time, outdoor activities, road trips, and household chores rather than as additions to existing activities. Yet both approaches offer parents and children opportunities for extending themselves mathematically.

Descriptive accounts of parents' experiences with a child's mathematics — although lengthy — might better enable parents to foster mathematical development. For example, when my three-year-old daughter Trina voiced her wonderment about how we would share ten dinner rolls among the four at the table, we asked her to distribute the rolls for us. She passed one roll to each person and then another to each. She broke each of the two remaining rolls into two pieces, and distributed the pieces equally among us. She smiled widely as she declared that we each received “two and a half rolls so we each got the same.” My amazement only grew when five-year-old Erica piped in with, “No, we did not get the same amount. Actually, I don't have two and a half because halves must be the same size and my half is bigger than your half.” She immediately realized that the very words she had spoken, “my half is bigger than your half,” contradicted her message and she broke out in laughter that was contagious.

The messages that parents might accord to this short account are numerous. Parents might learn a strategy for division. They might realize the power of language and children's ability to communicate and think abstractly. Child-initiated mathematical activities are well worth the attention of parents, and simple analysis of children's dialogue might help parents learn to recognize and make the most of possible learning situations.

The belief that a young child constructs meaning has prompted the recent focus on student engagement in reasoning, problem solving, making connections and communicating mathematically (NCTM, 1989, 1999). Although Kenschaft uses a riddle and a description of a game called 7-Up to highlight these process standards, her mention of these areas of cognitive and social development is far too brief to adequately prepare parents to ready their children for the classrooms of today. She might have relegated what she termed her “tirade” to a separate publication rather than including it in a motivational guide to parents. Nonetheless, *Math Power* incites

parents to become involved in their children's education and offers them insights into how they might help their children. In this sense, it provides a much needed resource for parents.

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SONIA KOVALEVSKY HIGH SCHOOL MATHEMATICS DAYS

Through grants from Coppin State University, IMO 2001 USA, Inc., Microsoft Corporation, and the National Security Agency (NSA) (*pending final funding approval*), the Association for Women in Mathematics expects to support Sonia Kovalevsky High School Mathematics Days at colleges and universities throughout the country. Sonia Kovalevsky Days have been organized by AWM and institutions around the country since 1985, when AWM sponsored a symposium on Sonia Kovalevsky. They consist of a program of workshops, talks, and problem-solving competitions for high school women students and their teachers, both women and men. The purposes are to encourage young women to continue their study of mathematics, to assist them with the sometimes difficult transition between high school and college mathematics, to assist the teachers of women mathematics students, and to encourage colleges and universities to develop more extensive cooperation with high schools in their area.

AWM anticipates awarding at least eighteen to twenty grants of up to \$3000 each (*pending final funding approval*) to universities and colleges; more grants may be awarded if additional funds become available. Historically Black institutions and women's colleges are particularly encouraged to apply. Programs targeted towards inner city or rural high schools are especially welcomed. If selected, institutions will receive an information packet consisting of model schedules of activities, a check list for the sorts of arrangements that need to be made, suggestions for securing additional funding and for obtaining prizes to be awarded to contest winners, recruitment and publicity material to be adapted for local use, lists of possible workshop topics for students and teachers, model problem-solving-contest material, and guidelines for follow-up activities and evaluation.

Applications, not to exceed five pages, should include: a) tentative plans for activities, including specific speakers to the extent known; b) qualifications of the persons to be in charge; c) plans for recruitment, including the securing of diversity among participants; d) itemized budget; e) local resources in support of the project, if any; and f) tentative follow-up and evaluation plans.

Decisions on funding will be made late February to early March. The high school days are to be held in Spring 2000 and Fall 2000. Reports on funded high school days are to be made to AWM within four to six weeks of completion. In addition, all receipts (originals or copies) for reimbursement must be submitted to AWM 30 days after the institution's event or no later than December 1, 2000, whichever comes first. Reimbursements will be made in one disbursement; no funds can be disbursed prior to the event date.

As a special Year 2000 enhancement of the program, AWM hopes that at least one SK Day workshop will be held in every state of the United States! Unfortunately AWM does not anticipate sufficient funding for that number of workshops. In case AWM receives more excellent proposals than the Association can fund, the applicants will be encouraged to find other funds to support their AWM Sonia Kovalevsky High School Day workshop proposals. AWM is happy to provide information and assistance to organizers of SK Days.

Send *five* complete copies of the application materials to: Sonia Kovalevsky Days Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461; email: awm@math.umd.edu; phone: 301-405-7892. Applications via email or fax will not be accepted. Applications must be received by **February 4, 2000**.

THE OLGA TAUSSKY TODD CELEBRATION OF CAREERS IN MATHEMATICS FOR WOMEN: Part II

Meandering Mathematical Career Paths

From a distance, it can appear that all successful mathematicians had simple career paths, striding up the ladder in their chosen university, government laboratory, or industrial environment. In reality, though, many successful careers are far more circuitous than this, involving changes of course either because of changes in the mathematician's priorities or because of external events.

The career of Olga Taussky Todd (1906–1997) is a prime example of this. A saturated job market in Europe, followed by the upheavals of war, caused her to begin her career in a series of temporary positions, sometimes unpaid. Despite this, she thrived in a number of venues ranging from academe to government. Meanwhile, a change in her interests (“I did not look for matrix theory. It somehow looked for me.”) led her to deemphasize her number theory research. Yet even after she was well established, nepotism rules denied her the academic rank that she deserved, although she did not let this hinder her teaching or her research.

The Olga Taussky Todd Celebration of Careers in Mathematics for Women highlighted the plethora of employment opportunities for mathematicians outside of the narrow traditional academic track and the wide variety of career paths that are possible. The speakers were chosen to illustrate some of the lesser-known career paths.

Fern Hunt (NIST), who spoke on the daunting task of modeling paint, began her career teaching at Howard University, but later expanded her one-day-a-week consulting job at the National Institute of Standards and Technology (a successor to an agency that employed Taussky Todd) into a full-time career.

Linda Petzold's career (University of California, Santa Barbara) went in the opposite direction. There was an enthusiastic response to her presentation, “Math with an Attitude,” which described her career that began with a software development project in a national lab and led from there to an ill-fitting academic job and then to the right match.

Three speakers, Lisa Goldberg (BARRA), Diane Lambert (Bell Laboratories), and Lani Wu (Microsoft), discussed being unexpectedly captured by applications: Goldberg by financial modeling at an investment firm, Lambert in a data mining division, and Wu by a variety of software problems.

Evelyn Boyd Granville gave an inspiring presentation on her journey from being the first black woman to obtain a Ph.D. in mathematics in the United States (Yale, 1949) to contributions in academics, government, and industry, and her continuing active involvement in K–12 mathematics education. She noted that as opportunities for women and minorities have increased, the pool of bright and qualified K–12 teachers has diminished, and this has serious implications for the pipeline of women and minorities interested in mathematics. It is worth visiting <http://www.agnesscott.edu/lriddle/women/granvill.htm> to learn more about her story.

Margaret Wright (Bell Laboratories) and Cathleen Morawetz (Courant Institute) both spoke on the transition from marginal academic jobs to mainstream careers, Wright in industry and Morawetz in academia. Both of these women have combined research with a strong commitment to the mathematical community, serving as presidents of two of the major U.S. mathematical societies.

A constant theme of the speakers was, “When I was in graduate school, I never thought I would be doing what I am doing now!” Their advice to their younger colleagues was to keep their minds open and not stay immersed in small problems. Whether they discussed their roles in teaching, research, or service to the community, they seemed to echo the words of Taussky Todd: “But it seems to me that both in the work of others and in my own I look for beauty, and not only for achievement.”

Videos of the major presentations at the conference are available for viewing from the MSRI website, <http://www.msri.org/>, under “videos, MSRI Spring 1999”. Proceedings of the conference are planned as the highlight of a volume in preparation by AWM.

This concludes the report begun last issue. Bettye Anne Case, Florida State University, was the section editor for both parts. Dianne P. O'Leary, University of Maryland, in this section amplifies on Case's report in part one.

Remarks from participants

Lesley Ward, Harvey Mudd College

As part of the Olga Taussky Todd Celebration, 37 young women mathematicians (recent Ph.D.'s and graduate students) participated in the conference workshop, along with 25 more senior women mathematicians who acted as mentors. The workshop was an augmented version of the very successful workshops AWM has held at national meetings of the AMS, MAA, and SIAM over the last eleven years. The current workshop was strongly enriched by the context of the three-day conference celebrating women's achievements and potential in mathematics.

The 37 workshop participants presented posters on their research in three lively one-hour poster sessions in the MSRI foyer. We participants did not give formal talks, but were able to explain our work to many interested listeners. These sessions were very well attended, and there was excitement in the air as students in particular enjoyed the wonderful feeling of finding that mathematicians other than themselves and their thesis advisors were interested in their results. Much networking went on during the poster sessions. As some undergraduate students at the conference remarked, it was especially helpful to see many applied mathematics presentations, suggesting new answers to the perennial question: "What can I do with a math degree?"

The mentoring aspect of the workshop was very successful. Pairs of graduate students and recent Ph.D.'s were matched with senior women mathematicians (from academia and industry) for a relaxed lunchtime discussion. The small-group format produced many effective conversations, touching on themes such as writing successful grant proposals, job search techniques, childcare, time management, careers in industry, and negotiating the path towards academic tenure, as well as discussion of the mentees' own research. Throughout the rest of the conference, we continued to see our mentors informally, and many of them appeared as panelists or plenary speakers.

The workshop was enhanced by the conference's ten plenary speakers and three panels. As well as discussing their mathematical work and some aspects of Olga Taussky Todd's life and work, the speakers generously shared their personal experiences and advice. Some of the more striking suggestions from the popular panel on "Issues and inside information for women in

mathematics": (1) Plan your CV: once a year take your CV to your department chair or manager, and ask what should be on it; then take steps accordingly. (2) In addition to grants like the POWRE grant, the AWM Mentoring Travel Grant, the AAUW grants (underutilized in mathematics) and the NSF summer grants, there are also many non-research grants, from the NSF and other sources, which often reduce teaching loads. (3) You can make your own research grant; set aside ten percent of your salary for conferences, travel for joint work, books, and other research expenses. In short, the workshop was an energizing and very useful experience, significantly enhanced by the surrounding conference with its more than 100 women mathematicians and its supportive atmosphere.

Claudia Polini, Hope College

In the paragraphs below, I will recount the experiences I shared during the panel "Issues and inside information for women in mathematics" organized by Sylvia Wiegand. I am always thankful for the support I have received from AWM all along my "short" (thus far) career. The Taussky Celebration was an excellent opportunity for me to interact with fellow women in my own and other mathematical areas. It also gave young mathematicians, such as myself, personal time with more established researchers and scientists, and allowed us to discuss different careers in mathematics. I really appreciated the advice and tips of my mentor. Additionally, the conference outlined potential strategies for women in mathematics to improve and to pursue more successfully their careers. Young people were given the chance to present their work at the poster session and get valuable input. In conclusion: Thanks to the AWM for the great organization job and the great opportunity afforded by the Celebration!

After graduating from the University of Padova (Italy) in 1990 I decided that I wanted to do active research in mathematics, more precisely in algebra. The U.S. was the best place where I could achieve that, so I embarked on my "American Adventure." After five years, I graduated from Rutgers University with a Ph.D. in commutative algebra under the direction of Wolmer Vasconcelos. What next?

Then, three years of postdoc followed; I spent them at Michigan State University. The experience there was extremely profitable and I was reassured that I enjoyed

doing research in mathematics. I also liked a lot the way of living here in Michigan, so I actively tried to remain in the area.

I got a tenure-track offer from Hope College. At first, I was reluctant to accept because it is a small, highly selective liberal arts college. I really liked the idea of having closer contact with the students, but I was afraid that a heavy teaching load would result in sacrificing my fairly young research career. I was pleased to discover, though, that Hope College has a strong science division and research is highly valued and strongly supported.

I am currently a co-PI of an already existing REU grant (note that Hope College ranks third in the nation for the number of REU research grants in science), and I also received a research NSF-RUI grant for a period of three years. As part of the latter grant, the College gave me a reduced teaching load; now I teach two courses per semester. Before the last grant was awarded, I still managed to do a good amount of research, even if this meant that I often had to stay in the office late at night.

In this situation, the only disadvantage of a small college is that we do not have many seminars and cannot afford to have a large library. But we are in the era of technology, so if one has a reasonable number of close collaborators most of those disadvantages can be overcome. I also found it very helpful to attend the weekly seminars at Michigan State University and to participate in national and international meetings.

Jennifer Switkes, Claremont Graduate University

The presentations were all very interesting. It was exciting to have the chance to hear dynamic women mathematicians speak about their work. It was also interesting to me to see the wide variety of personalities and interests among the women present. In talking with some of the other graduate students, I discovered that many of us are at this point much more passionate about teaching than about research. I would really have liked to have heard from some of the established mathematicians about their teaching experiences. AWM conferences would be a great place to encourage women graduate students who know they love teaching to pursue this in a career at a four-year college or university!

Graduate student and recent Ph.D. participants

Elizabeth S. Allman, University of North Carolina-

Asheville

"Subgroup Separability and Hyperbolic 3-manifolds"

Elizabeth A. Arnold, University of Maryland,
College Park

"Using Hilbert Lucky Primes to Compute Gröbner Bases"

Lora Billings, University of Delaware

"Newton's Method and Chaotic Attractors"

Andrea Codd, University of Colorado at Boulder

"Elasticity: Fluid Coupled Systems"

Sylvia Cook, The University of Iowa

"Two Star-Operations and Their Induced Lattices"

Sharon Frechette, Wellesley College

"Hecke Structure of Spaces of Modular Forms"

Sarah J. Greenwald, Appalachian State University

"Diameters of Spherical Alexandrov Spaces and Constant Curvature One Orbifolds"

Cheryl Grood, Swarthmore College

"Centralizer Algebras of $SO(2n, C)$ "

Weiqing Gu, Harvey Mudd College

"Volume-Preserving Great Circle Flows on the 3-Sphere"

Rachel W. Hall, Pennsylvania State University

"Hecke C^* -Algebras"

Deborah Heicklen, University of California, Berkeley

"Discretizing Randomly Perturbed Dynamical Systems"

Sanjukta Hota, Columbia State Community College

"A Mathematical Model for Carbon Dioxide Exchange during Mechanical Ventilation with Tracheal Gas Insufflation (TGI)"

Chris Hurlburt, University of New Mexico

"Differential Modular Forms"

Lois Kailhofer, University of Wisconsin-Milwaukee

"A Classification of Inverse Limit Spaces with Periodic Critical Points"

Annella Kelly, Northeast Louisiana University

"Analytic Measures"

Megan Kerr, Wellesley College

"New Homogeneous Einstein Metrics of Negative Ricci Curvature"

Sandra Kingan, Trinity College, D.C.

"Structural Results for Matroids"

Tanya L. Leise, Rose Hulman Institute of Technology
 "Dynamically Accelerating Cracks along a Bimaterial Interface"

Jing-Rebecca Li, Massachusetts Institute of Technology
 "Vector ADI: A Low Rank Right Hand Side Lyapunov Equation Solver, with Applications to Model Reduction"

Moira A. McDermott, Gustavus Adolphus College
 "Tight Closure and Singularity Theory"

Gema A. Mercado, University of Arizona
 "Formation of Hotspots and Dynamics of the Electric Field in Microwave Heating"

Dorina Mitrea, University of Missouri-Columbia
 "The Transmission Problem for Multilayered Anisotropic Elastic Bodies with Rough Interfaces"

Helen Moore, Stanford University/Bowdoin College
 "Gauss Map Omissions of Minimal Surfaces"

Susan Morey, Southwest Texas State University
 "Associated Primes and Ideals of Graphs"

Regan E. Murray, University of Arizona
 "Modeling Reaction Zone Dynamics of the Bioremediation Equations"

Nilima Nigam, Institute for Mathematics and its Applications, University of Minnesota
 "Variational Methods for Some Problems Exterior to a Thin Domain"

Ruth Pfeiffer, National Cancer Institute, National Institutes of Health
 "Some Problems for Stochastic Processes with Hysteresis"

Claudia Polini, Hope College
 "Ideals with Small Deviation"

Julianne Rainbolt, Saint Louis University
 "Extensions of Periodic Linear Groups"

Victoria Rayskin, University of Texas at Austin
 "Degenerate Homoclinic Crossings"

Vanessa Robins, University of Colorado at Boulder
 "Computational Topology with Applications to Fractal Geometry"

Karen L. Shuman, Dartmouth College
 "Signal Processing with the Jacobi Group"

Masha Sosonkina, University of Minnesota-Duluth
 "Preconditioning Strategies for Linear Systems

Arising in Tire Design"

Jenny Switkes, Claremont Graduate University
 "Models of Coevolutionary Interaction"

Lesley Ward, Harvey Mudd College
 "Brownian Motion and the Shape of a Region's Boundary"

Julia M. Wilson, University of Wisconsin-Milwaukee
 "Non-uniqueness of Boundaries of CAT(0) Groups"

Golbon Zakeri, Argonne National Laboratory and the University of Wisconsin-Milwaukee
 "You Too Can Optimize using a Metacomputer"

Photo Montage

page 16, top: The Celebration [RD]; bottom: AWM President and Past Presidents: Mary Gray (American University), Bhama Srinivasan (University of Illinois at Chicago), Carol Wood (Wesleyan University), Alice T. Schafer (emerita, Wellesley College), Jean Taylor (Rutgers University), Sylvia Wiegand (University of Nebraska) [SW]

page 17, top left: Carolyn Mahoney (California State University San Marcos) [RD]; top right: Alice T. Schafer (emerita, Wellesley College) and Mary Ann McLoughlin (The College of Saint Rose) [RD]; bottom left: Lesley Ward (Harvey Mudd College) [RD]; bottom right: Victoria Rayskin (University of Texas at Austin), Vanessa Robins (University of Colorado at Boulder), and Krystyna Kuperberg (Auburn University) at a mentoring session [RD]

page 18, top left: Rebekka Struik (emerita, University of Colorado at Boulder) [RD]; top right: Isabel Beichl (National Institute of Standards and Technology), Evelyn Boyd Granville (emerita, California State University, Los Angeles), and Tamara Kolda (Sandia National Laboratories) [RD]; center left: Megan Kerr (Wellesley College), Andrea Codd (University of Colorado at Boulder), and Cathleen Morawetz (Courant Institute) at a mentoring session [RD]; center right: Lani Wu (Microsoft) delivering her plenary address [RD]; bottom left: Barbara Brown Flinn (National Security Agency) and Elizabeth Arnold (University of Maryland at College Park) at Elizabeth's poster [SW]; bottom right: Claudia Polini (Hope College) and Hema Srinivasan (University of Missouri, Columbia) at Claudia's poster [SW]

photo credits: [RD] R. Dimitric, copyright AWM/R. Dimitric; [SW] S. Wiegand







WOLF CREEK SUPPORTS ESU'S FIFTH SK MATH DAY

This year Emporia State University's Division of Mathematics and Computer Science hosted its fifth Sonia Kovalevsky Mathematics Day on February 18, 1999. Fifty-one students and seventeen teachers from southeast Kansas participated in this event. For the third year, this conference was made possible by a grant from Wolf Creek Nuclear Operating Corporation.

The day began with registration and a continental breakfast. Marvin Harrell and Betsy Yanik, program organizers, welcomed the participants to the day's events. Dr. Larry Scott, Chair of Emporia State's Division of Mathematics and Computer Science welcomed the attendees to the university and congratulated the young women on their success in high school mathematics.

During the morning's activities, each young woman selected one of four hands-on workshops. The choice of workshops included "The Power of Numbers" presented by Maxine Pennington and Debbie Hinkle, both of Allied Signal FM&T, "Soap Bubbles and Minimization" presented by Monica Meissen of Bethel College,

"Estimation to Answer the Nearly Impossible" presented by Jean Morrow of ESU, and "Balance, Bounce, and Jump into Modeling" presented by Betsy Yanik of ESU. While the students were engaged in these workshops, their teachers participated in a session entitled "Reform Calculus" led by Joe Yanik of ESU. Students and teachers jointly attended a career discussion session which was led by panelists Marcy Blow and Kathy Davis of Wolf Creek, Debbie Hinkle of Allied Signal, and Patty Delmott of the ESU Computing Center. Each career speaker described her job, discussed how mathematics is used in her daily work, and shared personal experiences about life as a professional woman. The morning concluded with the session "Game Shows with Math," which was developed and hosted by undergraduate ESU mathematics majors. Participants were grouped at tables in teams of four or five and played "Wheel of Fortune" with mathematical phrases and names. The teams with the highest overall scores were allowed to lead the luncheon pasta buffet line. Bonnie Johnson, the director of the Aerodynamic Laboratories for the National Institute

for Aviation Research at Wichita State University presented the invited address at the luncheon. She led a lively discussion on the impact of wind tunnel studies relating to airplane, race car, and motorcycle designs. Again in the afternoon, the young women attended another of the four workshops. The teachers experimented with a variety of calculus computer laboratory exercises. At the end of the day, a social was held at which refreshments were served and participation certificates were awarded.

Both the young women and their teachers expressed their enthusiasm about the conference. These results were gratifying, and plans are underway for next year's conference. Pending funding, the tentative date for the 2000 ESU Sonia Kovalevsky Day is February 17. We would like to extend our gratitude to WCNOC and the guest speakers for their participation. Without them, this day would not have been possible.



Dr. Bonnie Johnson, National Institute for Aviation Research

EDUCATION COLUMN

Review of Liping Ma, **Knowing and Teaching Elementary Mathematics**, Lawrence Erlbaum Associates, Mahwah, NJ, 1999

Reviewer: Judith Roitman, University of Kansas

Liping Ma found herself, as a very young teenager during the cultural revolution, sent to a town far away from the center. She was, like millions of other patriotic Chinese teenagers, supposed to learn the good earthy values of the peasants. Instead, the peasants wanted their kids to know what she knew, and she found herself (shades of the U.S. frontier) teaching elementary school, all grades at once. She had found her calling. The vagaries of life eventually brought her to graduate school at Michigan State University, where she worked with Deborah Ball's group at the National Center for Research on Teacher Education. More vagaries of life brought her to Stanford to finish her dissertation under Lee Shulman.

This book is essentially her dissertation. It should be noted, as Ma herself more modestly notes, that the uncommon elegance of the writing is the result of a partnership between Ma and Cathy Kessel who, as a member of Alan Schoenfeld's mathematics education research group at Berkeley, took on the editing of this book, which appears in a series edited by Schoenfeld. Thus, this work is firmly situated in the education research community, especially in the work of Ball and her colleagues.

That mathematicians have discovered this book — it was reviewed by Roger Howe in the *AMS Notices*, for example, and was circulated widely in manuscript form by Dick Askey — is quite wonderful, but the book is often discussed in the mathematics community as if it is an isolated, revolutionary work. This gives the unfortunate impression that Ma's is the only work on education that mathematicians need to read, rather than opening up to mathematicians a literature and set of questions which are a focus of continuing activity in the mathematics education research community. Ma herself is quite clear about her intellectual influences, and discussions of her work should firmly root it in the larger

research agenda that produced it.

When Ma was at Michigan State, Ball and her colleagues were using a series of mathematical questions to study the mathematical understanding of a group of American elementary teachers. These questions are exquisitely designed to gain insight into teacher's content knowledge by posing hypothetical classroom situations and, essentially, asking "what would *you* do?" These questions aim for the jugular of elementary mathematics, and Ma used four of them in her work. The questions she used involve regrouping, place value, meaning of operations, and area and perimeter.

Ma found herself, as she politely puts it on p. xix, "intrigued" by American teachers. They had so much formal education! And they knew so little! So she compared the data on 27 subjects from the study of Ball and her colleagues, with her own data on 72 Chinese teachers. "Data" here does not mean simply performance on the four questions, but extensive interview responses, many of which she quotes at some length.

It is important to emphasize that she did not administer an instrument to a large group. Ma's is a qualitative study. Her purpose is not to draw conclusions about Chinese teachers vs. American ones. It is, rather, to gain an understanding about what it is that the teachers successfully answering these questions (who tend to be Chinese) know that the teachers who answer unsuccessfully (who tend to be American) do not and then trying to find the conditions that encourage that knowledge.

The easy answer for what many of the Chinese teachers know is "content knowledge." But this is too easy an answer, and it tells us nothing. What kind of content knowledge? Not differential equations, that's for sure. Another easy answer would be "pedagogical content knowledge," for example (at the secondary level) knowing that many students overgeneralize linearity, thinking, e.g., that $(a+b)^2 = a^2 + b^2$. But that is not it either. Ma's notion is something she calls profound understanding of elementary mathematics, or PUFM, and it is not what you might think. That the integers form a ring, and the rationals a field, under the usual operations, is not PUFM but simply irrelevant. On the other hand, a strong understanding of how algorithms and procedures involving place value are grounded in the distributive law *is* relevant. Also relevant are things

Column Editor: Ginger Warfield, Department of Mathematics, University of Washington, Seattle, WA 98195;
warfield@math.washington.edu

that are barely, or frequently not, in the mathematician's vocabulary: grouping/regrouping and composing/decomposing of numbers, for example; or notions of meaning, such as the partitive interpretation of division. This sort of knowledge is a major part of PUFM. Ma is reminding us that the basic mathematics taught in the elementary classroom is intellectually respectable and worthy of careful attention. But she is also careful to point out that this is not the same understanding that a mathematician might emphasize. I would add that it is not the same understanding that a mathematician might even have, or might have so implicitly she might not even notice it, much less realize how important it is for teachers.

Ma's exploration of how teachers gain PUFM is in part an exploration of what is already widely known through various international studies: teachers in east Asia often collaborate, have much more time to plan, work in an atmosphere of on-going professional development, and are generally treated as professionals. She explores how these factors affect how and what teachers learn mathematically. But she also raises other issues: attitudes towards the children in their classes; the sorts of supplemental curriculum material available to

teachers; access to materials that encourage ongoing learning of fundamental mathematics; teachers' attitudes towards their own learning of mathematics; and, most intriguing (at least, to me), the differences in attitude and absorption between people preparing to be teachers and people who are already experienced teachers. Apparently there is a sharp learning curve that takes place in China after teachers start teaching. The widespread assumption that content is essentially learned before teachers begin teaching appears to be essentially flawed.

Ma's work poses serious challenges for American education. Because of its subtlety it can easily be misinterpreted (Lee Shulman's introduction delineates some of ways it can be misunderstood: as primarily a cross-cultural study, for instance), especially if the reader is too quick to try to fit it into comfortable pigeonholes. It is suggestive, both building on previous research and pointing to further research. While one may wish that it provide easy answers, it has too much integrity to do so. It is both a graceful introduction (for mathematicians and other neophytes) to an important area of mathematics education and an interesting theoretical work in its own right. I recommend it highly.

NSF-AWM MENTORING TRAVEL GRANTS FOR WOMEN

The objective of the NSF-AWM Mentoring Travel Grants program supported by the National Science Foundation is to help junior women to develop a long term working and mentoring relationship with a senior mathematician. This relationship should help the junior mathematician to establish her research program and eventually receive tenure. AWM expects to award as many as six grants, in amounts of up to \$4000 each. Each grant will fund travel, subsistence, and other required expenses for an untenured woman mathematician to travel to an institute or a department to do research with a specified individual for one month. Any unexpended funds may be used for further travel to work with the same individual during the following year. (Applicants for mentoring travel grants may in exceptional cases receive up to three such grants throughout their careers, possibly in successive years; each such grant would require a new proposal and would go through the usual competition.) For foreign travel, U.S. air carriers must be used (exceptions only per federal grant regulations; prior AWM approval required).

Applicants must be women holding a doctorate or equivalent experience and with a work address in the U.S. (or home address if unemployed). The applicant's research may be in any field which is funded by the Division of Mathematical Sciences of the National Science Foundation.

Each applicant should submit **five** copies of each of the following: a cover letter; a curriculum vita; a research proposal, approximately five pages in length, which specifies why the proposed travel would be particularly beneficial; a supporting letter from the proposed mentor (who must promise to be available at the time of the proposed travel and may be either a man or a woman), together with the curriculum vita of the proposed mentor; an approximate budget; and information about other sources of funding available to the applicant. Send these materials to: **Mentoring Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer and Space Sciences Building, University of Maryland, College Park, MD 20742-2461.**

A final report will be required from each awardee. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM.

If you have questions, phone 301-405-7892 or email awm@math.umd.edu. Applications via email or fax will not be accepted. The deadline for receipt of applications is **February 1, 2000.**

USE YOUR HEAD: MATHEMATICS AS THERAPY

Both of my parents lived into their mid-nineties. My father suffered a mild stroke at the age of ninety-one. "She is a mathematics professor" were the first words he uttered to the nurse, proudly pointing in my direction upon regaining his speech. I took it upon myself to give him biweekly speech and arithmetic lessons to counteract his aphasia. I would ask him to add, subtract and multiply orally. His answers came rapidly when produced automatically but with much greater mental effort when he slowed down to think them through. Yet he valued these lessons and stayed with them to exhaustion. He was in touch with skills embedded in his head since early childhood. His mind had been reactivated. Some nine years later when my once brilliant mother's strength was fading, I would sit by her and show her the wooden numbers of a child's puzzle. "What number is this?" "Six," she would whisper. "And how much is six plus six?" The right answer came from her struggling lips as I squeezed her blotched and gnarled hand to express my pride. Her eyes lit up knowing that she still could think correctly.

My parents enrolled me as a child in one of the Netherlands' first Montessori schools. We frequently started the day gathered around the teacher who fired arithmetic problems at us and made us solve them mentally. With our minds revved up after a half hour of this activity, we would get to our work tables to engage in our individual projects. I often entertained myself in bed, unable to sleep during the long summer dusks, by proposing arithmetic problems to myself in my head and enjoying the patterns I would discover in their answers.

These mental gymnastics stood me in good stead when, upon arriving in the U.S. at the war's outbreak, I applied for a scholarship at the Lycée Français in New York so as to maintain my educational headstart over American high schools. The mathematics teacher who tested me in an oral examination asked me to consider some algebra problem and to explain my thinking aloud. "Always think things through mentally first," he said, "then you will see the problem as a whole." I have taken his suggestion to heart ever since. I have seen the

outlines of a solution to a research question emerge as I let it wander in my head before falling asleep. "Think of your math problem when scrubbing a floor, or when the kids are screaming, or when in bed without your spouse," I used to say to my adult evening students, "It will take your mind off your other problems as well."

I developed a special course for these students entitled *Mathematics for Life and Society*. As a retired professor I presently am teaching this course to residents of the assisted care unit at the Windrows in Princeton, NJ. My students of all ages past 70 are rediscovering the basic math they thought they were never good at as I illustrate its relevance to our present world and life environment. I encourage them to think the questions through and to seek the answers in their heads. I have been greatly gratified to recognize the alertness and self-confidence (as well as the pleasure) among my audience due to this mental reawakening.

My grandchildren, unfortunately, were taught to use their fingers when adding and subtracting. They graduated from counting fingers to calculators and hence, I presume, they will move on to computers. They never developed a sense of the combinations of magnitudes which are revealed when seeing the abstract number patterns in the head. Where will they repair to when the years lie heavy upon them and the clutter of too many stored details and similitudes of past events confuses the mind? For they will be lacking this restorative haven of precision, economy and logical thought bestowed on us with our first fundamental knowing of numbers.

MATH/SCIENCE NETWORK

In 1999 the Math/Science Network, based in Oakland, California, celebrated more than half a million young women attending its Expanding Your Horizons™ (EYH™) Conferences. To mark this milestone, a special commemorative patch rode into orbit on the Space Shuttle Discovery at the invitation of Astronaut Dr. Ellen Ochoa. Before joining NASA, Ochoa worked at Sandia National Laboratory in Livermore, California. While there, she presented workshops at the Tri-Valley EYH Conference in San Ramon, California. Another astronaut aboard Discovery, Dr. Tamara Jernigan, has been an EYH keynote speaker.

Miriam Lipschutz-Yevick, Princeton, NJ

OPPORTUNITIES

Carleton and St. Olaf Colleges will continue their NSF-funded successful, intensive, four-week summer program (June 25 to July 23, 2000) designed to encourage talented undergraduate women to pursue advanced degrees in the mathematical sciences. The students will take two courses taught by women mathematicians who are excellent teachers and active professionals. In addition to the coursework there will be opportunities for recreational problem solving, discussions about graduate school and careers in mathematics, and twice-weekly colloquia.

Please encourage your talented first- and second-year female mathematics students to apply. Applications are due **March 1, 2000**. For information or application materials, email Deanna Haunsperger at dhaunspe@carleton.edu, write to Summer Math Program, Math Department, Carleton College, Northfield, MN 55057, or visit <http://www.mathcs.carleton.edu/smp>.

This year's IAS/Park City Mathematics Institute will be held July 16 through August 5, 2000 at the Institute for Advanced Study, Princeton, NJ; the topic will be computational complexity theory. It will be preceded as

usual by a Mentoring Program for Women in Mathematics from May 30 through June 9, 2000. For more information, see the display ads on page 28.

See page 29 for info on the NSF-sponsored REU to be held at Grand Valley State University, Allandale, MI, this summer.

The workshop "Mathematical Modeling in Industry" for graduate students will be held at the Institute for Mathematics and Its Applications, University of Minnesota, July 19–28, 2000. The application deadline is **April 15, 2000**. See page 29 for further information.

Nominations for the Weizmann Women & Science Award are due **January 30, 2000**. The award is given to honor an outstanding woman scientist who has made significant contributions to the scientific community, and to create more visible role models. Email Liz Jaffe at Liz@acwis.org for more information.

American Association for the Advancement of Science fellowships allow mathematicians, engineers, and scientists to work on political, policy, and public relations matters in the government. Applications are due **January 15, 2000**. See <http://fellowships.aaas.org>.

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. For foreign travel, U.S. air carriers must be used (exceptions only per federal grants regulations; prior AWM approval required).

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.

Target dates. There are three award periods per year. 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. If you have questions, contact AWM by phone (301-405-7892) or email (awm@math.umd.edu). Applications via email or fax will not be accepted. The next deadline for receipt of applications is **February 1, 2000**. Subsequent deadlines are **May 1**, and **October 1, 2000**.

National Academy of Science Internships are three-month assignments designed to engage graduate students and postdocs "in the analysis and creation of science and technology policy and to familiarize them with the interactions of science, technology, and government." See <http://www4.nas.edu/pd/nrc-ip.nsf/web/>.

Secretary of Education Riley has expanded the existing Federal Work Study waiver to permit paying 100% of an eligible undergraduate's wages for service as a mathematics tutor to elementary through ninth grade students. For more info see <http://www.ed.gov/americaaccounts/mathintro.html>.

Fellowships and grants up to \$10,000 are available for women educators interested in helping girls advance in math, science and technology and promoting their healthy development. The American Association of University Women (AAUW) Educational Foundation invites applications for the 2000–2001 Eleanor Roosevelt Teacher Fellowships and Community Action Grants. For more information, see <http://www.aauw.org/3000/fdnfelgra.html>.

The Maria Mitchell Women in Science Award invites nominations for the 2000 award. The \$5000 award is given annually by the Maria Mitchell Association to honor an individual or organization that encourages girls and women to pursue studies or careers in science and technology. Deadline: **April 28, 2000**. For guidelines and application, see www.mmo.org after January 17, 2000, or contact the Association at 2 Vestal Street, Nantucket, MA 02554 or 508-228-9198.

Feminist Expo 2000, sponsored by the Feminist Majority Foundation, will be held March 31 through April 2, 2000, in Baltimore, MD. See www.feminist.org.

BRIEF NOTES

The Institute for Women in Science & Technology's WomenWorking Technical (WomenTech) Project was funded by the National Science Foundation (NSF) to start on December 1, 1999. This three-year project is funded at \$625,000. The goals of the WomenTech

Project are to increase the number of women enrolled and retained in Science, Math, Engineering and Technology education at three community college demonstration sites and to disseminate nationally the Project's successful strategies and best practices. The three sites are: Community College of Rhode Island; North Harris Montgomery Community College, Houston and Northern Seattle Community College.

Detailed information about the WomenTech Project can be found on our Web site at www.iwitts.com.

The AMS email forwarding service for members allows you to set up an email address of the form `name@member.ams.org` that will automatically forward mail to your account elsewhere (the destination account may be updated on the web). This service is particularly useful to mathematicians early in their careers who change jobs frequently. For details, see <http://www.ams.org/mail-forward/>.

More Women and Minorities Are Earning Ph.D.'s

A new survey has found that more women and minorities are earning Ph.D.'s than ever before, though some said key fields, from business to engineering, are still lacking. The survey of 382 universities nationwide found that 17,322 women earned doctorates in the academic year ending 1997, making up 41% of all Ph.D. recipients. Ten years earlier, women received about a third of the degrees; in 1967, the total was just 12%. The survey was conducted by the University of Chicago and was released recently. It found that among minorities, the numbers nearly doubled between 1987 and 1997 — from 2,046 to 3,840, to about 9% of all doctorates granted.

She's Got Your Numbers

Danica McKellar is best known as Winnie Cooper, Fred Savage's true love on "The Wonder Years." But she might end up being remembered for her new vocation. "I want to help inspire kids to do math," the 24-year-old actress told us yesterday from Los Angeles, where she has been acting in indie movies and musical theater, including a recent turn as Rizzo in "Grease." "I figure if kids see someone like me doing it — Winnie Cooper was a sweet, wholesome, nice image, not some brainiac — maybe math will be less intimidating for them." [from the *Washington Post*]

ATTENTION APPLIED MATHEMATICIANS!
**AWM WORKSHOP FOR WOMEN GRADUATE
 STUDENTS AND RECENT PH.D.'S**

supported by the Office of Naval Research, the National Science Foundation,
 and the Association for Women in Mathematics

Over the past eleven years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent Ph.D.'s in conjunction with major mathematics meetings.

WHEN: An AWM Workshop is scheduled to be held July 10–11, 2000 with an introductory dinner on July 9, in conjunction with the 2000 Society for Industrial and Applied Mathematics (SIAM) Annual Meeting (July 10–14, 2000) at the Westin Rio Mar Beach Resort and Country Club, in Rio Grande, Puerto Rico.

FORMAT: The workshop will consist of a poster session by graduate students and two or three minisymposia featuring selected recent Ph.D.'s, plus an informational minisymposium directed at starting a career. The graduate student poster sessions will include all areas of research, but each minisymposium for recent Ph.D.'s will have a definite focus selected from the research areas of Mathematical Biology, Modeling, Control, Optimization, Scientific Computing and PDEs and Applications. AWM will offer funding for travel and two days subsistence for up to 20 participants. Departments are urged to help graduate students and recent Ph.D.'s obtain some supplementary institutional support to attend the Workshop and the associated meeting. All mathematicians (female and male) are invited to attend the entire program.

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

ELIGIBILITY: To be eligible for selection and funding, *graduate students* must have begun work on a thesis problem. Applications should include a cover letter, a summary of their work (1–2 pages), a title of the proposed poster, a curriculum vitae, and a supporting letter of recommendation from a faculty member or research mathematician. Applications from *recent Ph.D.'s* should include a cover letter, a title and abstract (75 words or less) of the talk (to be given if accepted), summary of their work (1–2 pages), and curriculum vitae and may also include a letter of recommendation. Letters of support are encouraged. A recent Ph.D. must have received her Ph.D. within approximately the last five years, whether or not she currently holds a postdoctoral or other academic or non-academic position. All non-U.S. citizen applicants must have a current U.S. address. All selected and funded participants are invited and strongly encouraged to attend the full AWM two-day program. Those individuals selected will be notified by the AWM Office and will need to submit a title and abstract (75 words or less) with name, affiliation, address, etc., by mid-February to SIAM for the meeting program; AWM will provide instructions with the notification.

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

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

Phone: 301-405-7892; Email: awm@math.umd.edu; WWW: www.awm-math.org

APPLICATION DEADLINE: Applications must be received by **January 25, 2000**.

Applications via email or fax will not be accepted.

AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND RECENT PH.D.'S

supported by the Office of Naval Research, the National Science Foundation,
and the Association for Women in Mathematics

Over the past twelve years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent Ph.D.'s in conjunction with major mathematics meetings.

WHEN: The next AWM Workshop to be held in conjunction with the annual Joint Mathematics Meetings will be in New Orleans, Louisiana, January 10–13, 2001 (*pending final funding approval*). The exact date of the Workshop is not known at this time; most likely it will be Saturday, January 13, 2001 with an introductory dinner and discussion group on either Thursday or Friday evening (1/11 or 1/12).

FORMAT: Twenty women will be selected in advance of the workshop to present their work; the selected graduate students will present posters and the recent Ph.D.'s will give 20-minute talks. AWM will offer funding for travel and two days subsistence for the selected participants. The workshop will also include a panel discussion on issues of career development, a luncheon and a dinner with a discussion period. Participants will have the opportunity to meet with other women mathematicians at all stages of their careers. All mathematicians (female and male) are invited to attend the program. Departments are urged to help graduate students and postdocs who do not receive funding to obtain some institutional support to attend the workshop presentations and the associated meetings.

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

ELIGIBILITY: Applications are welcome from graduate students who have made substantial progress towards their theses and from women who have received their Ph.D.'s within approximately the last five years (whether or not they currently hold a postdoctoral or other academic position.) Women with grants or other sources of support are welcome to apply. All non-U.S. citizens must have a current U.S. address. All applications should include a curriculum vitae, a concise description of research (2–3 pages), and a title of the proposed talk/poster. All applications should also include at least one letter of recommendation; in particular, graduate students should include a letter of recommendation from their thesis advisors. Nominations by other mathematicians (along with the information described above) are also welcome.

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

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

Phone: 301-405-7892

Email: awm@math.umd.edu WWW: www.awm-math.org

APPLICATION DEADLINE: Applications must be received by **September 1, 2000**.
Applications via email or fax will not be accepted.

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Solicitation for Applications

Visiting Research Professorship at MSRI**A joint project of the Mathematical Sciences Research Institute and the Hewlett-Packard Laboratories**

The Mathematical Sciences Research Institute in Berkeley, (MSRI) and Hewlett-Packard Laboratories in Palo Alto, California (HPL) have established the position of HPL/MSRI Visiting Research Professor (VRP). The VRP is housed at MSRI. The VRP has no official duties, except to participate in the mathematical life of, and mentor postdocs at, MSRI, and to interact with the mathematical staff at HPL.

The VRP should be a senior mathematical scientist who is internationally recognized as a leader in the discipline. No particular field of mathematics, pure or applied, is specified for the appointment, but preference will be given to candidates with wide-ranging interests, who can contribute in one or more of the upcoming programs at MSRI and the current areas of interest at HPL.

The upcoming programs planned at MSRI for 2000-2001 are "Algorithmic Number Theory", "Operator Algebras", and "Spectral Invariants". More on these programs can be found at <http://www.msri.org>. MSRI is also interested in encouraging increased interaction of mathematics with other sciences such as physics and biology.

The current mathematical interests at HPL include information theory, source coding, error correcting codes, cryptography, computational number theory, finite fields and elliptic curves over them, analysis of algorithms and complexity, operations research, mathematical economics, probability theory and statistics, sequential decision problems, quantum chaos, quantum computation, foundations of quantum physics, discrete mathematics, graph partitioning, graph matching, combinatorial optimization, theoretical materials science, random networks and percolation, distance geometry.

A one-year position will be offered this year, with starting date August 14, 2000. Future appointments may be from one to four years. Salary range for this position will be commensurate with the candidate's previous experience and with the intention to hire a mathematical scientist of the highest standing. **Applications should be sent to the Director, MSRI, 1000 Centennial Drive, Berkeley CA 94720-5070.** We will begin considering applications on February 15, 2000. Applicants should include a curriculum vita and a statement of how the applicant views the possibilities for interaction with the mathematical programs at MSRI and HPL. Applicants may solicit letters of recommendations to be sent to the Director of MSRI, or may include a list of references. Inquiries may be directed to vrp@msri.org.

MSRI and HPL support the principles of equal opportunity and affirmative action.

POSITION ANNOUNCEMENT**University of Maine**

The Department of Mathematics and Statistics is seeking to fill four positions beginning September 2000 as follows.

- A tenure track position in Computational Mathematics at the rank of Assistant Professor. Workload for the position consists of teaching eight credit hours of mathematics courses per semester (two courses), research in Computational Mathematics with interdisciplinary expectation, and departmental/college/University service. Requirements for the position are: Ph.D in Mathematics specializing in some area of Computational Mathematics linked to departmental research interests, completed Ph.D thesis by September 2000, proven research ability, and demonstrated excellence in teaching. Preference given to candidates interested in developing collaborative extramurally funded research programs
- Two ongoing Lecturer positions. Workload consists of teaching 12 credit hours per semester (three courses) of mathematics or statistics courses and an expectation of department/college service. Requirements for the positions are: demonstrated excellence in teaching including outstanding student evaluations and other evidence and knowledge of classroom technology use. Masters degree in mathematics or statistics required, Ph.D preferred.
- One ongoing SET Lecturer position. Workload for this position consists of teaching 12 credit hours of applied mathematics courses (three or four courses) per semester for Engineering Technology students and an expectation of departmental/college service. Requirements for the position: demonstrated excellence in teaching including outstanding student evaluations and other evidence. A Masters degree in mathematics is required.

Interested individuals should send a letter of application, a Curriculum Vita, a statement of teaching philosophy, evidence of teaching excellence, three letters of recommendation, and for the Computational Mathematics position an overview of research program to the respective Search Committee prefixed by one of the following: Computational Math, Lecturer, or SET Lecturer, Department of Mathematics & Statistics, Room 333, 5752 Neville Hall, University of Maine, Orono, ME 04469-5752. Review of applications will begin on December 1, 1999. Further information about the Department of Mathematics & Statistics can be found at: <http://www.umemat.maine.edu>. The University of Maine is an Equal Opportunity/Affirmative Action Employer. Women and minorities are especially encouraged to apply.

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Mentoring Program for Women in Mathematics

A program of the IAS/Park City Mathematics Institute (PCMI)

Topic:
Computational
Complexity
Theory

May 30-
June 9,
2000

the
Institute
for
Advanced
Study

Princeton,
New Jersey

Undergraduate students in mathematics,
Graduate students in
mathematics/computer science,
Mathematics/computer science researchers.

Organizers:

Chuu Lian Terng, Northeastern University
Karen Uhlenbeck, University of Texas at Austin

Application information:

IAS/PCMI, Institute for Advanced Study
Olden Lane
Princeton, NJ, 08540
1-800-726-4427 or 1-609-734-8025
pcmi@math.ias.edu
http://www.ias.edu/parkcity.

The Mentoring Program for Women in Mathematics and the
PCMI are programs of the Institute for Advanced Study,
Princeton, New Jersey.

Financial support is available for all participants.

Professional Masters in Industrial Mathematics Michigan State University

courses in applied mathematics, engineering,
a certification in business / communication,
a survey of industrial mathematics, and
group project experience with local industry

www.math.msu.edu/msim

with the support of the Sloan Foundation



IAS/PARK CITY MATHEMATICS INSTITUTE (PCMI)

A three-week summer program for:
graduate students in mathematics/computer science
high school teachers of mathematics
mathematics/computer science researchers
researchers in mathematics education
undergraduate mathematics faculty
undergraduate students

Topic:
Computational
Complexity
Theory

July 16-August 5, 2000

Institute for Advanced Study, Princeton, New Jersey

Organizers of Research Program and Graduate Summer School: Avi Wigderson, Institute for Advanced Study/Hebrew University; Steven Rudich, Carnegie Mellon University. **Graduate Summer School Lecturers:** Sanjeev Arora, Princeton University; Paul Beame, University of Washington; Michael Ben-Or, Hebrew University; Oded Goldreich, the Weizmann Institute of Science; Ran Raz, the Weizmann Institute of Science; Steven Rudich, Carnegie Mellon University; Madhu Sudan, MIT; Luca Trevisan, Columbia University; Salil Vadhan, MIT. **Organizers of Other Programs:** *High School Teachers:* Susan Addington, California State University at San Bernardino. *Undergraduate:* Robert Bryant, Duke University. *Undergraduate Faculty:* Daniel Goroff, Harvard University. *Mathematics Education Research:* Timothy Kelly, Hamilton College.

Application information: IAS/PCMI, Institute for Advanced Study,
Olden Lane, Princeton, NJ, 08540; 1-800-726-4427;
pcmi@math.ias.edu; http://www.ias.edu/parkcity.

PCMI is a program of the Institute for Advanced Study, Princeton, New Jersey.

Financial support is available.

American University, Washington, D.C. Department of Mathematics and Statistics

The following positions are for Fall 2000.

- (1) **TENURE TRACK ASSISTANT PROFESSOR OF STATISTICS.** Ph.D. in Statistics or Biostatistics. Evidence of effective teaching and scholarship is required.
- (2) **TENURE TRACK ASSISTANT PROFESSOR OF MATHEMATICS EDUCATION.** Ph.D. in Mathematics Education or Mathematical Sciences and evidence of effective teaching and scholarship is required.
- (3) **POSSIBLE ADDITIONAL TEMPORARY POSITIONS IN MATHEMATICS, STATISTICS OR MATHEMATICS EDUCATION,** subject to budgetary authorization.

Applications for the tenure track positions will be reviewed beginning 1/15/2000 until the position is filled. Applicants should indicate which position(s) they are interested in and send vitae and 3 letters of reference to:

Search Committee
Department of Mathematics and Statistics
American University
4400 Massachusetts Avenue, N.W.
Washington, D.C. 20016-8050

American University is an EEO/AA employer committed to a diverse faculty, staff and student body. Minority and women candidates are strongly encouraged to apply.

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National Science Foundation
Division of Mathematical Sciences
 Arlington, VA 22230

POSITIONS Several of the **technical staff** of the Division of Mathematical Sciences Foundation serve on 1-2 year **'Visiting Scientist'** or **'Intergovernmental Personnel Act'** appointments as Program Directors while on leave from universities, colleges, industry or national laboratories. Since the timing of these positions is staggered, the Division continually seeks talented applicants. In 2000 the Division will be seeking to make appointments in all areas. **'Permanent' Program Director** appointments will also be considered. The position involve responsibility for the planning, coordination, and management of support programs for research (including multidisciplinary projects), infrastructure, and human resource development for the Mathematical Sciences. Normally, this support is provided through merit-reviewed grants and contracts that are awarded to academic institutions and nonprofit, nonacademic research institutions.

QUALIFICATIONS: Applicants should have a Ph.D. or equivalent training in a field of the mathematical sciences, a broad knowledge of one of the relevant disciplinary areas of the Division of Mathematical Sciences, some administrative experience, a knowledge of the general scientific community, skill in written communication and preparation of technical reports, an ability to communicate orally, and several years of successful independent research normally expected of the academic rank of associate professor or higher. Skills in multidisciplinary research are highly desirable. Qualified women, ethnic/racial minorities, and/or persons with disabilities are strongly urged to apply. No person shall be discriminated against on the basis of race, color, religion, sex national origin, age or disability in hiring by the National Science Foundation.

APPLICANTS SHOULD SEND LETTER OF INTEREST AND VITA TO:

Dr. Bernard R. McDonald, Executive Officer
 Division of Mathematical Sciences, National Science Foundation
 4201 Wilson Blvd., Suite 1025, Arlington, Virginia 22230

Phone: 703-306-1870

Fax: 703-306-0555

**ARE YOU A SOPHOMORE OR JUNIOR MATHEMATICS STUDENT INTERESTED
 IN LEARNING WHAT MATHEMATICS RESEARCH IS ALL ABOUT?**

Apply to spend the summer learning and doing mathematics, and getting paid for it! Undergraduate Research Experiences in Mathematics is an NSF-sponsored REU site at Grand Valley State University in Michigan. Details and application information are available at <http://www.gvsu.edu/mathstat/reu/> or by writing to:

Steven Schlicker, REU Program, Department of Mathematics and Statistics,
 2307 MAK, Grand Valley State University, Allendale, MI 49401.

Mathematical Modeling in Industry - A Workshop for Graduate Students July 19-28, 2000
INSTITUTE FOR MATHEMATICS AND ITS APPLICATIONS - UNIVERSITY OF MINNESOTA

The IMA is holding a 10-day workshop on Mathematical Modeling in Industry. 36 students will be selected to work in teams on real-world industrial problems under the guidance of tutors from industry. Graduate students and advanced undergraduates are invited to apply. Selection criteria will be based on background and statement of interest, as well as geographic and institutional diversity. Women and minorities are especially encouraged to apply. Local living expenses will be covered by the IMA. Details on the project topics and application procedure are available from <http://www.ima.umn.edu/modeling/> or by contacting ima-staff@ima.umn.edu. Application deadline: April 15, 2000.

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ARIZONA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics at Arizona State University invites applications for two visiting positions at the Assistant/Associate Professor levels commencing Fall 2000. For complete information about application requirements and process see <http://math.la.asu.edu/~math/position/vs.html>. Application deadline is February 29, 2000, and weekly until the position is filled.

BINGHAMTON UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department of Mathematical Sciences at Binghamton University (The State University of New York at Binghamton) invites applications for a senior position in topology/differential geometry or a related area of mathematics which would strengthen the department's already strong group. Qualifications: A very substantial international research reputation, a record of successful supervision of Ph.D. students, research grants, and a strong teaching record. Screening begins 15 January 2000. Send CV and evidence of research and teaching credentials to: **Erik Pedersen, Chair, Department of Mathematical Sciences, Binghamton University, Binghamton, NY 13902-6000**. Also arrange for three letters of recommendation to be sent. Phone: 607-777-2148. Fax: 607-777-2450. Email: senior@math.binghamton.edu. The Department URL is <http://math.binghamton.edu>. Binghamton University is an equal opportunity/affirmative action employer.

BINGHAMTON UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department of Mathematical Sciences at Binghamton University (The State University of New York at Binghamton) invites applications for a non-tenure-track three-year postdoctoral position in mathematics. Qualifications: A recent Ph.D. in mathematics or Ph.D. expected by Summer 2000, evidence of teaching ability and outstanding research potential. Research areas near those of current faculty will have priority. Screening begins 15 January 2000. Send CV and evidence of research and teaching credentials to: **Erik Pedersen, Chair, Department of Mathematical Sciences, Binghamton University, Binghamton, NY 13902-6000**. Also arrange for three letters of recommendation to be sent. Phone: 607-777-2148. Fax: 607-777-2450. Email: junior@math.binghamton.edu. The Department URL is <http://math.binghamton.edu>. Binghamton University is an equal opportunity/affirmative action employer.

BRANDEIS UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for a two-year, non-tenure track position at the rank of assistant professor, beginning in the fall of 2000. Ph.D., excellence in research and demonstrated excellence in teaching are required. Applicants should send a vita and four letters of recommendation, one of which should address teaching effectiveness, by January 28 to: **Hiring Committee, Department of Mathematics, MS 050, Brandeis University, Waltham, MA 02454-9110**. Brandeis is an Affirmative Action/Equal Opportunity Employer; we especially encourage applications from women and minorities.

CALIFORNIA POLYTECHNIC STATE UNIVERSITY, POMONA - DEPARTMENT OF MATHEMATICS - 3 Tenure-Track Positions in Math - App.Math/Stat (Asst Prof). Teach major and service courses in applied math or stat. Pref. to those with multiple specialization in DE, modeling, random processes, OR, data analysis or estimation theory. Expected to direct master's theses and teach graduate classes in applied math or stat. Min qual: Ph.D. in Math, Stat or related area. **Pure/Math Ed** (Asst Prof). Teach major & service courses in pure and secondary math option. Advise students seeking secondary teaching credential. Interact with Center for Education & Equity in Math, Sci. & Tech. and School of Education. Min qual: Ph.D. in pure Math with ability to teach Geometry, Number Theory, Topology and strong background in math ed, or doctorate in Math Ed with ability to teach upper division pure math courses. **Math Ed** (Asst/Assoc. Prof). Teach service courses in math ed, calculus or teacher ed. Advise single & multiple subject credential students. Direct master's theses in mathematics education. Interact with Center for Education & Equity in Math, Sci. & Tech. and School of Education. Ability to supervise student teachers is desirable. Min qual: Doctorate in Mathematics Education with strong background in mathematics, or doctorate in Mathematics with strong background in mathematics education. Pref. to those with exp. in teaching K-12, knowledge of trends in math ed, exp. in use of technology in teaching. Salary and level dependent upon qualifications. Evidence of teaching excellence, potential for conducting scholarly activities. Completion of the terminal degree by September 2000. To apply, please submit: application form (indicate your area of interest), vitae, transcripts, minimum of 3 reference letters to: **Faculty Search Committee, Math Dept., CSU Pomona, 3801 W. Temple Ave, Pomona, CA 91768-4007; 909-869-3467; Fax: 909-869-4904; email: ngutierrez@csupomona.edu**. Initial review of applications begins January 31, 2000 and will continue until each position is filled or search is closed. See <http://www.csupomona.edu/~math>. AA/EEO.

CARLETON COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Tenure-track positions in Statistics and in Computer Science, to begin September 2000. A Ph.D., in Statistics or a closely related field and in CS, respectively, is required. Ordinarily, Carleton faculty teach 2 courses per term, 3 terms per nine-month year. For information on how to apply, on the positions, and on the department, see <http://www.mathcs.carleton.edu>. Carleton is an AA/EO employer; women & members of other underrepresented groups are especially encouraged to apply. Review of applications will continue until the positions are filled.

CENTRAL MICHIGAN UNIVERSITY - DEPARTMENT OF MATHEMATICS - Mathematics Education Position - Applications are invited for a tenure-track position in Mathematics Education at the Assistant Professor level starting in August 2000. Candidate should have a recent doctorate or near doctorate in Mathematics Education. The successful candidate will be expected to teach a variety of undergraduate mathematics courses including mathematics courses for Elementary Education students, participate in field-based experiences, to apply for external funding, and to conduct research in Mathematics Education. Excellent communication skills, a commitment to teacher education, and evidence of quality teaching skills are required. Experience teaching mathematics courses for Elementary Education students or teaching at the K-12 level is desirable. The usual teaching load is nine semester hours. Salary is competitive and benefits include university-paid retirement, medical, dental, disability, and group life insurance. Please send a letter of application, a curriculum vita, transcript, and three letters of references to: **Professor Sidney Graham, Chair, Department of Mathematics, Central Michigan University, Mt. Pleasant, Michigan 48859**. Phone: 517.774.3596, fax: 517.774.2414, email: math@cmich.edu, web site: <http://www.cst.cmich.edu/units/mth/>. Consideration of applications will begin January 5, 2000 and will continue until the position is filled. CMU, an AA/EO institution, is strongly and actively committed to increasing diversity within its community (see www.cmich.edu.aao.html).

CENTRAL MICHIGAN UNIVERSITY - DEPARTMENT OF MATHEMATICS - Temporary Instructor Position - Applications are invited for a full time temporary instructor in Mathematics starting in August 2000. Appointment will be for a full academic year. Candidates should have an M.S. or Ph.D. in the mathematical sciences. Teaching load is 12 hours per semester in courses ranging from elementary algebra through calculus. Evidence of quality teaching skills are required. Experience teaching mathematics courses for Elementary Education students or teaching statistics is desirable. Pending administrative approval, there may be two or three positions available. Benefits include university-paid retirement, medical, dental, and group life insurance. Please send a letter of application, curriculum vita, transcript, and three letters of reference to: **Professor Sidney Graham, Chair, Department of Mathematics, Central Michigan, Mt. Pleasant, MI 48859**. Phone: 517.774.3596, fax: 517.774.2414, email: math@cmich.edu, web site: <http://www.cst.cmich.edu/units/mth/>. Consideration of applications will begin January 5 and will continue until the position is filled. CMU, an AA/EO institution, is strongly and actively committed to increasing diversity within its community (see www.cmich.edu.aao.html).

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CLEMSON UNIVERSITY - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department of Mathematical Sciences of Clemson University invites applications for tenure-track positions at the assistant/associate professor level starting with the Fall 2000 semester. Additional lecturer, post-doctoral, or temporary positions are anticipated. An earned doctorate or equivalent is required for the tenure track positions. The department includes the areas of algebra, discrete mathematics, analysis, computational mathematics, operations research, and statistics. Well qualified applicants in each of the above interest areas are solicited. Desirable attributes for candidates include an interdisciplinary research orientation in the mathematical sciences; post-doctoral, industrial, or practical experience; and an interest in innovative applications. Candidates should have strong potential or demonstrated capability for effective research and teaching. Review of applications will begin on November 1, 1999 and will continue until the positions are filled. Applicants should indicate in their cover letter their research specialties and interests. Vita and three reference letters should be sent to the address below. For further information regarding our department and its programs, please visit our Web site at <http://www.math.clemson.edu>. CU is an AA/EO employer and encourages applications from women and minorities. Send applications to: **Faculty Search Committee, Department of Mathematical Sciences, Box 340975, Clemson University, Clemson, SC 29634-0975.**

COLGATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Mathematics Department of Colgate University is accepting applications for a one-year visiting assistant professorship beginning August 2000. A Ph.D. is required. We invite applications representing all areas of mathematics. Colgate University is a highly selective liberal arts college with 2700 students. Faculty members normally teach five 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, an unofficial graduate transcript and three letters of recommendation by January 15, 2000, to: **The Search Committee, Department of Mathematics, Colgate University, 13 Oak Drive, Hamilton, NY 13346-1398.** Colgate is an equal opportunity, affirmative action employer. Applications from women and minorities are encouraged.

COLLEGE OF CHARLESTON - DEPARTMENT OF MATHEMATICS - At least one tenure-track position at the Assistant Professor level available Fall 2000. Qualifications: Ph.D. in one of the mathematical sciences, commitment to undergraduate and graduate teaching, and the potential for continuing research. Preference for first position, will be given to applicants in applied statistics. For one anticipated position preference will be given to applicants in Mathematics Education. Another anticipated position is completely open. Teaching: 9 hrs/wk is the normal load for those engaged in research. Salary is competitive. Send resume and have 3 letters of recommendation sent to: **Deanna Caveny, Chair, Mathematics Department, College of Charleston, Charleston, SC 29424-0001.** Additional information is available by visiting <http://math.cofc.edu> or emailing cavenydc@cofc.edu. The process of evaluating applications will begin on January 24, 2000, but applications will be considered until the position(s) are filled. AA/EOE.

COLLEGE OF LAKE COUNTY - MATHEMATICS - Mathematics Instructors (5 openings). Full-time Tenure-Track for Fall 2000. Responsible for teaching a variety of courses from arithmetic through differential equations, including Technical, University Parallel and Remedial/Developmental mathematics. Master's degree in Mathematics or Mathematics Education. Must apply by 2/15/2000. Please contact **Human Resources at (847) 543-2065** or via email at personnel@clc.cc.il.us for an **APPLICATION FORM** and **DETAILED JOB POSTING**. College of Lake County, 19351 W. Washington Street, Grayslake, IL 60030. EOE/AA/M/F/D/V.

THE COLLEGE OF NEW JERSEY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Applications are invited for two anticipated tenure track positions starting September 2000. The positions require doctorate, demonstrated record of teaching effectiveness, and strong indications of research potential. Responsibilities include undergraduate teaching, advising, and committee service. Preference given to candidates with postdoctoral experience in teaching and research. Position preferences will be given in one case to statistics/applied math and the other to mathematics education. Send vita and three letters of recommendation, addressing teaching and research to: **Search Committee, Department of Mathematics and Statistics, The College of New Jersey, P.O. Box 7718, Ewing, NJ 08628-0718.** Application deadline: February 1, 2000. To enrich education through diversity, TCNJ is an AA/EOE.

COLORADO COLLEGE - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for a tenure-track Assistant Professor position in applied mathematics to begin in September 2000. Ph.D. in Applied Mathematics or Mathematics required. Applicants must be able to teach numerical analysis and mathematical modeling, as well as courses across the mathematics curriculum. Review of completed applicant files will begin on 19 January 2000 and continue until the position is filled. Colorado College, a leading national liberal arts college, is dedicated to greater diversity among its faculty and in its curriculum, and candidates who can contribute to that goal are encouraged to identify themselves and their relevant experiences. The College welcomes members of all minority groups and reaffirms its commitment not to discriminate on the basis of race, color, age, religion, sex, national origin, sexual orientation, or disability in its educational programs, activities, and employment practices. The Department of Mathematics values both excellence in teaching and vigorous scholarship. Candidates should send a letter of application describing both their commitment to teaching and scholarly interests, a curriculum vita, graduate school transcripts, and three letters of recommendation (at least one of which should address abilities as a teacher) to: **Mike Siddoway, Department of Mathematics, The Colorado College, 14 E. Cache La Poudre, Colorado Springs, CO 80903.** Email address: msiddoway@coloradocollege.edu. Please indicate whether you will be available to meet with representatives of the college at the Joint Mathematics Meetings in Washington DC. Equal Opportunity Employer.

COLORADO COLLEGE - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for a tenure-track Assistant Professor position to begin in September 2000. Ph.D. in Mathematics or Computer Science required. Applicants will be considered from all areas of mathematics, but will be expected to be able to teach undergraduate computer science courses. In keeping with departmental tradition, all applicants are expected to be able to teach courses across the mathematics curriculum. Review of completed applicant files will begin on 19 January 2000 and continue until the position is filled. Colorado College, a leading national liberal arts college, is dedicated to greater diversity among its faculty and in its curriculum, and candidates who can contribute to that goal are encouraged to identify themselves and their relevant experiences. The College welcomes members of all minority groups and reaffirms its commitment not to discriminate on the basis of race, color, age, religion, sex, national origin, sexual orientation, or disability in its educational programs, activities, and employment practices. The Department of Mathematics values both excellence in teaching and vigorous scholarship. Candidates should send a letter of application describing both their commitment to teaching and scholarly interests, a curriculum vita, graduate school transcripts, and three letters of recommendation (at least one of which should address abilities as a teacher) to: **Marlow Anderson, Department of Mathematics, The Colorado College, 14 E. Cache La Poudre, Colorado Springs, CO 80903.** Email address: manderson@coloradocollege.edu. Please indicate whether you will be available to meet with representatives of the college at the Joint Mathematics Meetings in Washington D.C. Equal Opportunity Employer.

FORT LEWIS COLLEGE - DEPARTMENT OF MATHEMATICS - Two Math Dept. tenure track positions. Ph.D. or equivalent required. Asst. Professor, 12 hrs. undergraduate teaching. One position with emphasis on analysis, one position coordinating and planning entry level courses. FLC is a state-supported liberal arts college of 4,500 in mountains of SW Colorado. Send letter of application, resume, transcripts, 3 current letters of recommendation, including one from a dept. chair or other academic official that addresses teaching to: **Dr. Ramaley, Chair, Math Dept., Fort Lewis College, Durango CO 81301.** (ramaley_w@fortlewis.edu). Applications will begin to be reviewed February 15, 2000 and continue until the position is filled. FLC is an AA/EEO employer.

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GEORGIA COLLEGE AND STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - The Department of Mathematics and Computer Science invites applications for two tenure-track positions in mathematics. A Ph.D. in Mathematics, Statistics, or a closely related discipline is required, as well as a commitment to teaching and scholarship at a public liberal arts university. All specialties are welcome, with special consideration given to candidates who can help develop the department's new actuarial science minor. Effective teaching, scholarship and university/community service are requirements for promotion and tenure. Please send a letter of application, CV, unofficial graduate transcripts, and three letters of recommendation to: **Search Chair, Department of Mathematics and Computer Science, CBX 017, Georgia College & State University, Milledgeville, GA 31061**. The cover letter should address career goals and views on teaching and scholarship in a liberal arts university. [Final candidates for the position will need to submit official graduate and undergraduate transcripts.] Please indicate availability for interviews at the January meeting of the AMS/MAA. For complete information on the Department and the positions, please see the Department's web page: http://www.gcsu.edu/acad_affairs/coll_arts/mathcomp_sci. GC&SU is an Equal Opportunity/Affirmative Action Employer.

GEORGIA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Three anticipated tenure-track assistant professorships beginning August, 2000 in the Department of Mathematics & Statistics at Georgia State University. Two positions are in mathematics with a preference for the areas of applied mathematics, differential equations, dynamical systems, and scientific computing. The other position is for applied statistics with a preference for biostatistics. Ph.D. and an excellent record in publications are required, with a preference for extramural funding. Applications should include a letter of application, a vita without birthdate, but including citizenship status, three letters of reference, and transcripts of all graduate work. Applicants should have letters of reference and other materials sent to: **Chair, Department of Mathematics & Statistics, Georgia State University, 100 University Plaza, Atlanta, GA 30303-3083**. Applications will be accepted until the position is filled, but should be postmarked by January 28, 2000 for first round consideration. Georgia State University, a unit of the University System of Georgia, is an equal opportunity educational institution, and an EEO/AA employer.

HENDRIX COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Faculty Position in Mathematics - Hendrix College invites applications for a tenure-track position in mathematics at the assistant professor level beginning fall 2000. Applicants must have a Ph.D. in Mathematics by the start date and be committed to excellence in teaching undergraduate mathematics in the context of a liberal arts college. Applicants who may increase the department's strengths in applied mathematics are especially welcome but all areas of interest will be considered. Responsibilities include teaching courses at all levels of the curriculum, directing undergraduate research, and sustaining professional growth. Applications should include a curriculum vitae, transcripts, three letters of recommendation (at least one addressing teaching effectiveness), and a letter of application addressing the applicant's teaching interests and scholarship goals in a liberal arts environment. Evaluation of applicants will begin on January 3, 2000 and will continue until the position is filled. Mail applications to: **David C. Sutherland, Chair, Department of Mathematics and Computer Science, Hendrix College, 1600 Washington Avenue, Conway, Arkansas 72032**. Hendrix, a private, residential, baccalaureate liberal arts college related to the United Methodist Church, has a coeducational enrollment of 1,100 students. The Department, with five full-time faculty, has a vigorous undergraduate research program and offers a major in mathematics and a combined major in computer science and mathematics. Hendrix is situated in Conway, Arkansas, a city of 40,000 thirty miles from Little Rock at the foothills of the Ozark Mountains. An equal opportunity employer, the College seeks to increase the diversity within its faculty, staff, and student body. Women and members of minority groups are specifically encouraged to apply.

HUMBOLDT STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Tenure-track position in mathematical analysis, AY 2000-01 - Doctorate in math and successful college teaching experience. Preference for applications of analysis or in stochastic processes/probability. Twelve-unit teaching load. See <http://www.humboldt.edu/~mathdept>. Send letter describing background and interest in teaching and mathematical analysis, vita, transcripts, three letters of reference for teaching to: **Search Committee, Mathematics Dept., HSU, Arcata, CA 95521-8299**. Deadline February 15, for full consideration. HSU is an EO/AA employer.

JAMES MADISON UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Two tenure track positions in statistics. One or two tenure track positions in mathematics. See www.math.jmu.edu/positions.html for details. **James Madison University, Department of Mathematics and Statistics, Harrisonburg, VA 22807**. JMU is an equal opportunity/affirmative action/equal access employer.

KANSAS STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Subject to budgetary approval, applications are invited for an instructorship commencing between January 15 and August 15, 2000 and lasting through July 2002. The instructor will participate in the design and implementation of a collaborative program to improve teacher preparation and teach in the undergraduate program. The instructor will have time to pursue research in the department along with these duties. Applicants must have a commitment to excellence in teaching. A Ph.D. in mathematics or a Ph.D. dissertation accepted with only formalities to be completed is required. Experience in mathematics education and/or teaching with technology is preferred. Letter of application, current vita, three letters of reference, and a statement of teaching philosophy should be sent to: **Louis Pigno, Department of Mathematics, Cardwell Hall 138, Kansas State University, Manhattan, KS 66506**. Offers may begin by January 2000, but applications for the position will be reviewed until the position is closed. AA/EOE.

LAKE FOREST COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Lake Forest College invites applications for a full-time, continuing position at the Assistant Professor level in the Department of Mathematics and Computer Science. The position is subject to administrative approval. Candidates should have a Ph.D. in Computer Science or a Ph.D. in Mathematics with significant background in a modern CS curriculum. The successful applicant will be expected to take a leadership role in strengthening the course offerings leading to the CS major. Lake Forest College is a selective, 4-year, liberal arts college, with an enrollment of 1,150, located on Chicago's North Shore. Applications should include a curriculum vita, a statement on teaching, and three letters of reference (at least one of which must address teaching ability). Materials should be sent to: **Search Committee, Department of Mathematics and Computer Science, Lake Forest College, 555 North Sheridan Road, Lake Forest IL 60045**. Closing date for applications is February 17, 2000. Applications from minorities and women are actively encouraged. Email inquiries are invited at holliday@lfc.edu, but email applications will not be accepted.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY - DEPARTMENT OF MATHEMATICS - Applied Mathematics - Applications are invited for a limited number of positions in applied mathematics starting fall 2000. Available positions include instructorships, lectureships, assistant professorships, and possibly higher levels. Appointments will be made mainly on the basis of demonstrated research accomplishments and potential. Complete applications must be received by January 3. To apply, please send a vita with a description of your recent research and research plans, and arrange to have three letters of reference sent. Address: **Committee on Applied Mathematics, Room 2-345, Department of Mathematics, Massachusetts Institute of Technology, Cambridge, MA 02139-4307**. MIT is an Equal Opportunity Affirmative Action Employer.

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics may make a few appointments at the lecturer and at the assistant professor or higher levels in pure mathematics for the year 2000 - 2001. The teaching load will be nine hours for the academic year (eight hours for assistant professor appointments). Open to mathematicians with doctorates who show definite promise in research. Applications should be completed by January 15. Applicants please arrange to have sent (a) a vita; (b) three letters of reference; (c) a description of your most recent research; and (d) a research plan for the immediate future 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 - 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. Please arrange to have sent (a) a vita; (b) three letters of reference; (c) a description of the research in your thesis; and (d) a research plan for the 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.

MOUNT MARY COLLEGE - MATHEMATICS/MATHEMATICS EDUCATION - Assistant Professor - applications invited for the following full-time, tenure-track appointment, for August of 2000. Seeking candidates with demonstrated commitment to excellence in teaching. Mount Mary has a current enrollment of 1,300 and is Wisconsin's oldest Catholic college for women, blending the liberal arts and professional preparation. The Graduate degree programs of the College are open to men and women. **Mathematics/Mathematics Education - Assistant Professor: Qualifications** - ABD or doctorate preferred. Preference given to candidates with proven excellence in college-level teaching experience in mathematics/mathematics education. Additional preferred qualifications: interest in mathematics curriculum reform and innovative format and delivery systems; knowledge of current standards in mathematics education; mathematics teaching experience in K-12; ability to teach mathematics methods course for middle/secondary mathematics education majors; ability to teach computer and statistics courses. Primary responsibilities include teaching a variety of undergraduate mathematics courses (introductory and upper division courses in both day and evening sections), and advising students. Please send letter of interest, resume, transcripts, names and contact information for three references to the attention of: **Sister Joy Marie Parolari, Chair, SSND, c/o Human Resources, Mount Mary College, 2900 N. Menomonee River Parkway, Milwaukee, WI 53222-4597**. Review of applications begins immediately, and will continue until position is filled. Please indicate if you wish confidentiality. Visit our web page at www.mtmary.edu. Mount Mary College is an Equal Opportunity Employer encouraging minorities, women, veterans and individuals with disabilities to apply.

NORTHERN MICHIGAN UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Mathematics Education - The Department of Mathematics and Computer Science at Northern Michigan University invites applications for a tenure-track position in Mathematics Education at the rank of Assistant Professor beginning with the 2000-2001 academic year. The successful applicant must possess an Ed.D. or a Ph.D. in Mathematics Education prior to employment; be prepared to teach a variety of undergraduate mathematics and undergraduate and graduate mathematics education courses; be willing to work in partnerships with local schools; participate in program development in mathematics education; advise undergraduate and master's degree students; and demonstrate the potential to be an effective mathematics educator and active scholar. Applicants with specialized interests in any area of Mathematics Education are encouraged to apply; however, preference will be given to applicants whose special interests are at the elementary or middle school level. In addition, applicants must have at least three (3) years of K-12 teaching experience. Applications should include a complete resume, letter of application, transcripts, and the names, addresses (including email), and telephone numbers of three references. Nominations are welcomed, and should be submitted as early as possible. Application materials should be sent to: **Donald L. Zalewski, Interim Chair, Department of Mathematics and Computer Science, Northern Michigan University, 1401 Presque Isle, Marquette, MI 49855-5340, (906) 227-2020**. Email: dzalewsk@nmu.edu. For additional information see <http://www.nmu.edu>. Applicant review will begin February 1, 2000, and will continue until the position is filled. NMU is an equal opportunity, affirmative action employer and is strongly committed to increasing the diversity of its faculty.

NORTHWESTERN UNIVERSITY - DEPARTMENT OF MATHEMATICS - Coordinator of Calculus Teaching - Northwestern University plans to fill a non-tenure-track two-year renewable lectureship, starting September 2000. Responsibilities: teach, and improve the teaching of, calculus; coordinate calculus sections offered by the Mathematics Department; develop and implement new programs to improve undergraduate learning of calculus. Requirements include Ph.D. in mathematics, record of excellent teaching, experience with varied approaches to teaching calculus, dedication to teaching excellence and to enhancement of learning. Candidates should send *AMS Application Cover Sheet for Academic Employment* and curriculum vitae -- and arrange to have letters assessing their qualifications for this position sent by four referees directly to: **Professor Paul Goerss, Department of Mathematics, Northwestern University, Evanston, IL 60208-2730**. Direct inquiries to [hiring@math.nwu.edu](mailto: hiring@math.nwu.edu). Full consideration will be given to applicants all of whose materials have been received by January 31, 2000. AA/EOE. Applications from women and under-represented minority candidates are especially welcome.

OAKLAND UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - The Department of Mathematics and Statistics at Oakland University invites applications for a tenure-track position at the rank of Assistant Professor in the area of applied continuous mathematics. The responsibilities of this position include teaching, research, and service to the Department, College and University. Candidates must have a Ph.D. in mathematics, or in a closely related field, by August 15, 2000. Preference will be given to applicants with strong research potential in applied continuous mathematics and operations research. Of particular interest is a specialty in continuous optimization (deterministic or stochastic). The ability to contribute to the Department's collaborative efforts with industry is desirable. Candidate's should arrange for a curriculum vitae, transcripts and three letters of recommendation to be sent to: **I. E. Schochetman, Professor, Department of Mathematics and Statistics, Oakland University, Rochester, MI 48309-4485**. Phone: (248) 370 - 3434; email: schochet@oakland.edu Completed applications should be received by January 31, 2000. For further information, contact <http://www.math.oakland.edu/>. Oakland University is an Affirmative Action/Equal Opportunity Employer and encourages applications from women and minorities.

OAKLAND UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - The department invites applications for a visiting assistant professor position for the academic year 2000-01. Applicants must have a Ph.D. in mathematics, statistics, or a closely related field by August 15, 2000, and should send a curriculum vita, transcripts, and three letters of recommendation to: **Stephen J. Wright, Department of Mathematics and Statistics, Oakland University, Rochester, MI 48309-4485; (wright@oakland.edu)** by March 31, 2000. For further information, consult the Department web site at <http://www.math.oakland.edu/>. AA/EOE. Applications from women and minorities are encouraged.

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OHIO NORTHERN UNIVERSITY - DEPARTMENT OF MATHEMATICS - Faculty Positions in Mathematics - The Department of Mathematics at Ohio Northern University invites applications for the following positions in mathematics starting in the 2000-01 academic year. One opening is for an Assistant Professor of Mathematics. This position will be a tenure-track nine-month appointment, or a visiting nine-month appointment depending on interests and qualifications of the candidates. A Ph.D. in mathematics is required. Only those applicants who expect to complete their degrees by August 29, 2000 will be considered. The Department also has one or more openings for nine-month visiting positions. A Ph.D. in mathematics is preferred for these positions. Applicants for all of these positions must be dedicated to excellent teaching at the undergraduate level and committed to continued professional activity in the mathematical sciences. The ability to teach introductory courses in statistics is a plus. The University is a private university with colleges of Arts & Sciences, Engineering, Pharmacy, Business, and Law and an enrollment of approximately 3200 students. Ohio Northern is an Affirmative Action/Equal Opportunity Employer and encourages applications from women and minority candidates. Qualified applicants should send a letter of application, resume, copies of transcripts, and three letters of recommendation to: **Dr. Harold L. Putt, Chair, Department of Mathematics, Ohio Northern University, Ada, OH 45810**, by February 15, 2000, for full consideration. For further information about the university, visit our web page at <http://www.onu.edu>.

OHIO WESLEYAN UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Ohio Wesleyan University invites applications for a tenure-track assistant professor position in statistics. A Ph.D. in Statistics is the ideal qualification but candidates with a Ph.D. in Mathematics and significant academic training in Statistics will also be considered. Responsibilities include teaching undergraduate courses in statistics and developing the Concentration in Statistics within the mathematics major. Consult www.owu.edu/~macsweb/ for FURTHER INFORMATION AND APPLICATION MATERIALS. Ohio Wesleyan is an affirmative action/EEO employer and encourages women and minority applicants.

OLD DOMINION UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Assistant Professor (2) - The Department of Mathematics and Statistics at Old Dominion University invites applications for two tenure track positions at the Assistant Professor level beginning Fall 2000 under a university-wide computational sciences initiative. A Ph.D. in Mathematics, Applied Mathematics, Statistics, Biostatistics, or a closely related field is required, as is a strong focus on computational aspects of mathematics or statistics, in algorithms or applications. Candidates should have an interdisciplinary orientation, strong potential to establish a funded research program, and a desire to excel at teaching. Outstanding candidates in any area of computational mathematics or statistics will be considered. Candidates are expected to forge research relationships with other departments within the university or with local external organizations, such as the Eastern Virginia Medical School (EVMS), NASA's Langley Research Center, DOE's Thomas Jefferson National Accelerator Facility, and the Virginia Modeling, Analysis and Simulation Center (VMASC). Located in Norfolk, VA, Old Dominion is a state supported doctoral-research university enrolling approximately 19,000 students, including 5,500 graduate students. The university's computing resources include a 32-processor Sun Starfire cluster, SGI Origin and Onyx machines, and a CAVE. The full-time faculty of the Department of Mathematics and Statistics currently numbers 27. The department offers B.S., M.S., and Ph.D. degrees, has granted approximately 50 doctorates in the past 15 years, and currently enrolls 30 full-time graduate students. More information are available at <http://www.math.odu.edu/positions>. To apply, send curriculum vitae and contact information for three references to: **Chair, Search Committee, Department of Mathematics and Statistics, Old Dominion University, Norfolk, VA 23529-0077**. [Fax: 757-683-3885]. Interviewing will begin as early as January 10, 2000. Applications will be considered until the positions are filled. Old Dominion University is an Affirmative Action/Equal Opportunity Employer and requires compliance with the Immigration Reform and Control Act of 1986.

PURDUE UNIVERSITY - DEPARTMENT OF STATISTICS - Faculty Position(s) in Statistics - The Department of Statistics at Purdue University has one or more openings for faculty positions. Screening will begin December 1, 1999, and continue until the position(s) is (are) filled. Essential Duties: Conduct advanced research in statistical sciences, teach undergraduate and graduate students and maintain service in the Statistics Department. Essential Qualifications: Require Ph.D. in Statistics or related field, in hand or expected by August 15, 2000. Candidates must demonstrate potential excellence in teaching. Salary and benefits are competitive and commensurate with qualifications. Rank and salary are open. Candidate for assistant professor should send a letter of application, curriculum vita and three letters of reference. For senior positions, send a letter of application or nominations, curriculum vita, and the names of three references. Purdue University is an AA/EO employer and educator. Send applications to: **Mary Ellen Bock, Head, Department of Statistics, Purdue University, 1399 Mathematical Sciences Building, West Lafayette, IN 47907-1399, USA**.

RHODE ISLAND COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - anticipates a tenure line opening pending budgetary approval. Required: Ph.D. in Mathematics and interest in teaching a wide variety of courses, scholarship, and professional service. Deadline: 2/1/2000. Send resume, transcripts, 3 reference letters to: **Human Resources, Rhode Island College, Providence RI 02908, Attn: Math Search**. TDD 401-456-8216. RIC, a comprehensive mid-sized state college, is an EO/AA employer. Please visit www.ric.edu

ROWAN UNIVERSITY - DEPARTMENT OF MATHEMATICS - Assistant Professor (Tenure-Track) - 9/1/00 - Ph.D. in Math with an interest in undergraduate research and teaching. Responsibilities: teaching lower and upper level undergraduate courses and graduate. Load: 12 s.h. per semester. Submit letter, CV, official transcripts, three letters of rec. (one re: teaching) to: **Dr. Ronald Czocho, Chair, Department of Mathematics, Rowan University, Glassboro, NJ 08028**. email: czocho@rowan.edu. Deadline for complete applications due January 24, 2000. An EOE/AA/M/F/D employer.

SAN JOSE STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - one tenure track position in math educ. at rank of Asst. Prof. & one at rank of Asst. or Assoc. Prof. for 2000-01 AY. Candidates must have Ph.D. in Math Educ. by Aug. 2000, math background equivalent to a master's degree, K-12 experience, ability to develop teachers of English language learners, familiarity with the use of technology as a tool in teaching mathematics, and commitment to quality teaching. Preference will be given to candidates with at least one year of teaching experience in US K-12 schools. Application deadline is Feb. 1, 2000. PVIN:SCI 00-047. Two tenure track positions in Math at rank of Assist. Prof. for 2000-01 AY. Candidates must have a Ph.D. in Math by Aug. 2000. Preference will be given to candidates whose research areas are probability, statistics and/or linear algebra. Application deadline is Mar. 1, 2000. PVIN: SCI 00-046. Applicants should send vita, transcripts, & 3 letters of recommendation to: **Dr. Michael Burke, Dept. of MathCS, SJSU, San Jose, CA 95192-0103**. EOE/AAE

SANTA CLARA UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - One tenure-track position, Assistant Professor level, beginning September 2000. Required: Recent Ph.D. or Ph.D. with evidence of recent scholarship. Undergraduate teaching only. A variety of fields will be considered, but preference will be given to applicants with the background and experience needed to teach courses for computer science majors (e.g., programming, data structures, algorithms) and lower division mathematics courses. The Department is in the College of Arts and Sciences in a comprehensive university and emphasizes (roughly equally) both excellent teaching and continuing research. For more details consult our website at www.scu.edu/math. Applications should be sent to: **Chair, Search Committee, Department of Mathematics and Computer Science, Santa Clara University, 500 El Camino Real, Santa Clara, CA 95053-0290**. Santa Clara University, a Jesuit institution, emphasizing education in the liberal arts and sciences, is an equal opportunity-affirmative action employer-title IX M/F/H.

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SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE - DEPARTMENT OF MATHEMATICS - Statistics Position - Tenure-track position in Statistics at the assistant professor level beginning August 16, 2000. Candidates must have a strong background in mathematical statistics and must demonstrate evidence of, or potential for, excellence both in research and teaching. Knowledge of applications of statistics and experience in statistical computing are desirable. Ph.D. in statistics, or mathematics with a concentration in statistics, required by August 15, 2000. Postdoctoral experience preferred. Send letter of application, CV, and three letters of recommendation to: **Statistics Position, Department of Mathematics, Southern Illinois University, Carbondale, IL 62901-4408**. Review of applications will begin January 24, 2000, and continue until position is filled. Southern Illinois University Carbondale is an equal opportunity/affirmative action employer. Women and minorities are particularly encouraged to apply.

SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE - DEPARTMENT OF MATHEMATICS - Analysis Position - Tenure-track position in Analysis at the assistant professor level beginning on August 16, 2000. Applicants from all areas of Analysis (e.g., Classical, Geometric, Modern, Stochastic, as well as Probability) will be considered. However, applicant must have a broad background in mathematical analysis and must demonstrate evidence of, or potential for, excellence both in research and in teaching at all university levels. Ph.D. in mathematics required by August 15, 2000. Postdoctoral experience preferred. Send letter of application, CV, and three letters of recommendation to: **Analysis Position, Department of Mathematics, Southern Illinois University, Carbondale, IL 62901-4408**. Review of applications will begin December 6, 1999, and continue until position is filled. Southern Illinois University Carbondale is an equal opportunity/affirmative action employer. Women and minorities are particularly encouraged to apply.

STANFORD UNIVERSITY - DEPARTMENT OF MATHEMATICS - The department expects to make at least one Szego assistant professor or tenure track assistant professor appointment beginning in September 2000, among the following fields: (1) analysis, (2) geometry or topology, (3) algebra, number theory or logic, (4) applied mathematics or probability. Applicants for a Szego Assistant Professor position should not be more than 2 years from the Ph.D. Candidates should send a letter of application and a curriculum vitae, including a list of publications, and a cover sheet clearly stating the following: name, area of specialization, institution, (expected) date of Ph.D., and Ph.D. advisor. Also the candidate should arrange to have three letters of recommendation and some evidence of commitment to excellence in teaching sent to: **Professor Leon Simon, Department of Mathematics, Stanford University, Stanford CA 94305** by January 15, 2000. Stanford is an Equal Opportunity, Affirmative Action Employer, and welcomes applications from women and minorities.

SUNY FREDONIA - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Applications are invited for a tenure-track position in mathematics at the rank of assistant professor. Either a Ph.D. in mathematics or a Ph.D./Ed.D. in mathematics education with an M.S./M.A. in mathematics is required. Applicants from all specialty areas are welcome, with special consideration given to those with interest/expertise in algebra or secondary teacher preparation. The successful candidate will show evidence of excellence in teaching and potential for scholarly growth. A complete application will include exactly: a cover letter, curriculum vitae; statement of teaching philosophy; research plan; transcripts of graduate work; and three letters of recommendation (at least one of which addresses the candidate's teaching ability). Send to: **Robert Rogers, Chair, Mathematics Search Committee, Department of Mathematics and Computer Science, SUNY Fredonia, Fredonia, NY 14063**. Review of applications will begin November 15. Inquiries can be made to rogers@cs.fredonia.edu. For further information about the college, visit the website at www.fredonia.edu. SUNY Fredonia is an Equal Opportunity/Affirmative Action employer and encourages women, minorities, and persons with disabilities to apply.

SWARTHMORE COLLEGE - DEPARTMENT OF MATHEMATICS AND STATISTICS - The Department of Mathematics and Statistics invites applications for a **tenure track position at the beginning assistant professor level** beginning fall 2000. The position is pending administrative approval which is anticipated fall 1999. The department is looking for candidates in areas that support our existing curriculum and complement existing expertise in our faculty. For more information about our department and program, please see <http://www.swarthmore.edu/natsci/math/jobs/>. Candidates should possess a commitment to undergraduate education and promise in research. A Ph.D. in mathematics by the starting date is also expected. The annual teaching load is three courses in one semester and two courses in the other. Faculty are eligible to apply for sabbatical leave after every three years of teaching. Please send a cover letter, resume, research summary, teaching statement, and three letters of recommendation to: **Mathematics Search Committee, Department of Mathematics and Statistics, Swarthmore College, 500 College Ave, Swarthmore PA 19081**. The cover letter should include a statement about how the candidate complements the department. All applications should be sent in paper form. No email or fax applications will be considered. Email inquiries can be sent to msdept@swarthmore.edu. All applications received by December 10 will receive full consideration. Later applications may be considered until the position is filled. Swarthmore is an Equal Opportunity employer. Women and minority candidates are encouraged to apply.

SWARTHMORE COLLEGE - DEPARTMENT OF MATHEMATICS AND STATISTICS - The Department of Mathematics and Statistics invites applications for a **three year nonrenewable visiting assistant professor position** beginning fall 2000. The department is looking for candidates in areas that support our existing curriculum and complement existing expertise in our faculty. For more information about our department and program, please see <http://www.swarthmore.edu/Natsci/Math/>. Candidates should possess a commitment to undergraduate education and promise in research. A Ph.D. in mathematics by the starting date is also expected. The annual teaching load is three courses in one semester and two courses in the other. Please send a resume, research summary, teaching statement, and three letters of recommendation to the **Mathematics Search Committee, Department of Mathematics and Statistics, Swarthmore College, 500 College Ave, Swarthmore PA 19081**. All applications should be sent in paper form. No email or fax applications will be considered. Email inquiries can be sent to msdept@swarthmore.edu. All applications received by January 15 will receive full consideration. Late applications will be considered until the position is filled. Swarthmore is an Equal Opportunity employer. Women and minority candidates are encouraged to apply.

TRINITY COLLEGE, WASHINGTON, D.C. - DEPARTMENT OF MATHEMATICS - Clare Boothe Luce Program - Trinity College is one of thirteen institutions named in Clare Boothe Luce's bequest to receive funds in perpetuity to support women in Math, Science, and Engineering through scholarships and professorships. Trinity College is a comprehensive University emphasizing the education of women in undergraduate programs. We invite applications from outstanding young women committed to undergraduate education for a tenure-track position at the assistant professor level in computer science, beginning Fall 2000. The candidate must be qualified to teach both Computer Science and Mathematics courses. A Ph.D. in Computer Science or a closely related field and U.S. Citizenship are required. The successful candidate will be committed to scholarship and innovation in teaching. Please send a curriculum vitae, a statement of teaching philosophy, graduate transcripts, and the names of three references by February 15, 2000 to: **Carole King, Director of Human Resources, Trinity College, 125 Michigan Avenue, N.E., Washington, D.C. 20017** or Fax to: (202) 884-9123 or email to: humanresources@trinitydc.edu. Trinity College is an EEO and welcomes applications from women and minorities.

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TUFTS UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for a tenure-track Assistant Professorship to begin September 1, 2000. A Ph.D. degree with a specialization in applied mathematics, a record of outstanding research in computational fluid dynamics or computational nonlinear optimization, and evidence of excellent teaching ability are required. Preference will be given to candidates who show strong promise of research interaction with members of our department and other departments at the university. The teaching load will be two courses per semester. Applicants should send a curriculum vitae and have three letters of recommendation sent to: **Christoph Borgers, Search Committee Chair, Department of Mathematics, Tufts University, Medford, MA 02155**. Review of applications will begin January 31, 2000 and continue until the position is filled. Tufts University is an Affirmative Action/Equal Opportunity employer. We are committed to increasing the diversity of our faculty. Members of underrepresented groups are strongly encouraged to apply.

TUFTS UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for an Assistant Professorship to begin September 1, 2000. Initial one year contract, renewable to a maximum of three years. Ph.D., promise of strong research and evidence of strong teaching ability required. Research interests preferred: Group theory, especially algebraic groups and/or buildings. The teaching load will be two courses per semester. Applicants should send a curriculum vitae and have three letters of recommendation sent to: **Richard Weiss, Search Committee Chair, Department of Mathematics, Tufts University, Medford, MA 02155**. Review of applications will begin January 25, 2000 and continue until the position is filled. Tufts University is an Affirmative Action/Equal Opportunity employer. We are committed to increasing the diversity of our faculty. Members of underrepresented groups are strongly encouraged to apply.

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM - DEPARTMENT OF MATHEMATICS - Applications are invited for a postdoctoral position which will be for two academic years starting September 1, 2000. Postdoctoral applicants are expected to show outstanding promise in research in an area related to either differential equations, dynamical systems, ergodic theory, general relativity, geometric analysis, mathematical physics or topology. Candidates should have received a Ph.D. prior to the start of the appointment. Duties will consist of teaching two courses per year and participation in the research activities of the Department. The salary will be competitive. In order to apply, send a completed *AMS standard cover sheet*, a curriculum vita, and a summary of future research plans. Please arrange for at least three letters of reference to be sent. Review of applications will begin January 3. Applications and letters of reference should be sent to: **Search Committee, Department of Mathematics, UAB, Birmingham, AL 35294-1170**. UAB is an AA/EO Employer. For more information about the position or institution/company: <http://www.math.uab.edu/>

THE UNIVERSITY OF ALABAMA AT TUSCALOOSA - DEPARTMENT OF MATHEMATICS - Director of Introductory Mathematics - The Department of Mathematics invites applications for tenure-track position as Director of Introductory Mathematics at the assistant/associate professor level to begin in June 2000. This is a 12-month position. Candidates must possess a doctorate in mathematics or a doctorate in mathematics education with a Master's degree in mathematics (or the equivalent). The Director of Introductory Mathematics has primary responsibility for curriculum development, coordinating and scheduling introductory mathematics courses, and supervision of instructors and GTAs. Candidates must have successful teaching experience at the developmental level and post-secondary level, possess excellent communication skills, demonstrate knowledge of compensatory mathematics programs, materials, and methods, and have strong organizational skills. We are particularly interested in candidates with knowledge/experience in computer-based instruction. In addition, the Director is expected to teach at least one course per semester and to engage in scholarship in mathematics or mathematics education. Send letter of application, vita, transcripts, and at least three letters of reference to: **Recruiting Committee, Department of Mathematics, The University of Alabama, Box 870350, Tuscaloosa, AL 35487-0350**. Review of applications will begin in February & continue until position is filled. The University of Alabama is an AA/EO employer. For more information about the position or institution: <http://www.ua.edu/>

UNIVERSITY OF CALIFORNIA, LOS ANGELES - DEPARTMENT OF MATHEMATICS - TEMPORARY POSITIONS - Subject to availability of resources and administrative approval. Preference will be given to applications completed by January 7, 2000. (1) **Several E.R. Hedrick Assistant Professorships**. Applicants must show very strong promise in research and teaching. Salary \$49,300. Three year appointment. Teaching load: four quarter courses per year, which may include one advanced course in the candidate's field. (2) **One or two Research Assistant Professorships in Computational and Applied Mathematics (CAM)**. Applicants must show very strong promise in research and teaching. Salary \$49,300. Three year appointment. Teaching load: normally is reduced to two quarter courses per year by research funding as available; may include one advanced course in the candidate's field. (3) **One Adjunct Assistant Professorship or Lectureship in the Program in Computing (PIC)**. Applicants for the Adjunct position must show very strong promise in teaching and research in an area related to computing. Teaching load: four quarter programming courses and one more advanced quarter course per year. One-year initial appointment, with the option of applying for renewal for a second year and possible longer, up to a maximum service of four years. Salary \$52,900. 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 \$42,300 or more, depending on experience. (4) **An Adjunct Assistant Professorship**. One year appointment, probably renewable once. Strong research and teaching background required. Salary \$45,500-\$48,000. Teaching load: five quarter courses per year. (5) **Possibly one or more positions for visitors**. To apply, send electronic mail to: search@math.ucla.edu or open <http://www.math.ucla.edu/~search> on the World Wide Web, or write to: **Staff Search, Department of Mathematics, University of California, Los Angeles, CA 90095-1555**. UCLA is an Equal Opportunity/Affirmative Action Employer. Under Federal law, the University of California may employ only individuals who are legally authorized to work in the United States as established by providing documents specified in the Immigration Reform and Control Act of 1986.

UNIVERSITY OF MICHIGAN, DEARBORN - DEPARTMENT OF MATHEMATICS AND STATISTICS - UM Dearborn plans to fill a tenure-track position at the Assistant/Associate Professor level in Mathematics Education, starting September 2000. It is expected that a Doctorate in Mathematics Education will be completed by September 2000. Selection criteria for this position include candidate's potential for and commitment to curriculum development and scholarship in Mathematics Education. A demonstrated capability in teaching courses related to Mathematics Education is required. Additionally, the candidate's teaching experience and continuing involvement in K-12 schools will be considered. The teaching load is 18 credit hours per academic year. Assistant professors receive one course released time per year for each of the first three years. To apply, send vita, transcripts, and have 3 letters of recommendation sent to: **Professor R. Verhey, Chair of Mathematics Education Search Committee, University of Michigan-Dearborn, Department of Mathematics and Statistics, Dearborn, MI 48128-1491**. To ensure full consideration, all application materials must be received by January 20, 2000. The committee will continue to accept application materials until the position is filled. The University of Michigan-Dearborn is dedicated to the goal of building a culturally diverse and pluralistic faculty committed to teaching and working in a multicultural environment and strongly encourages applications from minorities and women. The UM-Dearborn is an equal opportunity/affirmative action employer.

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UNIVERSITY OF MINNESOTA, DULUTH - DEPARTMENT OF MATHEMATICS AND STATISTICS - Applied Math - Tenure-track assistant professor in the applied mathematical sciences starting 8/28/00. Expertise required in applied analysis, including mathematical modeling, dynamical systems, control theory, scientific visualization, and high-performance computation. Teach two courses per semester at graduate and undergraduate level; assist in master's program; direct student research; conduct active research program; perform usual service responsibilities. Ph.D. in mathematics or related field required by 8/28/00. Competitive salary. For more information, contact: **Dr. Bruce Peckham, Search Committee Chair, Department of Mathematics and Statistics, University of Minnesota-Duluth, Duluth, MN 55812**. Review of completed applications starts 1/24/00 and continues until position is filled. Full position description and application procedures at: <http://www.d.umn.edu/math> or email address: math@d.umn.edu. The University of Minnesota is an equal opportunity educator and employer.

UNIVERSITY OF MINNESOTA, DULUTH - DEPARTMENT OF MATHEMATICS AND STATISTICS - Math Education - Tenure-track assistant professor in mathematics education starting 8/28/00. Teach two courses per semester at graduate and undergraduate level; direct student research; conduct active research program; perform usual service responsibilities. Doctorate in mathematics education and undergraduate or master's degree in the mathematical sciences required by 8/28/00. Competitive salary. For more information, contact: **Dr. Robert McFarland, Search Committee Chair, Department of Mathematics and Statistics, University of Minnesota-Duluth, Duluth, MN 55812**. Review of completed applications starts 1/24/00 and continues until position is filled. Full position description and application procedures at: <http://www.d.umn.edu/math> or email address: math@d.umn.edu. The University of Minnesota is an equal opportunity educator and employer.

UNIVERSITY OF MISSOURI, COLUMBIA - DEPARTMENT OF MATHEMATICS - Applications are invited for two tenure-track positions at the assistant professor level to start in fall 2000. The positions can be in any of the three areas of Modern Analysis/Harmonic Analysis, Algebra/Algebraic Geometry, and Mathematical Physics. All positions require a Ph.D. in Mathematics and a proven record and experience to warrant the hiring at a given rank. Send a curriculum vitae along with a letter of application, a completed *AMS Standard Cover Sheet*, and arrange for three letters of recommendation to be sent to: **Elias Saab, Chair, Department of Mathematics, University of Missouri, Columbia, MO 65211**. The application deadline is January 31, 2000, or until the positions are filled thereafter. AA/EEO. For more information visit our homepage: <http://www.math.missouri.edu>.

THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO - DEPARTMENT OF MATHEMATICAL SCIENCES - The Department of Mathematical Sciences invites applications for a tenure-track position as Assistant Professor (Computer Science). Initial appointment begins August 1, 2000, for 4 years, 9 months per year. Ph.D. in Computer Science and commitment to research and teaching required. Applicants specializing in a systems area are of particular interest; exceptional candidates in other areas may be considered. Current faculty research areas include database and knowledge-base systems, human-computer interaction, image processing, complexity theory, algorithms, theory of computation, computer security and networks. The Department offers B.S. (CSAB accredited) and M.S. degrees in computer science. Send vita and 3 letters of reference to: **Dr. S.M. Lea, Computer Science Search Coordinator, Department of Mathematical Sciences, UNCG, P.O. Box 26170, Greensboro, NC 27402-6170** (smlea@uncg.edu). Applications received by February 15, 2000, are guaranteed full consideration. Applications may be considered until the position is filled or until the closing date of March 15, 2000. See www.uncg.edu/mat. EEO/AA:W/M/V/D.

THE UNIVERSITY OF TEXAS AT AUSTIN - DEPARTMENT OF MATHEMATICS - Openings for Fall 2000 include: (a) Instructorships, some of which have R.H. Bing Faculty Fellowships attached to them, and (b) two or more positions at the tenure-track/tenure level. (a) Instructorships at The University of Texas at Austin are post-doctoral appointments, renewable for two additional years. It is assumed that applicants for Instructorships will have completed all Ph.D. requirements by August 31, 2000. Other factors being equal, preference will be given to those whose doctorates were conferred in 1999 or 2000. 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 \$35,000 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 \$38,500, 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. Those wishing to apply for Instructor positions are asked to send a vita and a brief research summary to: **Instructor Committee, Department of Mathematics, The University of Texas at Austin, Austin, TX 78712**. Transmission of the preceding items via email (address: instructor@math.utexas.edu) is encouraged. (b) An applicant for a tenure-track 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 tenure-track/tenure positions are asked to send a vita and a brief research summary to: **Recruiting Committee, Department of Mathematics, The University of Texas at Austin, Austin, TX 78712**. Transmission of the preceding items via email (address: recruit@math.utexas.edu) is encouraged. All 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, 1999. The University of Texas at Austin is an equal opportunity employer.

UNIVERSITY OF WATERLOO - DEPARTMENT OF COMBINATORICS AND OPTIMIZATION - The Department of Combinatorics and Optimization at the University of Waterloo invites applications for one or more tenure-track faculty positions at the rank of Assistant Professor. Applications will be considered from persons in any of the Department's main research areas: algebraic combinatorics, combinatorial optimization, continuous optimization, cryptography, and graph theory. A Ph.D. and proven ability, or the potential, for excellent research and effective teaching are required. Responsibilities will include the supervision of graduate students, as well as teaching at the undergraduate and graduate levels. Salary will depend on the candidate's qualifications. Interested individuals should send curriculum vitae, up to four selected reprints/preprints and the names, addresses, and email addresses of three references to: **Prof. W.H. Cunningham, Chair, Department of Combinatorics and Optimization, Faculty of Mathematics, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1**. Email: combopt@math.uwaterloo.ca. Web page: http://math.uwaterloo.ca/CandO_Dept/homepage.html. Effective date of appointments: July 1, 2000. Closing date for receipt of applications is January 31, 2000. These appointments are subject to the availability of funds. The University of Waterloo encourages applications from all qualified individuals, including women, members of visible minorities, native peoples, and persons with disabilities.

UNIVERSITY OF WISCONSIN, EAU CLAIRE - DEPARTMENT OF MATHEMATICS - Tenure-track position in mathematics and an anticipated second tenure-track position contingent on funding. An earned doctorate in mathematics, statistics, or another mathematical discipline is required. Evidence of excellent teaching and the potential for sustained scholarly activity is required. For **Position One**, the ability and willingness to teach introductory statistics is highly desirable. For **Position Two**, a background in an area of applied mathematics and the potential for leadership in the development of our applied mathematics curriculum [→]

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[←] is highly desirable. Responsibilities include teaching undergraduate mathematics courses, scholarly activity, academic advising, and service. Send *AMS Application Cover Sheet*, a letter of application, vitae, complete transcripts, and three recent letters of recommendation, including a least one addressing teaching effectiveness, to: **Tom Wineinger, Mathematics Department, UW-Eau Claire, Eau Claire, WI 54702-4004**. Email wineintw@uwec.edu; World Web <http://www.uwed.edu>. To ensure consideration a completed application should be received by January 24, 2000. UW-Eau Claire is an EO/AA Employer.

UNIVERSITY OF WISCONSIN, STEVENS POINT - DEPARTMENT OF MATHEMATICS AND COMPUTING - Applications are invited for two tenure-track assistant professor positions in mathematics beginning August 2000. For one position, a background in operations research will be considered a plus. Primary duties involve teaching a variety of lower- and upper-level undergraduate mathematics courses. In addition, scholarly activity, professional growth, and university service are required for retention and tenure. A typical teaching load is twelve credit hours per semester with two preparations. Applicants should have a Ph.D. or equivalent terminal degree in mathematics by December 2000. Submit a curriculum vitae, copies of graduate transcripts, three letters of recommendation sent directly from references (at least one specifically evaluating past teaching performance), and a written statement of teaching/research experience, goals, and interests to: **James Gifford, Chair, Department of Mathematics and Computing, UW-Stevens Point, Stevens Point, WI 54481**. Screening of applications will begin on January 15, 2000; for full consideration, applications must be received by February 4, 2000. UW-Stevens Point is an EO/AA Employer. Additional information is available at <http://www.uwsp.edu/acad/math/mathhome.html>

WAKE FOREST UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Applications are invited for a tenure track position in statistics at the assistant professor level beginning August 2000. Duties include teaching statistics at the undergraduate and graduate levels and continuing research. A Ph.D. in statistics is required. Women and minorities are encouraged to apply. The department has 25 members and offers a B.S. and M.A. in mathematics, and B.S. and M.S. in computer science, and a B.S. in each of mathematical business and mathematical economics. Send a letter of application and resume to: **Richard D. Carmichael, Chair, Dept. of Mathematics and Computer Science, Wake Forest University, P.O. Box 7388, Winston-Salem, NC 27109-7388**. AA/EO Employer.

WELLS COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Assistant Professor - Established in 1868 by Henry Wells, founder of the Wells Fargo and American Express Companies. Wells College is a four-year, private liberal arts college of academically talented women. The College is located in the Finger Lakes region of upstate New York 1/2 hour from Ithaca, 1 hour from Rochester and Syracuse, and 5 hours from New York City. Wells College invites applications for a tenure-track position at the assistant professor level in the Department of Mathematics and Physical Sciences. The successful candidate must have the interest and ability to teach a full range of undergraduate courses in mathematics. She or he will be expected to contribute to the College's developing computer science program. The successful candidate will have a strong commitment to the liberal arts and an interest in teaching a college-wide first-year experience course. An interest in mathematics education is desirable. Ph.D. and teaching experience required. Women and minorities are encouraged to apply. Applicants should send letter of application, CV, statement of teaching philosophy and research interests, transcripts, and three letters of reference to: **Mathematics Search Committee, c/o Dr. Ellen Hall, Dean of the College, Wells College, Aurora, NY 13026**. Email: ehall@wells.edu. Screening will begin February 1, 2000. The position will remain open until it is filled. Wells College is an Equal Opportunity Employer.

WESTERN ILLINOIS UNIVERSITY - DEPARTMENT OF MATHEMATICS - Tenure Track Position - (Assistant Professor), August 2000. Applicants from all areas of mathematical sciences are invited to apply. Applicants with experience or research in optimization or mathematical modeling who can promote undergraduate engagement in projects and internships are particularly encouraged to apply. Three-course teaching (8-10 semester hrs, integration of computing technology into curriculum), research, and service expected. **QUALIFICATIONS:** Ph.D. (or imminent); demonstrated, or potential for, excellence in teaching; a record of, or potential for, research; a record of, or commitment to, service. **SELECTION BEGINS** February 14, 2000; continues until position filled. Interviews at Washington D.C. Joint Meetings. Send letter, resume, teaching philosophy, research description, three reference letters, transcripts (photocopies): **Iraj Kalantari, Chair, Mathematics Department, Western Illinois University, Macomb, IL 61455-1390**. URL: <http://www.wiu.edu/users/mimath/>. WIU is an Equal Opportunity and Affirmative Action employer. We are especially interested in applications from women and minorities, and individuals with disabilities.

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS - Tentative full-time visiting position in mathematics for the 2000-2001 year, probably at the rank of assistant professor; in exceptional cases, however, more advanced appointments may be considered. Excellence in teaching and research, and Ph.D. required. Please have a vita and three letters of recommendation on teaching and research sent to: **Visitor Hiring Committee, Department of Mathematics, Williams College, Williamstown, MA 01267**. Evaluation of applications will begin on or after January 15 and continue until the position is filled. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS - Anticipated tenure-track position in mathematics, pending administrative approval, beginning fall 2000, probably at the rank of assistant professor. In exceptional cases, however, more advanced appointments may be considered. Excellence in teaching and research and a Ph.D. are required. 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 on or after December 6. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

WRIGHT STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - At least one tenure track assistant professorship in mathematics anticipated for Fall 2000. Ph.D. in mathematics by September 1, 2000. Research areas compatible with department's current faculty in applied mathematics, analysis, or discrete mathematics. Successful teaching experience at the university level. Send vita, graduate transcript(s), and have three letters of reference sent to: **Mathematics Search Committee, Math & Statistics, Wright State University, Dayton, OH 45435**. Applications by February 1, 2000, for full consideration. WSU is an AA/EOE.

YORK UNIVERSITY - DEPARTMENT OF MATHEMATICS AND STATISTICS - Applied Mathematics - Applications are invited for a tenure-track appointment at the Assistant Professor level in the Department of Mathematics and Statistics. Applications in the areas of Operations Research, Computational Mathematics or Applied Discrete Mathematics will be considered. The position is subject to budgetary approval and is to commence July 1, 2000. The successful candidate must have a Ph.D. and is expected to have a proven record of research and successful experience in teaching. Preference will be given to candidates who can make solid contributions to an undergraduate programme in Computational Mathematics and to the graduate programme, and who can strengthen existing areas of present and ongoing research activity. The selection process will begin on January 31, 2000. Applicants should send resumes and arrange for three letters of recommendation (one of which should address teaching) to be sent directly to: **Alan Dow, Chair, Department of Mathematics and Statistics, York University, 4700 Keele Street, Toronto, Ontario, Canada, M3J 1P3**. Fax: (416) 736-5757 or (416) 736-5730. Email: chair@mathstat.yorku.ca. URL: www.math.yorku.ca/Hiring/. York is implementing a policy of employment equity, including affirmative action for women faculty. Applications are encouraged from women, visible/racial minorities, aboriginal people and persons with disabilities. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents.

ASSOCIATION FOR WOMEN IN MATHEMATICS

1999/2000 MEMBERSHIP FORM

LAST NAME _____ FIRST NAME _____ M.I. _____

ADDRESS _____

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

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

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

Email: _____

Home Phone: _____
 do not publish home number

Work Phone: _____
 do not publish work number

I do NOT wish for my AWM membership information to be released for the **Combined Membership List**.

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Position: _____

Institution/Company: _____

City, State, Zip: _____

If student, GRADUATE or UNDERGRADUATE? (circle one)
 If not employed, leave position & institution blank

DEGREES EARNED:

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

INDIVIDUAL DUES SCHEDULE

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

REGULAR INDIVIDUAL MEMBERSHIP.....	\$ 50	
2ND FAMILY MEMBERSHIP..... (NO newsletter) Please indicate regular family member: _____	\$ 30	
CONTRIBUTING MEMBERSHIP.....	\$100	
RETIRED or PART-TIME EMPLOYED MEMBERSHIP (circle one).....	\$ 25	
STUDENT or UNEMPLOYED MEMBERSHIP (circle one).....	\$ 15	
ALL FOREIGN MEMBERSHIPS (INCLUDING CANADA & MEXICO).... FOR ADDITIONAL POSTAGE ADD	\$ 8	
<small>All payments must be in U.S. Funds using cash, U.S. Postal orders, or checks drawn on U.S. Banks.</small>		
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<input type="checkbox"/> I am enclosing a DONATION to the "AWM GENERAL FUND".....	\$	
<input type="checkbox"/> I am also enclosing a DONATION to the "AWM ANNIVERSARY ENDOWMENT FUND".....	\$	
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INSTITUTIONAL DUES SCHEDULE

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_____/F00 Sponsoring CATEGORY I (may nominate 10 students for membership).....	\$150	\$230
_____/F00 Sponsoring CATEGORY II (may nominate 3 students for membership).....	\$ 95	\$120

INSTITUTIONAL MEMBERS WILL RECEIVE ONE FREE JOB ADVERTISEMENTS (up to four lines) IN OUR NEWSLETTER PER YEAR. Advertising deadlines are the 1st of every EVEN month. All institutions advertising in the AWM Newsletter are Affirmative Action/Equal Opportunity Employers. Also, Institutions have the option to nominate students to receive the newsletter as part of their membership. NOTE: List names and addresses of student nominees on opposite side or attach separate page. [ADD \$15 (\$23 for foreign members) for each additional student add-on over initial 10 students for Category I; over initial 3 students for Category II]

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