

AWM

ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 32, Number 1

NEWSLETTER

January–February 2002

AWM ELECTION!!

The ballot for the second round of bylaws changes appears on pages 31. Be sure to vote! Ballot due:

March 31, 2002

PRESIDENT'S REPORT

Hello to all AWM members! And Happy New Year!

We were pleased to receive many messages of concern about the tragic events of September 11th and the tornado damage to the University of Maryland campus on September 24th. Thanks especially to the Canadian Mathematical Society for the nice card.

We were heartened to see that so many of our members have recently renewed their memberships. Many members have also included donations to AWM in addition to their dues. We appreciate greatly both types of financial support.

I would like to thank Sue Geller (Texas A & M), Mary Gray (American University), Anne Leggett (Loyola University Chicago) and Jean Taylor (Rutgers University) for their hard work on the proposed changes in the AWM bylaws. There are further bylaws changes to be voted on this issue. Please remember to vote! The results of the election of officers and on the first round of bylaws changes are not yet official; they will appear in the next issue of the newsletter.

We are embarking on a new venture, the production of a video on "Women in Mathematics" together with Davis-Gray Inc. This production company has completed two similar videos, "Women in Computing" and "Women in Engineering," which have been shown on public television. The target audience for this video is high school students.

See the articles about the "spinners" activity written by Bernie Mullins (Birmingham-Southern College) and David Pollack (Youngstown State University) on page 11. I learned about this activity from Bernie and used it (parts 1 and 3) many times in middle school workshops and after-school clubs. I highly recommend checking it out!

The Conference Board of the Mathematical Sciences (CBMS) is continuing its support of mathematics education with the publication of the

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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: 4000. © 2002, AWM

EXECUTIVE COMMITTEE

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AWM OFFICE

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new book in its Issues in Mathematics Education Series, *The Mathematical Education of Teachers*. This book may be purchased from AMS (long version), the short version may be obtained free from MAA, and the full text of the book is available online (see the CBMS website www.maa.org/cbms). We are proud to note that Cathy Kessel, a member of our Education Committee, was the lead editor on this book.

The application deadline for our workshop at the SIAM Annual Meeting is January 21st, and the deadline for the next round of travel and mentoring grants is February 1st. The deadline for Sonia Kovalevsky High School Days applications is February 4th.

AWM has an email newsletter, maintained by Diane O'Leary (University of Maryland); to subscribe, send your name and email address to awm-net-request@cs.umd.edu. The email newsletter is a great way to give or receive advice on mathematical careers and to quickly broadcast announcements. If you would like to get a message to the list, send it to awm-net@cs.umd.edu. We hope to increase the number of subscribers and the usefulness of this resource.

This is the time of year to encourage your math majors to apply for summer research programs. Many of the application deadlines are in February. A listing of some of the available opportunities can be found at the websites of MAA, the National Science Foundation (Directorate for Mathematical and Physical Sciences, Division of Mathematical Sciences) and the National Security Agency.

I appreciate your continuing support, and your comments and suggestions are always welcome (lenhart@math.utk.edu).

Suzanne Lenhart

Suzanne Lenhart
University of Tennessee
and Oak Ridge National
Laboratory
Knoxville, TN
December 1, 2001



AWM ELECTION

We are now ready for phase two of the election procedure, the second half of the bylaws changes. You will find a ballot on page 31 that may be removed from the newsletter or photocopied; also, it is available at the AWM website www.awm-math.org. Please return it to this address by **March 31, 2002**: 2002 AWM Elections, K. Renee Fister, Clerk, c/o Association for Women in Mathematics, 4114 Computer and Space Sciences Bldg., University of Maryland, College Park, MD 20742. As return address, please include the following: validating signature, name, and address. Institutional, affiliate, and corporate memberships do not carry voting privileges.

BYLAWS CHANGES

In the Bylaws text below, deletions are indicated by ~~overstriking~~ and additions in **boldface**.

Bylaws change #4: The Web Editor shall be added to the Executive Committee.

Rationale: The Web Editor has already been made an ad-hoc member of the Executive Committee by that body. This regularizes the position and gives it voting powers, in a manner consistent with the positions of Newsletter Editor and Meetings Coordinator.

Proposed Bylaws text, Bylaws change #4:

4.1 Qualification and Powers of Directors

The Directors shall consist of all members of the Executive Committee except for the Newsletter Editor, **the Web Editor**, and the Meetings Coordinator. The affairs of the Corporation shall be managed by the Directors who shall have and may exercise all the powers of the Corporation, except those powers reserved to the members by law, the Articles of Organization or by these Bylaws.

4.2 Number and Election or Appointment of Officers

The Officers shall consist of the Executive Committee. The Executive Committee shall consist of the President, President-Elect (in even years) or Past President (in odd years), Treasurer, Newsletter Editor, Clerk, Meetings Coordinator, **Web Editor**, and five At-Large Members. The Officers shall be elected or appointed as follows:

MEMBERSHIP AND NEWSLETTER INFORMATION

Membership dues

Individual: \$50 Family (no newsletter): \$30

Contributing: \$100 Retired, part-time: \$25

Student, unemployed, developing nations: \$15

Friend: \$1000 Benefactor: \$2500

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: \$250

Level 2a: \$125

Level 2b: \$125

See <http://www.awm-math.org> for details on free ads, free student memberships, and ad discounts.

Affiliate Members: \$250

Institutional Sponsors:

Friend: \$1000+ Patron: \$2500+

Benefactor: \$5000+ Program Sponsor: \$10,000+

See the AWM website for details.

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.

Newsletter ad information

AWM will accept advertisements for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership and other appropriate subjects. The Director of Marketing, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the Newsletter must be Affirmative Action/Equal Opportunity designated.* Institutional members receive discounts on ads; see the AWM website for details. For non-members, the rate is \$100 for a basic four-line ad. Additional lines are \$6 each. See the AWM website for *Newsletter* display ad rates.

Newsletter 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, Math Dept., 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, Math Dept., 460 McBryde Hall, Virginia Tech, Blacksburg, VA 24061-0123; email: murray@calvin.math.vt.edu and all **education column** material to Ginger Warfield, Math Dept., University of Washington, Seattle, WA 98195; email: warfield@math.washington.edu. Send everything else, **including ads and address changes**, to Dawn V. Wheeler, 4114 CSS Building, University of Maryland, College Park, MD 20742-2461; phone: 301-405-7892; email: awm@math.umd.edu.

AWM ONLINE**Web Editor**

Tamara G. Kolda
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Online Ads Coordinator

Aileen Gormley
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Online Ads Info

Classified and job link ads may be placed at the AWM website. Detailed information may be found there.

Website

<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

NSF-AWM Mentoring Travel Grant:
February 1, 2002

NSF-AWM Travel Grant: February 1,
May 1, and October 1, 2002

Sonia Kovalevsky High School Mathematics
Days: February 4, 2002

AWM CALENDAR

AWM at the Joint Mathematics Meetings,
San Diego: January 6–10, 2002

AWM Workshop, SIAM meeting,
Philadelphia, July 8–12, 2002

AWM CONTACT INFO

4114 Computer & Space Sciences Building
University of Maryland
College Park, MD 20742-2461
301-405-7892
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In the fall of years $2005+4n$, elections will be held by mail ballot of the general membership for the President-Elect, Clerk, and three At-Large Members; and the Executive Committee shall appoint a Newsletter Editor, a **Web Editor**, and a Meetings Coordinator. In the fall of years $2003+4n$, elections will be held by mail ballot of the general membership for the President-Elect, Treasurer, and two At-Large Members; and the Executive Committee shall appoint a Newsletter Editor, a **Web Editor**, and a Meetings Coordinator. The Directors shall automatically appoint the President-Elect to be President immediately following her term of office, and the President to be Past President for the year immediately following her term of office.

4.3 Tenure

The President shall hold office for two years commencing with the odd year February 1 immediately following her election as President-Elect. The Meetings Coordinator, **the Web Editor**, and the Newsletter Editor shall hold office for two years commencing with the even year February 1 immediately following their appointments. The President-Elect shall hold office for one year commencing with the even year February 1 immediately following her election, and the Past President shall hold office for one year commencing with the odd year February 1 immediately following her term as President. At-Large Members, the Clerk, and the Treasurer shall hold office for four years commencing with the even year February 1 immediately following their election. Each officer shall hold office for the above terms and until her successor is elected and qualified, or until she sooner dies, resigns, is removed, or becomes disqualified. The President, Clerk, Treasurer, and At-Large Members are not to hold the same office for more than two consecutive terms.

Bylaws change #5: Calendar changes shall be made.

Rationale: The first change reflects a decision already made by the Directors. The other changes reflect current practice.

Proposed Bylaws text, Bylaws change #5:

1.4 Fiscal Year

The fiscal year of the Corporation shall, unless otherwise decided by the Directors, end ~~May 31~~ **June 30** in each year.

2.6 Regular Meetings

Regular meetings of the members may be held at such places within the United States and at such times as the members may determine. ~~Two regular meetings of the Corporation may be held in conjunction with the annual and summer meetings of the American Mathematical Society and the Mathematical Association of America.~~ **One regular meeting shall be held in conjunction with the Joint Mathematics Meetings in January.** The presence of twenty

members in good standing shall be necessary to constitute a quorum.

4.10 Executive Committee

d. Responsibilities.

1. The Executive Committee shall meet at least once annually in conjunction with the Annual Meeting of members at the Joint Mathematics Meetings in January; ~~and generally also at the time of the Summer Mathematics Meeting~~ or otherwise as called by the President. It is a responsibility of Officers to try to attend meetings during their tenure; those who will not be present should notify the President in advance of the meeting. If a majority of the Executive Committee is not present, members having notified the President that they would be absent will be polled concerning actions. The Executive Committee may go into closed executive session upon majority vote. Any members of the Corporation may attend and participate, without vote, in all meetings of the Executive Committee which are not in closed executive session. Interim matters requiring Executive

Committee action and approval may be handled by mail or email ballot of the Executive Committee.

Bylaws Change #6: The appointment method for committees shall be changed.

Rationale: This reflects current practice.

Proposed Bylaws text, Bylaws change #6:

4.10 Executive Committee

e. *Committees.* ~~Either the President or the Executive Committee, upon recommendation of the President after she has solicited the membership for nominations,~~ shall appoint such committees as may be needed to carry out the objectives of the Corporation. Each committee may choose its own internal structure. Upon request of the Executive Committee, committee chairpersons shall report on the work of their committees.

Bylaws Change #7: The due date and destination for ballots shall be changed. The Council shall be removed from the Bylaws.

NSF-AWM MENTORING TRAVEL GRANTS FOR WOMEN

The objective of the NSF-AWM Mentoring Travel Grants 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 up to 5–6 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, US air carriers must be used (exceptions only per federal grant regulations; prior AWM approval required).

Eligibility. Applicants must be women holding a doctorate or equivalent experience and with a work address in the US (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: 1) a cover letter; 2) a curriculum vita; 3) a research proposal, approximately five pages in length, which specifies why the proposed travel would be particularly beneficial; 4) 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; 5) an approximate budget; and 6) information about other sources of funding available to the applicant.

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.

Send *five* complete copies of the application materials (including the cover letter) to: Mentoring 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 deadline for receipt of applications is **February 1, 2002**.

Rationale: Members have asked to have the voting deadline extended; December 15th is the latest possible, considering the rest of the calendar. The preliminary change in removing the Council from the bylaws has already passed; the final change was not included on the November–December ballot to prevent possible inconsistencies.

Proposed Bylaws text, Bylaws change #7:

4.4 Nominations

d. In order to be counted, ballots must reach the ~~Clerk Corporation main business office~~ by December ~~±~~ 15. The nominee receiving a plurality of votes cast shall be declared elected in the case of the positions of President-Elect, Clerk, and Treasurer; in the case of Members-At-Large, the three candidates with the largest number of votes in years 1993+4n and the two candidates with the largest number of votes in years 1991+4n shall be declared elected by the Directors. ~~Other Candidates shall, with their agreement, become members of the Council.~~

IN MEMORIAM

Rebecca Ann Stoudt (1960–2001)

Rebecca Ann (Lyter) Stoudt was born April 13, 1960 in Harrisburg, PA and raised in Richfield, PA. She received a B.S. Ed. in Mathematics from Shippensburg University in 1978, an M.A. in Mathematics from Bucknell University in 1980, and a Ph.D. in Applied Mathematics from Lehigh University in 1982. She was a faculty member in the Mathematics Department at Indiana University of Pennsylvania (IUP) 1991–2001 after teaching at Bucknell University and Susquehanna University. She died October 14, 2001.

While at IUP she was the recipient of the IUP Distinguished Faculty Award for Teaching, 1996; The Middleburg High School Distinguished Alumni Award, 1997; and The IUP Graduate School and Research Sponsored Program Award for Outstanding Achievement in Curriculum and Instruction, 2000.

She was a talented first soprano. In high school she sang many solos and had major parts in school musicals.

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, US 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 US (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 *any* sources of funding from a governmental agency (for example, NSF, NIH, ONR, DOD, or NSA), is ineligible. Partial travel support from the applicant's institution or from a non-governmental agency does not, however, make the applicant ineligible; the availability or possibility of such partial support should be indicated in the applicant's budget.

Target dates. There are three award periods per year. An applicant should send *five* copies of 1) a cover letter, including the conference name, conference dates and location (city/state/country), and amount of support requested, 2) a description of her current research and of how the proposed travel would benefit her research program, 3) her curriculum vitae, 4) a budget for the proposed travel, and 5) information about all other sources of travel funding available to the applicant to: Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. 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 2002 deadlines for receipt of applications are **February 1, May 1, and October 1.**

She was a member of the Madrigal Singers at Shippensburg University, the Susquehanna Valley Chorale, and the IUP University Chorus. She was a member of Graystone Presbyterian Church.

She is survived by her husband of ten years, Gary Stoudt, and her children Sara and Scott.

Olga Arsen'evna Oleinik (1925–2001)

We are very sad to report the death of Olga Arsen'evna Oleinik on October 13, 2001, after a long struggle with cancer. Professor Oleinik was the AWM Noether Lecturer in January 1995. We want to express our sympathy to her family, friends and colleagues upon the occasion of her death.

Oleinik was born July 2, 1925 in Matusov in the Kiev region. In 1942 she began studying with the Physics and Mathematics Faculty at Perm' University. In 1944 she transferred to the Mathematics and Mechanics Faculty at Moscow State University where she graduated with honours in 1947. From 1947 to 1950 she was a graduate student at the Institute of Mathematics at Moscow State University. Her supervisor was Ivan Georgievich Petrovskii, who played an important role in Oleinik's academic development. In 1950, she defended her Ph.D. thesis, "On the topology of real algebraic curves on an algebraic surface." In 1954, she obtained her Doctor of Science dissertation (for the second degree in Russia, which is necessary to get a full professor position), "Boundary-value problems for partial differential equations with a small parameter for higher derivatives and Cauchy's problem for non-linear equations in the large."

Oleinik began to work in the Department of Differential Equations in the Mechanics and Mathematics Faculty at Moscow State University in 1950. Since 1955, she had been a professor in this department, and she had been its head from 1973 until her death. From 1948 to 1964, she worked also at the V.A. Steklov Institute of Mathematics and since 1965 had held a joint appointment at the Institute for Problems in Mechanics of the Russian Academy of Sciences. Oleinik was the author of more than 350 papers and nine monographs. She was a member of the Russian Academy of Sciences; a foreign member of the Italian Academy of Sciences in both Milan and Palermo, the *Accademia Nazionale dei Lincei* (Italy), and the Saxony Academy of Sciences



Olga Arsen'evna Oleinik

(Germany); an honorary member of the Royal Society of Edinburgh (UK); and an honorary Doctor of the University of Rome. She was awarded medals by the *Collège de France* and by Charles University in Prague, the Chebotarev prize for her research on elliptic equations with small parameter for higher derivatives, the Russian State prize (1988) for investigations of boundary-value problems for differential operators and their applications to mathematical physics, the Lomonosov prize (1964) for her papers on the theory of the boundary layer, the Petrovskii prize (1995) for investigations of the asymptotic properties of solutions of some problems of mathematical physics, and the prize of the Russian Academy of Sciences.

Her main research was concerned with algebraic geometry, partial differential equations and mathematical physics. Her work was extremely broad. In recent years, she obtained fundamental results on non-linear elliptic equations in unbounded domains, on mathematical problems of elasticity, on homogenization problems, on spectral problems arising in study of vibrations of strongly inhomogeneous elastic bodies.

Oleinik supervised more than 60 Ph.D. students and guided the research work of many undergraduates. She

Sergei Avdonin, University of Alaska, Fairbanks

carried out a large amount of editorial work, serving on the editorial boards of nine journals.

note from Cathleen Morawetz:

Richard Courant first met Olga Oleinik in 1960 in Moscow. She was introduced by Petrovsky as one of his prize students. In those days it was very difficult for Russians to get an exit visa to visit America. But in 1962 Olga was a delegate from the USSR to a Women's Convention in California. On the way back she visited Courant in New York, and that is how I met her. Later we were both guests of Professor Fichera in Rome and toured the sights together.

An indefatigable mathematician who made many profound contributions to p.d.e., notably nonlinear hyperbolic, she remained until her last illness a formidable worker. We women especially can mourn someone who, in those early days, toiled so successfully in a traditional men's field.

Dorothy McCoy (1903–2001)

Dorothy McCoy was born in August 9, 1903 in the Oklahoma Territory, near Enid. She had a brother, Neal, who was eighteen months younger. When Dorothy was about three years old, her father died and her mother moved Dorothy and Neal back to the family home in the tiny town of Chesapeake, Missouri. After the children finished grade school, the family moved again to Marionville, Missouri, near the local high school. Both Dorothy and Neal went on to earn undergraduate degrees with honor from Baylor University in Texas and both received Ph.D.'s in mathematics from the University of Iowa in 1929. Dorothy McCoy's dissertation was on "The Complete Existential Theory of Eight Fundamental Properties of Topological Spaces." She was the first woman to receive a Ph.D. in mathematics from the University of Iowa.

Neal McCoy became a professor of mathematics at Smith College where he was a noted algebraist and the well-known author of the widely used textbook *Introduction to Modern Algebra*. (See "In Memoriam," *AWM Newsletter*, Vol. 31, No. 2, 2001, p. 19.) Dorothy McCoy taught at Belhaven College in Mississippi for

Joan P. Hutchinson, Macalester College; Larry Riddle, Agnes Scott College



Dorothy McCoy

twenty years. She then became a professor of mathematics at Wayland Baptist College in 1949, the same year the college (now a university) began offering four-year degrees. At Wayland she taught all levels of mathematics, was head of the department of mathematics and physics, and from 1949 to 1972 served as chairman of the Division of Physical and Biological Sciences. She also directed the honors program in mathematics for many years.

Dorothy McCoy continued her study of mathematics during the summers at the University of Chicago, Columbia University, Vanderbilt University and the University of Colorado. In 1954, she received a Fulbright Fellowship to teach in the College of Arts and Sciences of the University of Iraq in Baghdad. She combined this experience with visits to several European countries. Later travels took her to South America, Africa, and Indonesia. She visited more than 60 countries, some as a visiting professor and others for personal enjoyment. In Rhodesia (now Zimbabwe) she gave an invited lecture to elementary and high school teachers in a Rhodesia teachers college. While visiting several African cities, she was often asked to help tutor missionary children in mathematics.

Dr. McCoy also spent several summers working on

the government's missile program at Cape Canaveral and the Aberdeen Proving Grounds, as well as teaching mathematics at the University of Hawaii, University of New Mexico, Baylor University, Northwestern State College of Oklahoma and Texas Tech University.

Dorothy McCoy retired from Wayland in 1975 with the title of Distinguished Professor Emeritus of Mathematics, the only member of the faculty to have received the title of both emeritus and distinguished. In 1980 Wayland began the Dorothy McCoy Lecture Series. In 1982 she received the first Distinguished Service to Students Award and in 1999 the first Distinguished Lifetime Service Alumni Award. No other faculty member has been longer associated with Wayland or had more honors bestowed upon her.

Shortly before her death on November 21, 2001, Wayland Baptist University dedicated an honors dormitory for women in her name.

The following excerpts are from a letter sent by Dorothy McCoy to the first author of this note, in the spring of 2001, and were included with her permission in the copy of this profile at the second author's web site on "Biographies of Women Mathematicians" at www.agnesscott.edu/lriddle/women/women.htm.

Neal and I had a one room elementary school at Chesapeake, Mo. Neal was caught in a scheduling situation where he and I had 8th grade together but he was supposed to take 7th grade the next year. We both passed the County examination but from then on through Ph.D. we had almost identical courses together and did our dissertations under the same professor, Dr. Chittenden, though the dissertation areas were very different. Neal taught during our second year of graduate school and I did the third year which made me graduate 6 weeks later.

Somewhere in grade school a teacher told me the area of a parallelogram was the product of the two sides. I did not believe it so I went home and cut papers until I was sure she was wrong. In high school I was very impressed with the logic of geometry and loved the Q.E.D. at the end of proofs. We had trigonometry in high school so should have started calculus but were put in solid geometry. I remember the class all being at the board in analytical geometry and Professor Harrell showing Neal and me how to "complete the

square." I was really impressed with it. Our last two years were worthless mathematically.

References

1. Cohen, David. "In Memoriam, Neal H. McCoy, 1905-2001," Memorial Minute presented to a meeting of the Smith College Faculty, 2001.
2. Wayland Baptist University News Release, November 29, 2001.
3. Wayland Baptist University archive materials.

AWARDS AND HONORS

CONGRATULATIONS to the women listed below for their meritorious achievements!

KRISTEN S. MOORE (University of Michigan) has been awarded an American Fellowship from the American Association of University Women to fund a post-doctoral leave at the University of Wisconsin, where she will study the use of partial differential equations in actuarial mathematics. Only eighteen of these fellowships are awarded annually in all of the arts and humanities, social sciences, and natural sciences. The competition is based on excellence in scholarly activities and teaching, and active commitment to helping women and girls through service in their communities, professions, and fields of research.

As part of the University of Maryland College of Education observation of American Education Week, November 12-18, 2001, seven alumni were honored for their achievements. GENEVIEVE M. KNIGHT was recognized as a Distinguished Scholar in Education.

Knight is Professor of Mathematics at Coppin State College. With the exception of a two-year position at Pennsylvania State Capital College, she has served at Coppin State since 1985. She has also taught mathematics at Hampton Institute in Virginia and Edison Junior College in Fort Myers, FL, and worked as a computer specialist for the United States Army Information Engineering Systems Command. She has directed a Junior/Senior High School Teacher Workshops for NASA in addition to serving on a number of boards such as the

Commission for the Education of Teachers of Mathematics, the National Council of Teachers of Mathematics, and the MAA Task Force on Minorities in Mathematics. She has also worked extensively with the National Science Foundation and has written test items for the ACT and PRAXIS exams. In addition to numerous grants, fellowships, and awards, she has recently been named the recipient of the Fort Valley State College Distinguished Alumni Award; Outstanding Faculty Award for Mathematics and Mentoring to Minority Youth, White House Initiative; and the Louise Kerr Hines Distinguished Faculty Award, Division of Arts and Sciences from Coppin State College. She received her B.S. in mathematics/secondary teaching from Fort Valley State College, her M.S. in pure mathematics from Atlanta University, and her Ph.D. in mathematics education from the University of Maryland.

DINA SHAPIRO, Milton High School, Milton, MA (PROMYS at Boston University); BETTY LUAN, Stuyvesant High School, Woodhaven, NY (Hampshire College Summer Studies in Math); and EVELINA SHPOLYANSKAYA, Bronx High School of Science, Bronx, NY (Ross Summer Mathematics Program, Ohio State University) received Ky and Yu-Fen Scholarships from the AMS to attend programs for mathematically talented high school students held in summer 2001. SVETLANA YEGOROVA, Ann Arbor, MI (Michigan Math and Science Scholars, University of Michigan, Ann Arbor) received a Roderick P. C. Caldwell Scholarship from the AMS for the same purpose.

The NSF has awarded Postdoctoral Research Fellowships to: DOROTHY E. BUCK (University of Texas, Austin), Mount Sinai School of Medicine; PATRICIA L. HERSH (Massachusetts Institute of Technology), University of Michigan, Ann Arbor; SHANNON L. STARR (University of California, Davis), Princeton University; JESSICA M. YOUNG (MIT), MIT; and WENDY W. ZHANG (Harvard University), University of Chicago. Ph.D. institution is in parentheses, followed by the fellowship institution.

ALICE THOMAS -of Meriden College, Sydney, received a B.H. Neumann Award for 2001 for contributions to the enrichment of mathematics learning in Australia and its region.

NSF-AWM TRAVEL GRANTS

Congratulations to the recipients of NSF-AWM Travel Grant Awards for the October 2001 cycle. They are: ANNALISA CALINI, College of Charleston; JOANNA ELLIS-MONAGHAN, University of Vermont; SARA FARDI, George Washington University; ANITA LAYTON, National Center for Atmospheric Research; KATHLEEN MADDEN, Drew University; KELLY PEARSON, Murray State University; SONYA STEPHENS, Florida Agricultural & Mechanical University; RAJESHWARI SUNDARAM, University of North Carolina-Charlotte; and JENNIFER TABACK, State University of New York at Albany. Awards ranged from \$300 to \$1,365.

SCIENCE LITERACY

A national survey developed by the California Academy of Sciences and polling organization Harris Interactive reveals that the American public lacks basic scientific knowledge at a time when science-related issues — bioengineering, mapping the human genome, environmental problems, global climate change, cloning, the increasing extinction rate, and the reliability of energy resources — have an increasing impact on daily life. 43% of Americans say they understand less and less of what scientists are doing today.

While crucial social, economic, and health issues now facing the public are being profoundly influenced by new scientific research, a startling number of Americans cannot answer even basic scientific questions: more than half of all American adults (53%) do not know that the Earth goes around the Sun once a year; nearly half (48%) do not have a sense of what percentage of the Earth's surface is covered by water; and 42% can't answer correctly when asked if the earliest humans lived at the same time as dinosaurs.

Nearly 1 in 5 people (19%) couldn't answer any of these questions correctly. Even college graduates did not fare well; just over a third (35%) were able to respond correctly to all three questions.

See http://www.calacademy.org/geninfo/newsroom/releases/survey_results.htm for more info.

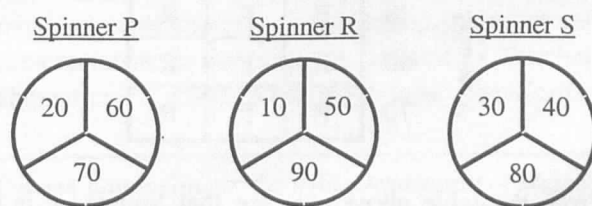
PROBABILITY EXPERIMENTS FOR STUDENT INVESTIGATION

Hands-on experiments often serve both to spark students' interest and to aid their understanding. Here is a probability project that has repeatedly been a hit with our students. The experiment is an easy-to-create modification of the non-transitive dice game designed by noted statistician Bradley Efron [1]. We recommend that students explore the game from (at least) three points of view: a physical experiment, a computer simulation, and a symbolic analysis.

Project Overview: Students investigate a simple game using three spinners (pictured below). They first experiment with paper spinners and then use a computer to simulate numerous repetitions of the game. After they have estimated the probability through experimentation, students analyze the mathematics behind the game. One hook for the students is that the results are surprising. Another is that computer simulations allow students to run enough trials so that their mathematical calculations are reflected in their experimental results. When this happens, many students feel mathematically powerful. By proceeding in stages from the concrete physical spinners through the computer model to the mathematical abstraction, we help ensure that the abstraction is meaningful to the students. This gradual approach to abstraction in one problem often enables students to move easily toward abstraction in future applications.

The Audience: We have used this project (in appropriately modified forms) with grade 3–8 students attending mathematics enrichment workshops, as an activity for middle school mathematics and science clubs, as a topic in college courses for pre-service teachers, and for workshops for in-service teachers.

Project Details: The students are divided into teams of three and each group is given the set of three spinners shown below, two paper clips, data recording forms, and a penny.



Part 1 — Paper Spinners: The spinners and data recording form can be easily made or downloaded from www.as.yzu.edu/~math/faculty/pollack.htm. The paper spinners work by unfolding one bend of the paper clip to act as a pointer. The tip of the pencil is then inserted through the loop of the paper clip and placed in the center of the spinner. Students quickly become proficient at flicking the paper clip so that the pointer whirls around the pencil until landing in one of the sectors (if the pointer lands directly on a dividing line it should be re-spun). These spinners are low-cost, easy to reproduce, don't take up storage space, and perform extremely well.

For the first experiment, we ask one team member to take spinner P, another to take spinner R and the third to record the results. The two students simultaneously flick their spinners and the spinner landing on the higher number wins. Each group conducts 50 trials of the experiment and writes their results on the blackboard. For most of the groups, spinner P will beat spinner R in the 50-spin round (there is a 74% chance) and almost surely the pooled results from the class will show spinner P defeating spinner R (99.3% chance with 500 class spins). We decide, as a class, that P is better than R and briefly discuss that, despite its superiority, P will lose some of the 50-spin games.

In the second experiment, the student with spinner P becomes the recorder, the student who had spinner R keeps it, and the student who was the recorder plays with spinner S. Again each group does 50 trials and class results are tabulated. With the same probabilities as the first experiment, it turns out that spinner R defeats spinner S.

The final experiment is a match between P and S. The student that has not yet been recorder serves in that role. The other two players flip a coin and the winner has the choice between P and S. Since P beats R and R beats S, many students will conclude that P is the best of the three. Contrary to inclination, the results of the experiment will show (with the same probabilities as above) that S beats out P. Spinner power in this game is not transitive!

Purposeful activity: The spinning game is fun (for most audiences) and the surprising result usually generates interest. However, just as important as these motivational factors is its role in enhancing

conceptualization of the key ideas. For example, working with the physical spinners makes the sample space of the experiment concrete. Students unfamiliar with these ideas might conclude that three possible outcomes for spinner P and three outcomes for spinner R combine to give six possibilities altogether. However, the students will see all nine possibilities by doing the experiment themselves and recording the results. This concrete introduction gives meaning to our later representation of the problem using a table of equally likely outcomes or a tree diagram.

Part 2 — Computer Simulations: After using the paper spinners to collect data themselves, students use Microsoft Excel to generate 2000 trials of the experiment. Exactly how the computer is used depends on the audience. We ask college students to build the spreadsheet themselves, but we provide a pre-built spreadsheet for young children. You can download the Excel file from the previously mentioned website. If you are interested in the computer simulation, but not fluent in Excel, having the spreadsheet in front of you will make the following description easier to read. For a short activity for a middle school math club, you could skip the computer simulation and move directly to part 3.

To simulate random events, we use the pseudo-random number generator in Excel. This function is called using the command `=rand()`, which results in a decimal in the interval $[0,1)$. If, for example, we multiply this function by six and add one, `=6*rand()+1`, we will get a decimal in the interval $[1,7)$. Then, by applying the greatest integer function, `=int(6*rand()+1)`, we could simulate the rolling of a fair die. (This can be accomplished in one step with the function `=randbetween(1,6)`, but this command, part of the "Analysis ToolPak," is frequently not installed.) Ask students to try out these commands before proceeding. Show them that the function key F9 causes the spreadsheet to recalculate and generate new random numbers.

Once we have the random number, we use the `=choose()` command to simulate the spinners. The syntax of this command is `=choose(exp,o1,o2,...,oN)`, where `exp` is an expression or cell reference that returns a real number in $[1,N+1)$, and `o1,o2,...,oN` are the outputs we

desire to produce for each of the N possibilities for the integer part of `exp`. We can simulate spinner P with the command `=choose(int(3*rand()+1),20,60,70)`. Type this command once and copy it down 50 rows to create a column of spinner P results that looks like the sheet on which we recorded our data from the paper spinners. Indeed, we designed the layout of the data-recording sheet to make the computer simulation seem like a natural extension of the earlier hands-on experience. This is helpful for younger students. The commands to simulate spinners R and S involve obvious modifications. Ask students to create 2000 spinner P results in column C and 2000 spinner R results in column E.

We use the `=if()` command to determine the winner of each spin. The syntax is `=if(condition,oT,oF)`, where `oT` is the output generated if the condition is true and `oF` is the output generated if the condition is false. Thus the command `=if(C3>E3,"P","R")` will produce the output P if the number in cell C3 is greater than the number in cell E3 and R if it is not. Finally, we use the `=countif()` command to count the number of P's and R's in the winner list. The command, as we used it, is `=countif(range,target)`, where `range` is the set of cells in which we want to count and `target` describes the item to be counted. Thus the command `=countif(C3:C2002,"P")` returns the number of cells between C3 and C2002 that evaluate to P. Finally, we compute the fraction of spins in which spinner P wins. By pressing F9 several times, students get a feel for typical winning percentages.

In a second and third worksheet within our Excel file, we calculate the relative frequency of R beating S and S beating P. With experimental results in hand, we next ask the students to calculate the actual probability.

Part 3 — Mathematical Analysis: Students calculate the probability of P beating R by making a table of equally likely outcomes.

		Spinner R		
		10	50	90
Spinner P	20	P	R	R
	60	P	P	R
	70	P	P	R

From the table above, we see that Spinner P is the winner 5 out of 9 times. Similarly, students find that the

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probability of Spinner R beating Spinner S is $5/9$. However, the probability of Spinner P beating Spinner S is $4/9$. In a group discussion at the end of the project, we ask the students to explain their findings. We also ask if they have any idea why the spinners are named P, R, and S. We usually get a smile when they recall the children's game "Paper, Rock, Scissors". You might remember that paper covers rock, rock dulls scissors, and scissors cuts paper.

Reference

Martin Gardner, "Mathematical Games," *Scientific American*, 223 (6) (1970), 110–114.

EDUCATION COLUMN

I have just had the good fortune to receive an article so interesting, so full of pertinent information and ideas and so articulate that I would dearly love to reproduce it in the space for this column. Unfortunately that would require something like a two-point font, which would be distinctly detrimental to its usefulness, so instead I shall hit the high spots of the article and wave gently in the direction of its details. The article is by Berkeley professor Alan Schoenfeld, one of the leading lights in the field of mathematics education. Its title is "Making Mathematics Work for all Children: Issues of Standards, Testing and Equity."

Schoenfeld's first line of argument, set up by remarks from civil rights leader Robert Moses, is that in the present state of society, mathematical literacy is an ever-increasing necessity for any form of employment. The combination of that increasing necessity with the fact that the children most likely to be defeated by mathematics are those already at a disadvantage — children of color and children of poverty — is fundamentally inequitable. More broadly, he argues that mathematical sophistication of the type championed in recent reform documents such as the national Council of Teachers of Mathematics' (2000) *Principles and Standards for*

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School Mathematics can be seen as a core component of intelligent decision-making in everyday life, in the workplace, and in our democratic society. To fail children in mathematics, or to let mathematics fail them, is to close off an important means of access to society's resources.

With this lens in hand, Schoenfeld inspects the recent history and current state of mathematics education in the US, both its strengths and its weaknesses, pointing up some areas of dire need, but also some reasons for hope and optimism.

Setting the scene, Schoenfeld cites some of the sources of the data correlating socioeconomic status, race and opportunity to learn — numerous sources from TIMSS to Jonathan Kozols. Then he traces the movements in mathematics education from the fifties to the present.

Prior to the curricular reforms of the previous decade, he points out, the standard curriculum was geared for the college bound and mathematically inclined, with some room for very bright kids with non-standard backgrounds. (I suspect that includes much of this newsletter's readership.) For anyone not mathematically or academically inclined, or even with the inclination but without the confidence (notably girls and minorities), it served as a harsh filter.

It had a further weakness that is more rarely acknowledged, possibly because absences are less visible than presences: the entire focus of the curriculum was on the pure and the abstract, with calculus as the Holy Grail. Nowhere was there more than a nod to the real world; word problems were far more often a cover story for a computational problem than an exercise in modeling, and topics like statistics were completely swept under the carpet. Even the art of expressing oneself coherently in mathematics was at most marginally represented. This curriculum remains to this day the one most likely to be encountered in a large percentage of classrooms anywhere in the United States.

Look now at what mathematics is really needed by the students who are not going to wind up in graduate school, but rather are going to head straight from high school out into the world and the work force. Quantitatively literate citizens need to be able to make sense of a slew of information on subjects ranging from the national debt to medical risk, to distinguish between plausible and bogus statistical claims and, as communication becomes more and more vital in the job market, to

convey their thinking effectively.

In short, there is a huge intersection between the set of elements of mathematics commonly lacking in the education of a graduate-school bound mathematics student and the set of elements required for the most basic quantitative literacy. Recognition of this intersection led to what Schoenfeld terms the most visionary of the recommendations in the *Principles and Standards for School Mathematics* (NCTM, 2000): that all students should study a common core of mathematics throughout their K–12 years. This was and is a radical and distinctly alarming thought — but one for which supporting data are now appearing. The consistent outcome is that a focus on conceptual understanding, applications, and problem solving, which are universal needs, does not produce a reduction in the procedural skills required for more advanced study.

The reason the data exist can be traced to the NCTM's 1989 *Curriculum and Evaluation Standards for School Mathematics* (the predecessor to the *Principles and Standards*). This astoundingly influential document had the same underlying philosophy as *Principles and Standards* and triggered the production of several curricula based on that philosophy. A certain number of school districts adopted these curricula. And testing data have quite recently begun to emerge. The city of Pittsburgh has produced a particularly well documented set of data, and results from other areas confirm them: a well-implemented use of the "Standards based" curricula had no detrimental effect on results of students' tests of basic skills, and a consistently large positive effect on results of their tests of conceptual understanding and problem solving. In addition, racial differences in performance diminished substantially. These are spectacular results, about which Schoenfeld gives details and references. He also discusses some of the issues and obstacles that need addressing to insure the sustained improvement of mathematics instruction.

Among those issues and obstacles, he cites four as fundamental: 1) high quality curriculum; 2) a stable, knowledgeable, professional teaching community; 3) high quality assessment that is aligned with curricular goals; and 4) stability and mechanisms for evolution.

The issue of curriculum is already being addressed, with a number of curricula that are already strong and are being debugged and further improved.

The teaching situation, on the other hand, he characterizes as a national outrage and a national pathology.

Partly because the skills required for teaching are underestimated and undervalued, teachers are generally sent into the classroom woefully underprepared, and then given appallingly little opportunity for professional growth. Data from Pittsburgh and Michigan back up what seems intuitively reasonable: when teachers are treated like professionals and given the opportunity to develop their skills and understandings over time, the result is significant gains in students' mathematical performance. Unfortunately, other places where professional treatment and opportunities happen are rare indeed in the United States. This is something that must change. Many people, in fact, subscribe to the idea that it must change, but how to do it is totally unclear. Schoenfeld's view, analogous to one of Robert Moses, is that all of us should provide any support we can, but that the basic responsibility for change must rest with the teachers themselves. Moses sets up an analogy with the political situation in Mississippi in the 1960s: many people had been supporting and speaking for sharecroppers, day laborers and the like, but the point when they got the vote was when they themselves rose up and demanded it.

The assessment situation is more mixed. On the one hand, Schoenfeld documents some of the pernicious effects of high-stakes, low-level testing. On the other hand, there is an increasing recognition of the damage this kind of testing can do, and an increasingly clear and articulate message coming from many branches of the educational community contrasting this testing with the kind of assessment which can be beneficial. The situation is fluid and has at least some encouraging aspects.

The issue of stability and mechanisms for evolution is one of the diciest. In the US our track record is not good. Over the past decades we have done pendulum swings with large arcs. We are a nation accustomed to quick fixes, and furthermore our politicians, who have a lot of influence, are strongly attracted by visions of change happening before the next election. This provides us with a daunting challenge. On the other hand, the current movement has now been sustained for long enough for solid data to begin to appear and for specific knowledge of what needs to be done to begin to take shape. It is a process that began with research on mathematical thinking and learning twenty-five years ago — and this is not the kind of scale on which the public is accustomed to thinking for educational issues. Among the mandates we now face is that of educating the public to as many of the issues and of the possibilities in the

current situation as we can.

Fortunately the possibilities really are there. The current situation, as Schoenfeld finishes by pointing out, offers tremendous opportunities. We have made what he describes as astounding progress, both in terms of students in general and in terms of traditionally underrepresented minority students. We have a solid base on which to stand. It is time, he concludes, to stay the course, build on what we know, and work in evolutionary fashion toward the improvement of (mathematics) education for *all* students.

BE A MENTOR!

Making Mathematics, an NSF-funded project, is looking for teachers, students, and mentors to explore exciting mathematics research projects. Our projects: 1) Match mentors from industry and academia with secondary mathematics teachers and students. 2) Engage students in extended mathematical explorations during which they gather data, discover patterns, pose questions, develop conjectures, and build proofs of their claims. Participating students come to view mathematics as a creative and collaborative science. They also gain new insights into and expertise with the computational and symbolic skills they investigate. 3) Support teachers as they include these mathematics research projects in their classrooms, math clubs, or independent tutorials.

To give you an idea of our research projects, here's an excerpt from "The Simplex Lock." The Simplex Lock Company manufactures a lock with 5 numbered push-buttons; they advertise that this simple lock has "thousands of combinations". Are they telling the truth? A combination is a sequence of 0-5 pushes. The pushes must follow these rules: 1) You may push any number of buttons, from 0 to 5. 2) Once a button is pushed, it cannot be reused in a later push. Some possible combinations: {1 2 3} {4 5} (push 1, 2, and 3 together, then push 4 and 5 together); {4 5} {1 3 2} (the order of pushes counts, but the order inside a push doesn't); {1} {3} {4 5} (you don't have to use every button); {} (no combination; the door is unlocked).

Our classroom-tested projects include teaching notes, hints, extension problems, warm ups, and solutions. You

may see the Simplex Lock resources at www2.edc.org/makingmath/mathprojects/simplex/simplex.asp.

You can learn more about Making Mathematics at our Web site: <http://www2.edc.org/makingmath/>. Be sure to look at our teacher and mentor support pages.

Research mathematicians can be a valuable resource for both teachers and students, bringing a wealth of expertise and encouragement to students of all abilities. Teachers can receive mentoring as they implement a new strategy. Students can get a chance to go beyond short-term problems and see mathematics as it really is. We invite you to take a chance and join us! Applications are available on our website. If you have additional questions, write to us at dmsr@edc.org.

FAMILIES OF FREEDOM SCHOLARSHIP FUND

The Families of Freedom Fund was created by former President Bill Clinton and Senator Bob Dole in response to the events of September 11. The Families of Freedom Scholarship Fund will assist children and spouses of the victims by providing funds for their college education. Through the leadership of the American Physical Society a subfund, the Science and Engineering Scholarship Fund, is being created with funds earmarked for students who are pursuing degrees in the sciences and engineering.

The Citizens' Scholarship Foundation of America, Inc. (CSFA) will manage the fund. CSFA is the nation's leading designer and manager of scholarship programs for corporations, associations, foundations, and individuals and has been recognized for four consecutive years by the *Wall Street Journal's Smart Money* magazine as one of the nation's top ten nonprofits and the second most efficient education nonprofit.

The AMS and more than 30 other scientific and engineering societies have joined the APS in supporting the creation of the subfund. Tax-deductible contributions may be made by visiting www.familiesoffreedom.org. Checks made payable to Citizens' Scholarship Foundation of America, designating The Science and Engineering Scholarship Fund, may be mailed to CSFA, 1505 Riverview Road, PO Box 297, St. Peter, MN 56082.

LIFE ON THE EDGE: FOUR YEARS DOWN

Enhancing Diversity in Graduate Education (EDGE) was started in 1998 as a summer program for women pursuing advanced degrees in mathematics. Program co-directors Rhonda Hughes, Helen Herrmann Professor of Mathematics at Bryn Mawr College, and Sylvia Bozeman, Associate Provost for Science and Mathematics at Spelman College, envisioned a program that would help women with the transition into graduate school. For the past four years, Bozeman and Hughes have alternately played host to eight to ten students on their respective campuses.

While their principal objective is to increase the number of women obtaining Ph.D.'s in the mathematical sciences, the program is geared to equip students with the tools necessary for getting over two major hurdles in their graduate programs — first year courses and Ph.D. comprehensive exams. To that end, the EDGE summer is centered around two intensive courses, one in algebra and the other in analysis. Students have daily group problem-solving sessions, required homework sets and presentations. During the four-week session guest speakers introduce new areas of research and share their perspective on how to succeed in graduate school.

On the surface, EDGE sounds like yet another summer enhancement program with a catchy acronym. Its mission is not atypical. The principal components of the program are fairly standard. But if you ask any of the now thirty-seven EDGE students, they will tell you that EDGE is unique in its fostering of community. They will tell you about their opportunity to mature, mathematically and personally, within the safe confines of this community. And further, they will affirm that the support of the EDGE community has been a key ingredient in their persistence thus far.

I credit the EDGE program as one of the influences that has kept me in graduate school. There have been many frustrating moments along the way. It was a great comfort to know that I always had people to call on willing to give a word of encouragement. I am grateful for all of them.

— Rachel DeCoste, student participant, 1998.

Take for example, the problem-solving sessions.

There are either one or two scheduled (or informal) problem sessions every day; they are intended to be collaborative efforts. During this time students begin to tackle the problems assigned by the instructor. Mentors, who are advanced graduate students, lead the problem sessions, ensuring that everyone is engaged. When a group of students has completed an assignment, they are encouraged to help others who may need further assistance. Less sophisticated students might present, to their more savvy counterparts, definitions and examples to build their conceptual framework. Everyone must participate and find her role within the group. And all students are improving their abilities to collaborate.

I've learned to pace myself, not by the pace of my peers, but at my own pace.

— Sandrina Gould, student participant, 2001.

The skill of collaborating, in both social and mathematical contexts, is one of many understated necessities for a positive graduate school experience. EDGE traditions create a climate that insists on social engagement. Every Thursday of the four-week program, students are given small dinner stipends. The caveat: they must all go together and without the program facilitators. The program has a weekend reunion that invites back the previous summer's participants. During each reunion, the current EDGE students provide the entertainment during a talent show. This past summer the group performed a Middle Eastern dance choreographed by two of the students, one of whom had studied the cabaret style and the other, the tribal style. In preparation for their debut, students found themselves challenged in an entirely new way as they redeveloped self-confidence and renegotiated their roles within the group. Every summer the students participate in discussions about the social aspects of graduate school. In the past three summers formal discussions, led by a social scientist, were added on race, class, and gender issues. In one way or another students are forced out of their comfort zone and become reliant on their fellow EDGERS.

Graduate school is a true test of one's abilities. But if we look into ourselves and turn to those around us, we can learn more than we ever thought possible.

— Denise Mason, student participant, 2000.

Diana Campbell, EDGE Program Coordinator

As students wield algebra and analysis in their work, they gradually come to understand that they are part of a larger community. Throughout the program, students meet a variety of EDGE supporters. Guest speakers may introduce their areas of research or speak about their experiences. During the first summer Janet Talvacchia of Swarthmore College gave a mini-course on the classification of two-dimensional manifolds, while Tepper Gill of Howard University gave a series of lectures on differential equations. Lee Lorch presented a historical account of the African-American mathematician's plight while seeking inclusion in the larger mathematical community. Every summer there is a panel discussion with advanced graduate students and recent Ph.D. recipients who give personal accounts of graduate school, completing their dissertations and the initial stages of their careers. Even the program officers from granting institutions that fund EDGE address and inspire the students. Lloyd Douglas spoke last year on interdisciplinary funding at the National Science Foundation. Danielle Carr from the Mellon Foundation gave several lectures in analysis during the summer of 2000. While guests arrive with varying accomplishments and stature, each leaves behind the same sentiment: you are not alone in your endeavor.

It helps to know the stories of these women. The struggles and triumphs help to reassure me that I am not in this race alone. The mentoring is crucial. Even a simple "Hang in there" helps in the tough times.

— Carla Cotwright, student participant, 2001

One of the most valuable aspects of the EDGE program has been seeing women in all stages of their mathematical careers. The community of professors, mentors and students here has been extraordinarily warm and friendly.

— Kamila Larripa, student participant, 2001

After the four weeks come to a close, EDGers are not left alone. There are three mechanisms in place to keep them closely tied to their new community. First is an email message board hosted by the Math Forum (www.mathforum.com) that allows students to stay connected, reach out for advice, announce triumphs as well as setbacks, and vent. Second, students are funded to attend the annual Joint Mathematics Meetings and provided another opportunity to connect with each other. Lastly, in addition to the personal outreach efforts of the

co-directors, each student is matched with a faculty mentor.

If the EDGE philosophy of community hadn't resonated loudly enough for the students, this past summer's reunion brought home the point. On June 15th, 2001, in Atlanta over 80 people attended the reunion. The group consisted of the student EDGers; faculty mathematicians who had served as instructors; and speakers, past and present; as well as the administrators and the support staff from Spelman College. They came, each from a different phase of his or her own mathematics career, each with reason to celebrate — from passing comprehensive exams, tenure, engagement, marriage, and motherhood to a new job opportunity, a research breakthrough, a masters degree and proving the Cantor set is uncountable. The co-directors, too, had cause for celebration. Seeds planted just four years ago had come to fruition: of the 27 students who had been through the EDGE summer, 26 are persisting in their graduate program.

Before I participated in EDGE, I had serious doubts about whether I could make it through graduate school. EDGE instilled the confidence I needed to pull through and make it over hurdles.

— Tawana Mapp, student participant 2000

Persisting in a program and graduating is only one measure of success. Of course the co-directors want EDGers to complete a master's degree or Ph.D. in the mathematical sciences. More importantly, EDGers should be equipped with the coping mechanisms to have positive graduate school experiences and to prepare them to be vital leaders in the mathematical community.

- EDGers should be confident. They should recognize their ability to independently tackle and learn abstract, difficult material.
- EDGers should be empowered. They should learn to respond positively to their successes and failures.
- EDGers should be resourceful and should, themselves, be resources. They should be able to identify their needs and use their entire community for support while providing support to their contemporaries.

Having been mentored, I am interested in mentoring those behind me. For example, I have co-founded an informal mentoring initiative for women in the Dartmouth math Ph.D. program that

builds on many ideas inspired by EDGE as well as incorporates new ideas that are relevant in the Dartmouth setting. Most importantly, it addresses both mentoring needs that arise on a day-to-day level as well as incorporates a crisis-intervention component should a student with potential and interest to succeed happen to fail a qualifying examination, have a negative encounter with a professor or generally feel overwhelmed by tutoring or classwork responsibilities.

— Susan D'Agostino, student participant, 1998

A 97% persistence rate is an impressive statistic. However, measuring persistence de-emphasizes the long-term effects of the program. Measuring persistence can also be deceptive because it fails to differentiate between a student who seeks one degree and obtains another. And what about the student who completes her Ph.D. but then doesn't pursue a career in mathematics? Is she as successful as her counterpart who has a Master's degree and is fully immersed in a mathematics career? What if a student leaves her graduate school program in mathematics and pursues a career in another discipline? Perhaps the most compelling evidence of success thus far is the plethora of anecdotal material found in program evaluation surveys and in the personal quotes such as those contained in this article. Although our statistics look very good, it is simply too soon to be sure *how* successful the program is. Only time and the experiences of more participants will tell.

This past October proposals were submitted to obtain funding for the EDGE program for another three years. The summer component of the program will continue as usual, but other components will be adjusted. The reunions, for instance, have become too large to accommodate during the summer program. Instead there are plans for a symposium to be held after the summer program. The symposium will have math sessions, panel discussions and some workshops geared toward faculty and administrators. As in previous years, there will be a celebration dinner and, of course, the talent show.

The post-program mentoring will be further developed. While each student is matched with a faculty mentor, it is unclear whether or how that relationship is developed throughout the school year. EDGE will tackle the issue of how to implement practices that help mentors to be effective and mentees to be responsive.

The location of the summer program has rotated back and forth between Bryn Mawr and Spelman. Next

summer Bryn Mawr will be the host site again. Following the summer of 2002, the co-directors intend to move the program to other campuses.

With four years down, living on the EDGE is exciting. In another three years about seventy percent of EDGErs will have had the opportunity to take preliminary exams or receive Master's degrees. There could very well be a large handful of new Ph.D. recipients. One thing is certain: there will be much to learn from this holistic approach to preparing women to become mathematicians. The entire community will grapple with the complexities of these issues: the delicate balance to be struck between a student's intrinsic love for mathematics and her extrinsic drive toward a Ph.D.; the dichotomous identity, one within her culture, the other within the mathematics culture, that she will need to meld; and the maturation, from being knowledgeable to being mathematically savvy, that must take place. In a nutshell that is what EDGE is all about: helping a student critically examine the variety of cards she brings to the table and providing the resources she'll need to play.

Apply by **March 15, 2002** for this year's EDGE Summer Program (see advertisement on page 32 for details.)

SKHS DAY REPORTS

Funded through grants from the National Security Agency, Coppin State College, and Sandia National Laboratories. Thanks to all the funding agencies!

California State University, Stanislaus

California State University, Stanislaus conducted its first annual Sonia Kovalevsky Mathfest on Saturday 22, 2001. The day was filled with activities that sparked the interest of all participants. The day began at 9:00 A.M. with registration and a continental breakfast. Upon registering, participants received a canvas tote bag, which they filled with goodies throughout the day. The tote bag's design included a picture of Kovalevsky and logos of the sponsors. On their way to the breakfast bar, participants filled their bags with notepads, pens,

Viji K. Sundar, Professor of Mathematics and Director of Math Grants and Sponsored Programs, and Silvia Malan, graduate student

pencils, and the AWM booklet *Careers That Count*.

Sixty-four participants attended the event from 10 secondary schools in the University's service area. With breakfast in one hand and tote bag filled with goodies, the participants made their way to the lecture hall. Viji Sundar, Professor of Mathematics and Director of SKM Day, welcomed the participants and turned their attention to the day's events. Sundar introduced Mary Cullinan, Dean of Arts, Letters and Sciences at CSU, Stanislaus, the keynote speaker who spoke of the importance that math has played in the development of civilization. In her speech "Celebrating the Past, Creating the Future" she led the students on a journey through time in which she discussed important moments in mathematics and their significance on the cultures of the world. She spoke of Sonia Kovalevsky's mark in the world — not just the world of mathematics. She pointed out that Kovalevsky's pioneering efforts "has allowed women to enter college" and graduate with degrees from all fields. The girls were intrigued by Sonia Kovalevsky's life and asked questions at the end of the session.

Students and teachers were given instructions about the sessions that followed. There were four concurrent sessions; each session was held twice. This gave the students a choice of two sessions to attend.

"Fractals: The Helpful Monster" by Heidi Meyer, Mathematics Instructor, Modesto Junior College and Jeopardy contestant, gave students an insight into the world of fractals. Students saw fractals in action on the screen as they entered the room. The students' attention was captured by the image of the fractal. She had students draw the beginnings of a fractal. She asked students to name some fractals in our everyday life. Many students participated in naming objects that they thought were fractals, but they were all amazed to hear about the fractal within themselves, their veins. One student made a connection between her math class and this session, "It also showed me what geometry could be used for."

Sundar conducted "Binary Code: The Language of Computers," a hand-on session where students learned about binary numbers. They also learned how to count up to 512 with their fingers and played a game with binary numbers. Students commented, "The computer language. I really enjoyed this session. I like the understandable explanations and the games used to reinforce it," and "Language of computers, Dr. Sundar

was so much fun."

Flora Watson, Professor of Biology, and Gail Garret, college student, teamed up to do the presentation, "All You Want to Know About Pre-Medicine and Pre-Dental Programs." They gave the students information about the role of mathematics in medicine and dentistry and opportunities available to women who wish to pursue a college education. During the question and answer period, students were actively engaged asking questions. A student said, "Very good, excellent answers of questions, very good information."

Chad Stessman, Assistant Professor of Chemistry, CSU Northridge and Nhuy Stessman, Assistant Professor of Chemistry, CSU Stanislaus did an interactive presentation in which students explored the chemical reaction of various household items. Students explored the balancing of equations by exploring acids, and bases in "Understanding Chemical Reactions in Your Daily Life." One student wrote, "This was my favorite session. We did three cool experiments and learned how math also deals with chemistry."

Following the two sessions, students were escorted to lunch. They feasted on pizza, soft drinks, fruit, and candy bars. They were given an opportunity to talk about their day and meet students from other schools. Our guest speakers sat among the students, giving the students an opportunity to talk to them.

Our final event was a series of math skits presented by the mathematics and science majors at the University. The college student's skits were math versions of popular game shows involving students from the audience as contestants. The skits were: "Name that Price," "The Weakest Link," "To Tell the Truth" and "Jeopardy." The questions were math problems that the students had to answer correctly to continue in the game. The winners received prizes. One student expressed her thoughts, "WOW! They were excellent. I also loved how they got the audience involved." Another student wrote, "The math skits were fun and hilarious. We should do this more often."

The day ended with the students completing the evaluation form. Once they had been collected there was a raffle with six big prizes given away. The participants left the SKM day joyful for being there, learning much and hoping that this event would be held again next year.

To all of you who gave your time to make this day a success, thank you. A special thanks to AWM who helped provide funding for this event in collaboration



1st place team, Ashley Borgstadt, Jill Hilbrenner, and Leslie Myers
at Central Missouri State University SKHS Day

with NSA, Coppin State College, Sandia/Martin Lockheed Foundation, and Central California Math Project. Also, thanks to CSU, Stanislaus for allowing us to use their facilities.

Central Missouri University

Central Missouri State University held its third Sonia Kovalevsky High School Mathematics Day on September 25, 2001. Fifty-four students and 15 teachers attended the event and seemed to thoroughly enjoy the day.

The day started with registration and refreshments. At 8:30 a.m., the group was welcomed to campus by Central's Provost Kyle Carter. Then it was off to the first workshop session. The students chose from four different workshops. One was titled "Data Collection with the CBL and the Graphing Calculator: Mathematics in Motion," led by Carol Keating of Lee's Summit North High School; another was titled "Goldfish, Chocolate and Lies: Adventures in Statistics," led by Erin Blankenship of University of Nebraska-Lincoln; the third was "Finding Patient Zero: Tracing Backward to Locate the Source of an Epidemic," led by Anita Salem of Rockhurst University; and the fourth was "Fundamentals of Flight," led by Kristin Goodwin, a US

Air Force pilot. The teachers also attended a workshop during this time. Their workshop was "CBR/CBL Explorations in Calculus," led by Terry Goodman of Central.

After a brief refreshment break, the students formed teams of two or three for the problem solving competition. The problems were tough, but the students were up to the challenge. Their teachers gathered in a separate room to visit and give the problems a try themselves. At 11:00 the students chose a second workshop to attend while their teachers attended a workshop titled "Recursion: The Devil and Daniel Webster," led by Cindy Ramey and Sue Sundberg of Central.

The afternoon proved to be just as busy and interesting as the morning. After lunch, five panelists spoke and answered questions during the career panel discussion. The panelists were Ameer Hamilton, Engineering Team Leader from Cerner Corporation; Lynn Robinson, Actuary from Kansas City Life Insurance Company; Marcie Danley, Electrical Engineer from Burns and McDonnell; Kristin Goodwin, Pilot, US Air Force, Whiteman Air Force Base; and Erin Blankenship, Assistant Professor of Biometry, University of Nebraska - Lincoln.

After the panel discussion, the group took tours of the Department of Mathematics and Computer Science. They saw demonstrations in a computer lab and an electronic classroom, and they visited the mathematics library, where Ed Davenport, chair of the department, spoke to the students about programs offered by the department.

The day ended with a reception to honor all participants. Students and teachers were presented with certificates and the winners of the problem solving competition were given prizes, including t-shirts, key chains and calculators. Two calculators were given away in a drawing.

Everyone involved seemed to have a great time. One student said, "My experience today has been positive and eye-opening." Another student said, "The panel was very helpful in learning more about math-related jobs." The teachers said that they plan to use in their

classrooms what they learned in their workshops. They also enjoyed watching their students get excited about mathematics.

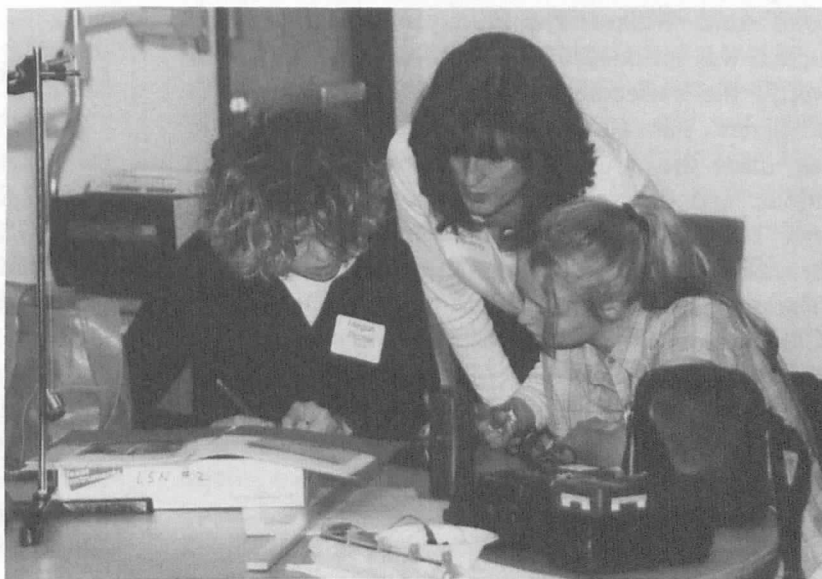
The day ended with a reception to honor all participants. Students and teachers were presented with certificates and the winners of the problem solving competition were given prizes, including t-shirts, key chains and calculators. Two calculators were given away in a drawing.

East Central University

The attendees were greeted with donuts and juice and given various materials for the day. Included were TI-83 Plus calculators, custom printed commemorative polo shirts, and some ECU items. A brief discussion on Sonia Kovalevsky was held, and Ray Hamlett, Chairman of the Department of Mathematics at East Central University, welcomed the attendees on behalf of the university. A short calculator exercise prepared the attendees for the day, and the attendees were split into two groups for the following sessions in order to force mixing of the students from the various schools.

Half of the attendees explored the use of their new graphing calculators though modeling problems presented by mathematics department member Robert Ferdinand. The coastline of Lake Tahoe and the prison populations in California were investigated. Data points were entered in both situations, and curve-fitting was done to create models from which future information could be obtained.

Simultaneously, the other half of the attendees explored a competitive swimming problem at the Department of Computer Science laboratory. Led by Chairman of Computer Science, Bill Walker, the attendees used tools from algebra and geometry to model hand-held stopwatch timing of swimming events held in a 50-meter pool. Of particular interest were 50-meter events. After programming the model on the UNIX machine, the attendees discovered that the positions of the timers and the swimmers affected the official times of the event. In races which are often won by a few hundredths of a second, the discrepancies discovered serve



Carol Keating works with two students using the CBL at Central Missouri State University SKHS Day

to reinforce the now more common practice of using electronic timing equipment in swim meets, when available.

A drawing was held to split the students into teams of two, forcing a mixture of students from different schools. They worked on a written exam containing questions at the high school algebra level. The top three teams were selected to compete in the finals to be held during the lunch break.

The sessions offered earlier were repeated, with the two groups swapping positions.

Visiting speaker Kandice Butler Johnson spent a half hour visiting with the attendees about her studies, her career, and her experiences as a woman mathematician. Everybody then gathered for a sandwich lunch, which included good food and enjoyable conversation. The contest finals were conducted orally. The audience was given party horns and encouraged to cheer for the teams as they responded to short-answer questions about various mathematical topics ranging from terminology to mathematics history. Everybody had a great time, as the evaluations at the end of the day showed. In fact, the lunch activities were the most highly rated of all the events!

Using the two groups formed in the morning, half of the attendees went to a number theory session presented

by Department of Mathematics member and grant director Anita Walker. The Principle of Mathematical Induction was introduced as a proof method often used to verify the correctness of closed-form solutions to finite series. The attendees explored numerous finite series, made their own guesses as to the closed form solutions, and then constructed proofs to prove their claims. The session provided a balance to the applied math sessions offered throughout the rest of the day.

The other half of the attendees met with Department of Computer Science members Mary Kay Tarver and Clay Carley to explore encryption algorithms and to learn about Boolean expressions as used in Internet searches. These were chalkboard presentations.

The sessions were then repeated, with the two groups swapping positions.

The contest winners were announced and light-hearted prizes were given. A variety of information from East Central University and AWM was distributed to the attendees as they prepared to depart. Exit evaluations were completed by all but one attendee, and based on the replies, the day was a total success for all involved.

The attendees were released fifteen minutes ahead of schedule!

East Tennessee State University

Seven high schools in Northeast Tennessee participated in the Sonia Kovalevsky High School Math Day held at ETSU. Two of the participating schools were large city high schools, while the remaining five were smaller rural schools. A total of 100 students and five teachers attended. The two larger schools attending sent 25 students, one teacher and 46 students, two teachers, respectively. Four of the county rural schools teamed up to pay for a single bus and then sent 25 students and one teacher. The remaining rural school, from a different county, sent four students and one teacher.

The event was held primarily in the ETSU University Center. When the students arrived in the morning, refreshments were provided at the welcome area outside the auditorium. The students were then provided with the flyers and information on Sonia Kovalevsky that was sent by AWM, and they also picked up their name tags. They then proceeded to the auditorium for orientation and selection of workshops.

Thank you for giving us the opportunity to host this event. Judging from the level of participation and the

evaluations, the day was a success.

Elizabeth City State University

The Celebration of Women in Mathematics was held on September 28, 2001 on the campus of Elizabeth City State University. The event was co-sponsored by AWM, The Office of Naval Research Nurturing ECSU Research Talent Program, and The NASA Network Resources and Training Site. Participants included 367 girls and 19 teachers from local area high and middle schools. All received registration packets which included a portfolio, drink bottle, nametag, and notepad. All items were imprinted with the Women in Mathematics logo. AWM literature was also distributed to all participants. The Celebration consists of a series of hands-on workshops, a career lecture, mathematics displays, a math sprint competition, lunch, and Math on the Internet. Photos from the event can be viewed at nia.ecsu.edu/nrts/2001events/soniakday/soniak.html. ECSU faculty members Linda Hayden and Georgia Lawrence served as program organizers and workshop leaders.

The day began with registration and an opening assembly. During the opening Carolyn Mahoney, ECSU Dean of the School of Mathematics, Science and Technology welcomed the participants. Georgia Lawrence followed with a discussion of the occasion and an overview of the life of Sonia Kovalevsky. Guests were introduced. The special guest for 2001 was Eleanor Jones, Professor Emeritus of Mathematics, Norfolk State University. The opening assembly concluded with a roll call of schools. During the roll call, a teacher from each school led an "I Love Math" cheer from its girls.

Two mathematics displays, Math/Science/Technology Trivia and I Want to Be Like Her, were set up in the lobby of the Jimmy Jenkins Science Complex. At these booths girls tested their knowledge of mathematics and learned about mathematics and science careers while earning prizes, posters and other rewards that were donated by ONR and NASA.

If a workshop was full, girls were instructed to immediately find another workshop. Lester Hall 116 and Moore Hall Auditorium were the largest rooms with exciting workshops on Factoring and Calculating Your New Car Payment. A map of the campus was in the registration packets to help participants find the buildings, and several ECSU students served as guides, wearing nametags with colored banners. The proctors and guides

were available to answer questions and give directions to the workshops.

The mathematics sprint competition involved teams of 4–5 girls. A school could have only one team entered in this competition. Teams had 50 minutes to complete 20 questions. First, Second, Third Place and three honorable mention trophies were awarded to winning teams during the awards luncheon.

Evaluation forms were distributed during the luncheon. Girls were instructed to take time to complete the evaluation forms. Evaluation is a very important part of this program since we would like to continue to bring these activities and opportunities to Northeastern NC.

Lunch was held in the ECSU Graduate Center on Weeksville Road. Girls had to board the buses again to get there after their second workshop. The lunch included turkey submarines, chips and cookies. We began with a moment of silence for those who were dead and missing after the recent attack on our country. Debbie Gochenaur, Ph.D. candidate in Mathematics Education from American University, told participants about careers in mathematics and science.

All sponsors were acknowledged for the important role they played in making this event possible. The closing remarks were:

We do hope that you enjoyed your day of mathematics competitions and workshops and will be encouraged to include more mathematics in your studies. We also hope that you enjoyed being with other students and women who love mathematics and have achieved in this field.

Norfolk State University

The Fourth Annual SK Day Program was held on September 29, 2001, on the campus of Norfolk State University, Norfolk, Virginia, sponsored by a grant from AWM, NSA, and Coppin State College. Additional funding and support for the program was provided by Norfolk State University School of Science and Technology, Norfolk State University Department of Mathematics, Brooks Cole Publishers, and Addison Wesley Publishers.

The uncharacteristically low turnout for the program can be attributed to the scheduling. Our previous SK Days had been held in the spring, so this year's scheduling caught several of our client institutions off guard. We had a total of six high school students, seven

Norfolk State University and Hampton University students and six teachers, mostly African-Americans, attending the sessions. The keynote speaker was an African-American woman, chairperson of the Mathematics Department at Hampton University, and our panelists were three female alumni of Norfolk State University: a teacher in a local high school; a Ph.D. in Biostatistics from Emory University, and now employed with the FDA; and a graduate student, doctoral candidate in Biostatistics at Virginia Commonwealth University.

Those in attendance rated the program very favorably. Again this year, the students gave high ratings to the "Problem Solving Can Be Fun" session. The teachers were pleased with the two "teacher only" sessions, and both the keynote address and the panel discussion were rated highly.

Thirty-six area high schools were invited to participate. Three direct mailings were sent, one in May and two in September, to area mathematics department chairs. Only two schools responded, and the student participants who actually showed up were personally invited to attend. In light of the aforementioned facts, NSU SK Day coordinators recommend the following: 1) SK-Day should be held in the spring of the academic year, 2) SK-Day should be advertised well in advance, and 3) personal contact works far better than direct mailings.

But lack of attendance does not mean lack of success. In conversation immediately following SK Day activities, many in attendance stated how beneficial the day had been. Faculty, students, teachers, panelists, and the keynote speakers all found SK Day to be an enriching experience.

Northern Arizona University

The First Annual Sonia Kovalevsky Mathematics Day for High School Women was held on Saturday, September 22, 2001. The directors for the event were Janet McShane, Amy Diekelman and Katie Louchart from the Department of Mathematics and Statistics at Northern Arizona University. They were helped by other faculty from the department and numerous undergraduate students from the Math Club. Sponsors for the day included AWM, Coppin State College, NSA, NAU College of Arts and Sciences, NAU Department of

Janet McShane, Amy Diekelman, and Katie Louchart

Mathematics and Statistics, NAU Associated Students for Women's Issues, and the NAU Math Club.

To recruit students we contacted mathematics department chairs from 19 high schools in Northern Arizona and asked them to submit names of female mathematics students. We received names from 12 high schools. These students were then sent individual letters inviting them, their parents, and their teachers to SKMDHSW. One of the reasons we held this event on a Saturday was precisely so that we could have the parents participate. Students were asked to RSVP via an enclosed postcard, by phone or by email. We had 41 attendees at our event. This included 19 students from eight different high schools, one sixth grader who was a sister of one of the participants, 19 parents and two teachers. Our target population was 10th and 11th grade students. Of the 19 students we had one 9th grader, ten 10th graders, five 11th graders and three 12th graders. Six of the students came from local Flagstaff schools

and the remaining thirteen came from schools that were anywhere from 40 minutes to 3 hours away.

We had a wonderful day planned for the students, parents and teachers, and at the end of the day we were quite pleased with how the day transpired. We began the day in the liberal arts building with registration, continental breakfast and a warm welcome by Terry Crites, Associate Dean of the College of Arts and Sciences. Janet McShane then spent 10 minutes talking about the life and times of Sonia Kovalevsky. This was followed by our keynote speaker, Pamela Eibeck, Director of the Honors Program at NAU and Professor of Mechanical Engineering. Eibeck gave an engaging talk on how mathematics is a powerful tool and how skill in mathematics allows you to make choices in your life.

Eibeck's presentation was followed by a panel discussion. Our goal here was to expose the students to various professions that use mathematics and to allow them to ask questions of the various professionals. The

SONIA KOVALEVSKY HIGH SCHOOL MATHEMATICS DAYS

Through grants from Coppin State College and the National Security Agency (NSA), the Association for Women in Mathematics expects to support (*pending final funding approval*) 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 approximately 10 grants of up to \$3000 each 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. The decision on funding will be made late February to early March. The high school days are to be held in Spring 2002 or Fall 2002. If selected, a report of the event along with receipts (originals or copies) for reimbursement must be submitted to AWM within 30 days of the event date or by December 1, 2002, whichever comes first. Reimbursements will be made in one disbursement; no funds can be disbursed prior to the event date.

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, Maryland 20742-2461. For further information: phone, 301-405-7892; email, awm@math.umd.edu; URL: <http://www.awm-math.org>. Applications must be received by **February 4, 2002**; applications via email or fax will not be accepted.

panel included: Pamela Eibeck, NAU Honors Director; Paula Helm, United States Geological Society; Maxie Inigo, Mathematics Department Chair at Coconino Community College; Kate Kozak, Mathematics and Physics Instructor at Coconino Community College; Kathy Stevenson, Raytheon; and Joanna Bieri, senior student at NAU majoring in mathematics and physics. Each of the panelists spent a few minutes talking about how they arrived where they currently are and how they are using their mathematical skills in their professions. We then opened the floor to questions from the audience. A lively discussion ensued and some very valuable information was relayed.

The students (and parents and teachers) then participated in two workshops held in the Mathematics Building. The first workshop, Exploring 3D Graphs, was held in our department computer lab and conducted by Katie Louchart. We discussed 3D graphs and then had the student use the software package DP Graph to create their own colorful 3D graph. Each student saved their favorite creation and these were then printed on iron-on transfer paper and given to the girls at the end of the day.

The second workshop was An Introduction to Coding Theory by Janet McShane. The students were given various items from the grocery store, and we discussed the concept behind UPC codes. They learned about modular arithmetic and some of its interesting applications.

The workshops were followed by a catered luncheon in the student union. After lunch, Amy Diekelman introduced us to origami and showed us how to make a hexahedron (cube) and a stellated octahedron. This activity really got everyone involved — students, parents, teachers, undergraduates and organizers. A thirty-minute activity turned into an hour because everyone was having so much fun. While everyone continued to work on their origami projects we had a drawing for five different door prizes and also passed out specially designed T-shirts to all the students. Included with the T-shirts were the girl's 3D creations that they could take home and iron onto their T-shirts.

At registration each attendee received a packet of materials that included a schedule, registration card, handout on Sonia Kovalevsky, information on NAU and the Department of Mathematics and Statistics, career information, an AWM *Newsletter*, the booklet *Careers that Count*, a sheet of puzzles, paper, pen and an evaluation form. Each student packet also included a survey

that questioned their attitudes regarding mathematics. As a follow-up, each student will receive a copy of the book *Flatland* during the month of October.

Based on the evaluation forms we received the day was a great success. Everyone who attended was very positive about the activities of the day and thanked us profusely. The parents especially enjoyed the chance to learn about opportunities in mathematics for their daughters. By including the parents in the day, we hope they can continue to encourage their daughters to pursue their studies in mathematics. We also noted that our undergraduate student helpers were very inspired and impressed with the activities of the day. Our Sonia Day would not have happened without the support of all our sponsors. Thank you from us but more importantly from all the students and their parents.

MARBURGER CONFIRMED BY SENATE

John H. Marburger III of New York, nominated by President Bush in June as science advisor, was confirmed by the Senate in the aftermath of the September 11th attack. He will head the Office of Science and Technology Policy. A 1962 Stanford physics Ph.D., he has served as a physics professor, a university president, and Director of Brookhaven National Laboratory. This belated appointment has been welcomed by the scientific community.

TWAS AWARDS

The Third World Academy of Sciences (TWAS) Awards in Basic Sciences are given each year in five fields, including mathematics. Candidates for the awards (\$10,000 US and a plaque) must be nationals of developing countries and, as a rule, must be living and working in those countries. Nominations for 2002 awards are due by **March 1, 2002**. For further information, see www.ictp.trieste.it/~twas/Awards_Info.html.

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

supported by the Air Force Office of Scientific Research, the Office of Naval Research,
and the Association for Women in Mathematics

Over the past thirteen 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 8–10, 2002, with an introductory dinner. This workshop is to be held in conjunction with the 50th Anniversary of the Society for Industrial and Applied Mathematics (SIAM) and the SIAM Annual Meeting (July 8–12, 2002) at the Philadelphia Marriott Hotel, Philadelphia, PA

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 will have a definite focus, to be selected from the research areas of Mathematical Biology, Modeling, Control, Optimization, Scientific Computing, and PDEs and Applications. All mathematicians (female and male) are invited to attend the program. Departments are urged to help graduate students and recent Ph.D.'s to obtain some supplementary institutional support to attend the Workshop and the associated meeting.

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, a *graduate student* must have begun work on a thesis problem. Her application should include a cover letter, a one to two page summary of her work, the title of the proposed poster, a curriculum vitae, and a supporting letter of recommendation from a faculty member or research mathematician who knows her research. To be eligible for selection and funding, a *recent Ph.D.* will have received her Ph.D. within approximately the last five years (whether or not she currently holds a postdoctoral or other academic position). Her application should include a cover letter, a title and abstract (75 words or less) of the talk (to be given if accepted), a one to two page summary of her work, and a curriculum vitae; it is recommended but not required to include a supporting letter of recommendation from a faculty member or research mathematician who knows her research. All non-US citizens must have a current US. 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 when notified.

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 URL: www.awm-math.org

APPLICATION DEADLINE: Applications must be received by **January 21, 2002**.
Applications via email or fax will not be accepted.

NATIONAL SUMMIT ON MATH EDUCATION OF TEACHERS

In November almost 300 participants and speakers gathered near Washington, DC for the National Summit on the Mathematical Education of Teachers. The Summit was an intensive two-day event, hosted and organized by the Conference Board of the Mathematical Sciences. The purpose of the Summit was to launch the document *The Mathematical Education of Teachers* (MET) and to stimulate the mathematics community into making the mathematical education of teachers a priority for this decade.

Participants formed a diverse group, geographically (from 35 states, the District of Columbia and the Virgin Islands), by specialty (mathematics, mathematics education, and education), and by affiliation (universities, and four-year and two-year colleges). Together, attendees heard some of the recommendations of MET, the challenges involved in implementing those recommendations, and efforts underway now at several institutions to improve the mathematics education of teachers.

The Summit consisted of plenary sessions, addresses, and working sessions. The plenary sessions and addresses were designed to frame the issues and problems associated with the mathematical education of teachers. The 18 working sessions were led by people from institutions that have had success improving that education. Participants learned the specifics of these programs and how projects could be applied at their own institutions. Topics from the working sessions were wide-ranging and included elementary, middle and high school teacher preparation and partnerships between higher education mathematics departments and school districts, schools of education and two-year colleges. Summaries are available at www.maa.org/cbms.

Some highlights of the meeting follow.

The Summit began with remarks from Jim Lewis, who along with Glenda Lappan was co-chair of the Summit Steering Committee. Mindful of the duties and workload awaiting participants upon their return home, Jim asked people to keep two questions in mind during the Summit: What have we learned that should be shared with a wider audience back home? What is our first action item when we return home?

Roger Howe, also a member of the Steering Committee, pointed out that there are serious challenges facing the improvement in the mathematics preparation

of teachers. For example, it would be desirable for teachers to know algebra, but many don't know arithmetic. He hoped that mathematics courses for teachers would be "rigorous *and* friendly" and that mathematics departments would "get incentives right," so that the mathematics education of teachers would not become a burden on those who have to develop or implement new programs.

Ed Ahnert, president of the ExxonMobil Foundation, spoke about the need ExxonMobil has for mathematics, science and engineering, which is shared by the country and its citizens. The Summit was supported by grants from the ExxonMobil Foundation and the NSF.

William "Brit" Kirwan, president of the Ohio State University, began his talk by noting the "math wars" that have flared up recently. Kirwan said that he has seen wars fought for many reasons, but this is the first time that wars have been fought over mathematics education. He stated that "teacher education in mathematics should be a central mission of our mathematics and education departments" and outlined six strategies to improve mathematics education: reshape and restructure the undergraduate curriculum, increase diversity in mathematics departments, create opportunities for second career mathematics teachers (for example, people coming from industry), increase involvement with school districts and their teachers, increase research in mathematics education, and individualize faculty workloads.

Deborah Ball and Hyman Bass gave many examples to show how much mathematics a teacher must know to teach even the most basic arithmetic.

Judith Sunley, Senior Advisor to the Director of the NSF, listed five challenges faced by those who seek to affect change. Among those challenges: No one wants change (but a wet baby).

At the conclusion of the Summit, Ed Ahnert announced the recipients of ExxonMobil Innovation Grants. The \$3000 grants are to assist the recipients in planning partnerships or other innovations that will then be supported by the institutions themselves or by other funding. The recipients of the first grants are: East Tennessee State University, Humboldt State University, Northeastern State University (Oklahoma), the University of Illinois at Chicago, and the University of Southern Colorado.

PUBLICATIONS OF INTEREST

The *Encyclopedia of Mathematics Education* edited by Louise S. Grinstein and Sally I. Lipsey, former chair of the AWM Education Committee and Education Column Editor, was published by RoutledgeFalmer in March 2001. Of the 250 mathematicians and math educators who contributed articles, twenty-seven are AWM members.

The encyclopedia has over 400 A–Z entries and covers major aspects of K–14 mathematics education (national and international), including major concepts of mathematics and how to teach them, as well as the history of mathematics and the history of mathematical pedagogy.

AWM members who contributed articles to the encyclopedia include: Gerald L. Alexanderson, “Combinatorics,” “Pascal’s Triangle”; Alice Artzt, “Cooperative Learning”; Sylvia T. Bozeman, “Minorities, Career Problems” (with W. Hawkins); John S. Bradley, “National Science Foundation”; Bettye Anne Case, “Teacher Preparation, College”; Lily E. Christ, “American Statistical Association,” “Mathematical Association of America”; Joan Countryman, “Poetry”; Annalisa Crannell, “Career Information”; Keith Devlin, “Logic”; M. Katherine Gavin, “Techniques and Materials for Enrichment Learning and Teaching” (with J. Renzulli); Mary W. Gray, “Sophie Germain,” “Sophia Kovalevskaja,” “Emmy Noether,” “Women and Mathematics, History”; Judy Green, “Association for Women in Mathematics (AWM)”; Louise S. Grinstein, “Fehr, Howard”; Louise S. Grinstein and Sally Lipsey, editors of “Encyclopedia of Mathematics Education and authors of “Hadamard,” “Mathematical Sciences Education Board,” “Poincare,” “Zeno,” “Zero”; Carole B. Lacampagne, “United States Department of Education”; Glenda Lappan (with Elizabeth Phillips), “Connected Mathematics Project”; Sally Lipsey (See Louise Grinstein); Anne Moskol, “Equalities,” “Exponents, Algebraic” (with A. Andreotti), “Inequalities”; A. Louise Perkins, “Field Activities,” “Numerical Analysis”; Teri Perl, “Ladies Diary,” “Manipulatives, Computer Generated”; Elizabeth Phillips (see Glenda Lappan) Eileen L. Poiani, “Instructional Methods, Current Research” (with B. D’Ambrosio); Diane Resek, “Interactive Mathematics Program” (with others); Chantal Shafroth, “Test Construction”; Martha J. Siegel, “Discrete Mathematics”;

Denisse R. Thompson, “Greatest Common Divisor,” “Logarithms,” “Systems of Inequalities”; Erica Dakin Voolich, “Exponents, Arithmetic”; and Alvin M. White, “Humanistic Mathematics.”

A Pew Internet Project report on African-Americans and the Internet is available at <http://www.pewinternet.org/reports>. The report includes the interesting fact that 61% of African-American Internet users are female.

A related fact: In July, Nielsen//NetRatings showed that women now make up 52% of the Internet users in North America.

OPPORTUNITIES

Nebraska Conference for Undergraduate Women

The fourth annual Nebraska Conference for Undergraduate Women in Mathematics will take place February 1–3, 2002 at the University of Nebraska – Lincoln. This conference is a national showcase for research projects by undergraduate women. In addition to the main program of undergraduate research talks, we are very pleased to have plenary addresses by Rosemary Chang of Coastcom and Dusa McDuff of SUNY Stony Brook. There will also be panel discussions about such topics as “Choosing a Graduate School” and “Careers in Mathematics”. The conference attracts students from all over the US and Puerto Rico. Participants hear a lot of interesting mathematics, meet with other women who share their interest in mathematics, and, if they have participated in research programs, present their research.

Last year, approximately 100 undergraduates participated in the conference and 50 gave talks about their research. Jennifer Key of Clemson University and Alice Silverberg from the Ohio State University gave wonderful invited addresses. Lloyd Douglas of NSF joined us as well and was a fountain of information about opportunities and careers. The research talks were excellent — interesting and well-presented — and the panel discussions were informative and thought-provoking. The participants enjoyed getting to know one another at the banquet, game night, and other social

events. Afterward, participants said "It gave me a sense of belonging to a wider community" and "It allowed me to talk to women making the same decisions I'm having to make." Thanks to the efforts of all involved, it was a great success! One generous participant even said "This was one of the best experiences of my undergraduate career."

The conference began as part of the UNL Department of Mathematics and Statistics' effort to continue their work in mentoring women students. Initially, the conference was funded in part by the Department's 1998 Presidential Award For Excellence in Science, Mathematics & Engineering Mentoring. The conference was funded by NSA last year and will be funded by NSF and NSA this year. This year's organizers are UNL professors Allan Donsig, Wendy Hines, Richard Rebarber, and Judy Walker and UNL students Kathy Bartley, Melissa Desjarlais, Teena Carroll (all Conference alumni), Katy Nelson, and Libby Beer.

Workshop Precalculus Summer Institute

The NSF summer institute, "Functions, Models, and Data" will be held at Dickinson College, Carlisle, PA June 19–24, 2002. Based on the Workshop Precalculus materials being developed by Nancy Baxter Hastings and Allan Rossman, it will prepare participants to utilize the interactive teaching techniques and innovative technology that characterize the workshop approach. It will provide them with the necessary background and support to adapt the Workshop materials for use in their own environments. Faculty from universities, two- and four-year colleges and high schools are encouraged to apply. There is no registration fee; room and board is free. Each participant will receive a \$250 stipend, and travel support is available in individual cases.

The application deadline is **March 15, 2002**. View more information and download an application at calc.dickinson.edu/SummerInstitute, or contact Joanne R. Weissman at weissman@dickinson.edu. Electronic submission of applications is encouraged.

WISC Program 2001–2003

The American Association for the Advancement of Science (AAAS) Directorate for International Programs announces the Women's International Science Collaboration (WISC) Program for 2001–2003. Supported by

the National Science Foundation (NSF), this program aims to increase the participation of women in international scientific research by helping establish new research partnerships with colleagues in Central/Eastern Europe, Newly Independent States of the former Soviet Union, Near East, Middle East, Pacific, Africa, the Americas, and Asia.

Small grants (\$4,000–5,000) will provide travel and living support for a US scientist and, when appropriate, a co-PI to visit a partner country to develop a research program. Funds can also be used to support a second visit to the partner country or for a foreign partner to travel to the US.

Men and women scientists who have their Ph.D. or equivalent research experience are eligible to apply. Applicants who have received their doctoral degrees within the past six years will receive special consideration, as will scientists applying to work with colleagues in less frequently represented countries and regions. With the exception of applications involving the Americas, applications from male co-PIs must be accompanied by an application from a female co-PI as part of a US research team (please contact M. Ratchford, see below, regarding special guidelines for the Americas). Male and female graduate students (Ph.D. candidates) are also eligible to apply, if they will be conducting research in an established Ph.D. program in the US, will be traveling with their Ph.D. advisor and will serve as co-PI on future proposals. (Male graduate students will need a female co-PI.) Applicants must be citizens or permanent residents.

Only fields funded by the National Science Foundation and interdisciplinary research cutting across these fields are eligible. For further information, please visit the NSF website (<http://www.nsf.gov>), or contact one of the AAAS administrators listed below.

Two competitions will be held, with application deadlines of **January 15, 2002** and **July 15, 2002**. Approximately 40 awards will be made in each competition.

For further application information and region-specific guidelines, please visit <http://www.aaas.org/international/wiscnew.shtml> or contact the appropriate AAAS administrator: Central and Eastern Europe, Newly Independent States (NIS) of the former Soviet Union, Karen Grill, kgrill@aaas.org; East Asia and Pacific, Suteera Nagavajara, snagavaj@aaas.org, (202) 326-6496; Africa, Middle East, Near East, and South

Asia, Alan Bornbusch, abornbus@aaas.org, (202) 326-6651; and Americas and Caribbean: Marina Ratchford, mratchfo@aaas.org, (202) 326-6490. Or write to (AAAS contact), WISC Travel Grant, American Association for the Advancement of Science, Directorate for International Programs, 1200 New York Avenue, NW, Washington, D.C., 20005.

Scholarship Program / James Madison University

James Madison University is offering scholarships of \$3,125/yr to talented and financially needy students who plan to study Computer Science or Mathematics at JMU. We want to especially encourage female and minority students, traditionally underrepresented in these fields, to apply. We will be giving awards to selected first year students, third-year community college transfer students, and first-year graduate students.

Complete information about the program, including eligibility requirements and application instructions, is available at <http://www.math.jmu.edu/csems>.

Budapest Semesters in Mathematics Program

This program allows third and fourth year undergraduates to spend a semester or year studying mathematics in Budapest, Hungary. Admission criteria are high, but the rewards are great. A semester immersed in the mathematical culture of Budapest is an intellectual adventure of the very first rank.

A wealth of information, including pictures and an electronic application form, is available online at www.stolaf.edu/depts/math/budapest. Presently, the program can accommodate about 60 students per semester. The application deadlines for fall 2002 and spring 2003 are **April 30, 2002** and **November 1, 2002** respectively; early applications (by as much as a year) are encouraged.

The 6th Conference on Clifford Algebras

The organizers of the 6th Conference on Clifford Algebras and their Applications in Mathematical Physics, May 20–25, 2002 (with a Lecture Series, May 18–19, 2002), invite women mathematicians, researchers, graduate students, postdocs, and recent Ph.D.'s to participate in this conference. It will be a continuation of a 16-year sequence of international conferences devoted to

the mathematical aspects of Clifford algebras and their varied applications in mathematical physics, cybernetics, robotics, image processing and engineering. The conference organizers are Rafal Ablamowicz, Tennessee Technological University, and John Ryan, University of Arkansas. The URL is: <http://math.tntech.edu/rafal/cookeville/cookeville.html>. This conference is co-sponsored by the AMS and by the International Society for Analysis, its Applications and Computation (ISAAC). The list of confirmed plenary speakers includes Helga Baum from Humboldt Universität zu Berlin and Sijue Wu from the University of Maryland. The Lecture Series on Clifford algebras is intended for graduate students and newcomers to the field.

The organizers have applied for an NSF grant to support this conference. If funded, this grant will provide, among other things, support for women mathematicians to attend this conference. Notification regarding funding will not be received before January or February, 2002. Meanwhile, everyone who plans to attend or present a paper is asked to preregister via the conference web page. Submission of abstracts via the same page is required by **February 15, 2002**. Any questions or inquiries should be directed to Dr. Rafal Ablamowicz, Department of Mathematics, Box 5054, Tennessee Technological University, Cookeville, TN 38505, rablamowicz@tntech.edu, phone: 931-372-3441, fax: 931-372-6353, or to Dr. John Ryan, Department of Mathematics, University of Arkansas, Fayetteville, AR 72701, jryan@comp.uark.edu, phone: 501-575-6334, fax: 501-575-8630.

Sicily 2002

Following our successful international conferences in Egypt 1999, Jordan 2000, Poland and Australia 2001, the Mathematics Education into the 21st Century Project is organizing an international conference with the title "The Humanistic Renaissance in Mathematics Education." It will be held in Italy on the coast of Sicily near Palermo. The conference will start Friday evening, September 20th and end at midday Wednesday, September 25th, 2002. Gila Hanna and Liv Sissel Groenmo of Norway will be leading the Equity Working Group in Sicily. Sicily 2002 will also be a planning meeting for the new global initiative in mathematics education. For a copy of the First Announcement, please email arogerson@vsg.edu.au.

AWM BALLOT**Must be received by March 31, 2002**

Only individuals who are members of AWM are eligible to vote.

VOTE for BYLAWS CHANGESBylaws change 4: Web Editor YES NOBylaws change 5: Calendar YES NOBylaws change 6: Committees YES NOBylaws change 7: Ballots YES NO

You may use this ballot or a photocopy of it, or print a ballot from the AWM website www.awm-math.org. You may use one envelope, or an inside and outside envelope, as you prefer.

Please validate your vote by signing your name on your (outside) envelope; also print your name and address. Unvalidated ballots will not be counted.

Return the ballot to: 2002 AWM Elections, K. Renee Fister, Clerk,
c/o Association for Women in Mathematics, 4114 Computer and Space
Sciences Bldg., University of Maryland, College Park, MD 20742.

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For more information about programs or to request an application, please contact:

**Director of Graduate Programs
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**WORKSHOP PRECALCULUS
SUMMER INSTITUTE:
FUNCTIONS, MODELS, AND DATA**

Dickinson College

Carlisle, PA

June 19 – 24, 2002

This National Science Foundation summer institute, based on the Workshop Precalculus materials being developed by Nancy Baxter Hastings and Allan Rossman, will prepare participants to utilize the interactive teaching techniques and innovative technology that characterize the workshop approach. It will provide them with the necessary background and support to adapt the Workshop materials for use in their own environments. Faculty from universities, two- and four-year colleges and high schools are encouraged to apply. There is no registration fee; room and board is free. Each participant will receive a \$250 stipend, and travel support is available in individual cases. Application deadline is **March 15, 2002**.

View more information and download an application at <http://calc.dickinson.edu/SummerInstitute>, or contact Joanne R Weissman at weissman@dickinson.edu

**RESEARCH EXPERIENCES FOR UNDERGRADUATES
SUMMER 2002**

**DEPARTMENT OF MATHEMATICS
SOUTHWEST TEXAS STATE UNIVERSITY**

We are currently seeking students interested in conducting original mathematical research under the supervision of a faculty member. In the summer of 2002, five students will work closely with two faculty members at Southwest Texas State University in San Marcos, Texas on questions from the fields of Algebra, Representation Theory, and Graph Theory. Under a grant from the National Science Foundation, students participating in the REU program will receive a stipend of \$2,625, room and board during the program, and a travel allowance. The program will run from June 3 through July 26.

To be eligible for the program, students should be undergraduates enrolled in a degree program who will not graduate before September of 2002 and who are citizens or permanent residents of the United States. All applicants should have completed a one-semester course in Modern Algebra, or the equivalent. One of the projects will also require knowledge of Linear Algebra, and familiarity with computers will be useful although not prerequisite. More information forms will be available on the web at <http://www.swt.edu/~sm26/>.

To apply, please send a completed application form, two letters of recommendation from faculty members, and college transcript(s) (photocopies are acceptable) to:

Dr. Susan Morey (512) 245-3739 (office phone)
Department of Mathematics morey@swt.edu
Southwest Texas State University
San Marcos, TX 78666

Consideration of applications will begin on March 15, 2002 and continue until all positions have been filled. Southwest Texas State University is an equal opportunity employer. Women and minority students are especially encouraged to apply.

Enhancing Diversity in Graduate Education (EDGE)

Announcement: Funding for this program is anticipated.

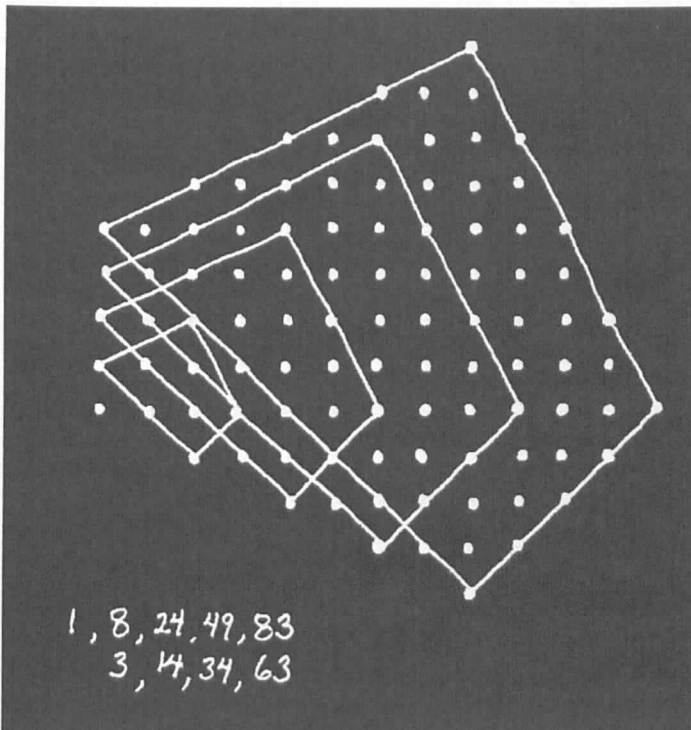
This program, is designed to strengthen the ability of women and minority students to successfully complete graduate programs in the mathematical sciences.

The summer program consists of two core courses in analysis and algebra/linear algebra. There will also be minicourses in vital areas of mathematical research in pure and applied mathematics, short-term visitors from academia and industry, guest lectures, graduate student mentors, and problem sessions. In addition, a follow-up mentoring program and support network will be established with the participants' respective graduate programs. Applicants to the program should be women in one of the following areas (i) graduating seniors who have applied to graduate programs in the mathematical sciences, (ii) recent recipients of undergraduate degrees who are now entering graduate programs, or (iii) first-year graduate students. All applicants should have completed standard junior-senior level undergraduate courses in analysis and abstract algebra and have a desire to earn a doctorate degree. Women from minority groups who fit one of the above three categories are especially encouraged to apply. Final acceptance to the program is contingent upon acceptance to a graduate program in the mathematical sciences. The summer session of the program will be held during **June 3 - 28, 2002 at Bryn Mawr College in Bryn Mawr, Pennsylvania**, co-directed by Sylvia T. Bozeman, Ph.D. (Spelman College) & Rhonda J. Hughes, Ph.D. (Bryn Mawr). A stipend of \$1,800 plus room and board will be awarded to participants. Participants to the program will be announced by April 15. **Deadline for Applications: March 1, 2002**

Applications should consist of the following: completed application form, statement describing the expected value of this program to the applicant's academic goals, two letters of recommendation from mathematical sciences faculty familiar with the applicant's work, transcript and current resume, list of graduate programs to which the applicant has applied, together with ranked list of her two or three top choices. Applications forms may be obtained from the website and should be sent to: **EDGE Program, c/o Rhonda Hughes, Department of Mathematics, Bryn Mawr College, Bryn Mawr, PA 19010**. Visit our website: <http://www.brynmawr.edu/Acads/Math/>.

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Send your resume and transcripts, in confidence, to: **National Security Agency, Suite 6779, (LBZ), 9800 Savage Road, Ft. George G. Meade, MD 20755-6779.**



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This conference aims to **Reconnect** faculty teaching undergraduates to the mathematical sciences research enterprise by exposing them to an exciting current research topic relevant to the classroom through a series of lectures by a leading expert and involving them in writing materials useful in the classroom.

Participants have the possibility of following up by preparing these materials for publication in the DIMACS Educational Modules Series.

Topic: Voronoi Diagrams — Properties, Algorithms and Applications

Principal lecturer: Scot Drysdale (Dartmouth College)

Where: DIMACS Center,
Rutgers University, Piscataway, NJ

When: August 11-17, 2002
(Sunday evening through Saturday afternoon).

Lodging and meals will be provided through anticipated NSF funding. Limited funds expected to be available for travel awards.

For information: <http://dimacs.rutgers.edu/reconnect/> or reconnect@dimacs.rutgers.edu or (732) 445-5928.

OAKLAND UNIVERSITY Department of Mathematics

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 discrete mathematics.

Responsibilities of this position include teaching, research, and contribution to the department's collaborative efforts with industry. For appointment, candidates must have a Ph.D. in discrete mathematics or a closely related field (or its requirements completed) by August 15, 2002.

The application due date is February 15, 2002. For complete application information, see: <http://www.math.oakland.edu/discreteposting.html>

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BELOIT COLLEGE - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Tenure-track mathematics faculty position, beginning August 2002. Beloit College is a selective liberal arts college with a mathematics major and minor. The College emphasizes excellence in teaching, breadth and versatility in faculty, and student-faculty research. Required: Commitment to excellence in teaching and research in mathematics in the context of a liberal arts college; Ph.D. or ABD in a mathematical science. Responsibilities: Teaching three four-semester-hour courses per semester, plus scholarship, advising, and committee assignments. We encourage diverse interests and creativity; the successful candidate will contribute to the mathematics major, to courses in mathematics for non-majors, and to College-wide courses, which include first-year seminars and interdisciplinary courses on topics of the faculty member's own devising. Apply (letter, vita, 3 reference letters, graduate and undergraduate transcripts) to: **Math TT Search, Campus 178, Beloit College, Beloit, WI 53511**. More info from campbell@beloit.edu (put "tsearch" in header). Interview possible at Jan.\San Diego math mtg. Priority to applications complete by February 1, 2002. Beloit College is committed to cultural and ethnic diversity and urges all interested individuals to apply.

BRANDEIS UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics invites applications for a one-year lectureship or visiting position (non tenure-track), beginning in the fall of 2002. A 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, to: **Hiring Committee, Department of Mathematics, MS 050, Brandeis University, PO Box 549110, Waltham, MA 02454-9110**. First consideration will be given to applications received by February 15, 2002. As an EEO/AA employer, Brandeis University is committed to building a diverse faculty and encourages applications from women and minorities.

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA - DEPARTMENT OF MATHEMATICS - Four tenure-track positions - **Math Education** (Two positions: Asst Prof and Assoc/Asst Prof). Teach major courses in math ed. and service courses in math ed. and math; advise students seeking secondary teaching credential; assist or coordinate in-service activities; help develop master's degree in math teaching; interact with Center for Ed. and Equity in Math, Sci. and Tech. and College of Ed. Preference given to applicants able to supervise student teaching for math credential students. Min qual: Doctorate in math ed. with strong background in graduate level math or Ph.D. in math, appl math, or stat with strong background in math ed. Initial review of applications 1/25/02. **Statistics** (Assoc/Asst Prof) Teach graduate stat courses and undergraduate and service courses in stat or math; advise graduate students. Preference given to applicants with expertise in more than one of: statistical modeling, multivariate stat, biostatistics, design of experiment, estimation theory, statistical consulting. Min qual: Ph.D. in stat or math or related area. Initial review of applications 2/8/02. **Pure Math** (Asst Prof) Teach major courses in pure math and service courses in math; advise undergraduate and graduate students. Preference given to applicants with expertise in more than one of: algebra, complex analysis, geometry, history of math, logic, number theory, real analysis, set theory, topology and/or those who have participated in math ed. activities. Min qual: Ph.D. in math. Initial review of applications 2/8/02. All positions: Salary dependent on qualifications. Required: evidence of teaching excellence, ability to direct master's theses, potential for conducting scholarly activities, ability to work with diverse student body. Completion of terminal degree by Sept. '02. Review of applications continues until position is filled or closed. Submit application form (with name of position), curriculum vitae, transcripts, and min. of 3 reference letters to **Faculty Search Committee, Math Dept., CSPU Pomona, 3801 W. Temple Ave., Pomona, CA 91768-4007**; Imborchert@csupomona.edu; 909-869-4008; Fax: 909-869-4904; <http://www.csupomona.edu/~math.AA/EEO>.

CLAREMONT GRADUATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - An applied mathematician or statistician with a strong computational background in engineering, mathematical finance, biostatistics, bioinformatics, scientific visualization, image processing, or related sciences, is sought for a tenure-track or tenured appointment starting July 2002. The rank is open, depending on qualifications, and is subject to final budgetary approval. An outstanding record of research, the ability to develop support from government or industry, and willingness to assume a leadership role in the department are required for a senior appointment. CGU is part of the Claremont Colleges, a consortium of 7 private colleges, and employs over 45 mathematicians. The MS and Ph.D. programs emphasize applied mathematics. The program operates a Mathematics Clinic, in which faculty and students gain experience in industrial project work, and supports CRIAMS, a Research Institute with an international reputation in Monte Carlo applications. The department has a joint Ph.D. program with CSU Long Beach in engineering / industrial applied mathematics, and a joint MS in financial engineering with the Drucker School of Management. In addition, there are joint research interests in computational science and biosciences with the Keck Graduate Institute, and a proposal for a joint Ph.D. in computational science with San Diego State University is under consideration. More information is available at www.cgu.edu/math, www.criams.cgu.edu, and www.kgi.edu. Applicants should send a CV, which addresses teaching ability, and a list of names of at least 3 references to Search, **Department of Mathematics, 121 E. 10th Street, Claremont, CA 91711**. In addition to being an affirmative action and equal opportunity employer, CGU is committed to creating a community in which a diverse population can live and work in an atmosphere of tolerance, civility, and respect for the rights and sensibilities of each individual, without regard to economic status, ethnic background, political views, sexual orientation, gender, or other personal characteristics or beliefs.

COLLEGE OF STATEN ISLAND/CUNY - DEPARTMENT OF MATHEMATICS - Assistant Professor of Mathematics - College of Staten Island/CUNY, seeks candidates for anticipated tenure-track position as Assistant Professor of Mathematics with primary teaching responsibility in elementary and secondary teacher preparation, to start September 2002. Required: PhD in Mathematics or related field, a productive research program in the mathematical sciences, excellence in teaching, and a demonstrated commitment to the education of teachers. Postdoctoral experience preferred. Experience in teaching at the elementary or secondary level or in using graphing calculators or computers in mathematics education is desirable. Responsibilities include teaching at the undergraduate and graduate levels, performing department and college service, and engagement in an active and productive research agenda. The successful candidate will be expected to work in collaboration with faculty in the Department of Education in ongoing development of the mathematics curriculum for pre-service elementary and secondary school teachers. Salary range: \$42,162 - \$57,049, commensurate with qualifications. Review of applications will begin immediately and continue until the position is filled. Send a letter of application summarizing qualifications, a curriculum vitae, a short statement describing teaching experience and approach to teaching, a short statement on current and planned research, and at least three letters of recommendation (to be sent separately), together addressing research, teaching, and work with elementary and secondary school teachers to: **Professor Deborah Franzblau, Mathematics Search Committee, Department of Mathematics, Room 1S-215, College of Staten Island, 2800 Victory Blvd., Staten Island, NY 10314**. Materials may be faxed to 718-982-3631, then followed by originals. Email: searchK12@math.csi.cuny.edu Website: <http://www.math.csi.cuny.edu> EEO/AA/ADA Employer.

COTTEY COLLEGE OF MISSOURI - DEPARTMENT OF MATHEMATICS - Full-time tenure-track Assistant Professorship starts August 2002. Three person department, four sections per semester teaching load. Doctorate preferred. Salary range \$28K-\$35K per academic year depending on qualifications and experience. Cottey (AA/EOE) is a teaching oriented, small, private, residential, 2 year, liberal arts college for women. Students per faculty ratio is 9/1, average class size is 13. Students from 35-45 states and 12-25 countries. 80 miles to Kansas City metro area, 40-140 miles to Ozark recreation areas. Review of applications begins immediately, but position open until filled. Apply by sending c.v. (with names/numbers of 3 references) to **Dr. Hal Ross, Academic Vice President, Cottey College, Nevada, Missouri 64772**. Phone: 417-667-8181; Fax: 417-448-1030; Email: dkerbs@cottey.edu.

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JOHNS HOPKINS UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics of the Johns Hopkins University invites applications for one position at the Associate or Full Professor level in the general areas of analysis, algebra and topology, beginning Fall 2002 or later. Preference will be given to candidates whose work is related to mathematical physics in a broad sense. Applicants should send a curriculum vitae to **Chair, Hiring Committee, Johns Hopkins University, 3400 N. Charles Street, Kreiger 404, Baltimore, MD 21218**. First round preference will be given to applications received by February 1, 2002. The Johns Hopkins University is an Affirmative Action/Equal Opportunity Employer and actively encourages interest from minorities and women.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY - DEPARTMENT OF MATHEMATICS - The Department may make appointments, at the level of lecturer and assistant professor or higher, in pure mathematics for the year 2002-2003. The teaching load will be nine hours for the academic year (eight hours for assistant professor appointments). These positions are open to mathematicians with doctorates who show definite promise in research. Applications should be complete by January 15. Applicants should arrange to have sent (a) vita; (b) three letters of reference; (c) a description of their most recent research; & (d) a research plan for the immediate future to: **Pure Mathematics Committee, Massachusetts Institute of Technology, Room 2-263, 77 Massachusetts Ave., Cambridge, MA 02139-4307**. MIT is an Equal Opportunity, Affirmative Action Employer. (For more information about the position or institution: <http://www-math.mit.edu>.)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY - DEPARTMENT OF MATHEMATICS - C.L.E. Moore Instructorships In Mathematics - These positions are open to mathematicians with doctorates who show definite promise in research. The teaching load will be nine hours for the academic year. Applications should be complete by January 15. Applicants should arrange to have sent (a) a vita; (b) three letters of reference; (c) a description of the research in their 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**. MIT is an Equal Opportunity, Affirmative Action Employer. (For more information about the position or institution: <http://www-math.mit.edu>.)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY - DEPARTMENT OF MATHEMATICS - Applied Mathematics - Applications are invited for a limited number of positions in applied mathematics, including numerical analysis and scientific computation, starting fall 2002. 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, MIT, 77 Massachusetts Ave., Cambridge, MA 02139-4307**. MIT is an Equal Opportunity, Affirmative Action Employer. (For more information about the position or institution: <http://www-math.mit.edu>.)

MEREDITH COLLEGE - DEPARTMENT OF MATHEMATICS - Assistant Professor in Mathematics/Mathematics Education - Meredith College seeks qualified candidates for position as Assistant Professor in Mathematics/Mathematics Education to begin in August 2002. Applicants must have a Ph.D. in Mathematics or a terminal degree in Mathematics Education and evidence of teaching excellence and continuing scholarship. The position includes responsibilities for teacher preparation. Experience with technology, innovative teaching techniques, and/or undergraduate research is highly desirable. Meredith College is a private comprehensive college of 2500 students offering both liberal arts and professional programs. The College is located near the world-renowned research triangle area in Raleigh, North Carolina. Applications will be reviewed beginning December 15, 2001 and continue until position is filled. Send letter of application, resume, statements of teaching philosophy and research goals, copies of transcripts, and three letters of support to: **Dr. Virginia Knight, Mathematics Education Position Search Committee, Meredith College, 3800 Hillsborough Street, Raleigh, N.C. 27607-5298**. Meredith College seeks to increase diversity among its faculty and staff. Minority candidates are strongly encouraged to apply. Meredith College is an Equal Employment Opportunity Employer.

MEREDITH COLLEGE - DEPARTMENT OF MATHEMATICS - Assistant/Associate Professor in Mathematics - Meredith College seeks qualified candidates for a position as Assistant or Associate Professor in Mathematics to begin August 2002. Applicants must have a Ph.D. in Mathematics and evidence of teaching excellence and continuing scholarship. Experience with technology, innovative teaching techniques, and/or undergraduate research is highly desirable. Meredith College is a private comprehensive college of 2500 students offering both liberal arts and professional programs. The College is located near the world-renowned research triangle area in Raleigh, North Carolina. Applications will be reviewed beginning December 15, 2001 and will continue until position is filled. Send letter of application, resume, statements of teaching philosophy and research goals, copies of transcripts, and three letters of support to: **Dr. Virginia Knight, Mathematics Position Search Committee, Meredith College, Raleigh, N.C. 27607-5298**. Meredith College seeks to increase diversity among its faculty and staff. Minority candidates are strongly encouraged to apply. Meredith College is an Equal Employment Opportunity Employer.

MICHIGAN STATE UNIVERSITY - DEPARTMENT OF STATISTICS AND PROBABILITY - Chairperson Position - Michigan State University invites applications and nominations for the position of Chairperson, Department of Statistics and Probability, College of Natural Science. The Department has eighteen tenure stream faculty (including joint appointments in the Department of Mathematics and Department of Epidemiology), many distinguished visiting faculty and fifty graduate students. The applicant may wish to visit www.msu.edu and www.stt.msu.edu to learn more about the university and the department. The Department expects to grow and add faculty positions with strong interdisciplinary components. The Chairperson will lead the faculty in shaping and developing the department's research, teaching and service, including recruitment into expected faculty openings. Candidates should possess a Ph.D. in an appropriate field, outstanding research credentials, an established record of university and professional service, and effective leadership, communication and administrative skills. The Chairperson must be strongly committed to the continued improvement in the department's research and grant standing, promoting interdisciplinary research initiatives, and furthering excellence in teaching and service to the greater university community. The position carries tenure at the rank of professor and is available starting 16 August 2002. Compensation is competitive and will be commensurate with qualifications. Applications and nominations should be sent to: **Professor Dennis Gilliland, Chairperson, Search Committee, Department of Statistics and Probability, Michigan State University, East Lansing, MI 48824**. An application should include a letter of interest, curriculum vitae and the names of four persons who may be contacted for letters of recommendation. Applications will be considered until the position is filled. We expect to begin interviews in early 2002. Applications are strongly encouraged from members of groups that are traditionally underrepresented in statistics and probability. www.stt.msu.edu

MOUNT HOLYOKE COLLEGE - DEPARTMENT OF MATHEMATICS AND STATISTICS - The Department of Mathematics and Statistics of Mount Holyoke College invites applications for a tenure-track position at the assistant professor level for fall 2003. (A fall 2002 start may be approved in exceptional circumstances.) In addition, a visiting assistant professor position will be available for the 2002-2003 academic year. Members of the department are active in both research and funded curricular development, and teach two courses each semester. Applicants in any field of mathematics or a mathematical science will be considered. Qualifications include a PhD (in hand or anticipated), a commitment to teaching and scholarship in a liberal arts environment, and evidence of classroom effectiveness. Interdisciplinary interests are welcomed. Review of applications will begin December 13, 2001 and will continue until the positions are filled. Send a CV and arrange for three letters of recommendation (addressing both research and teaching) to be sent to: **Mathematics Search Committee, [→]**

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[◀] **Department of Mathematics and Statistics, Mount Holyoke College, South Hadley, MA 01075.** Mount Holyoke is an undergraduate liberal arts college for women with 2000 students and 200 faculty. It is located about 80 miles west of Boston in the Connecticut River valley, and is a member of the Five College Consortium consisting of Amherst, Hampshire, Mount Holyoke, and Smith Colleges and the University of Massachusetts. Mount Holyoke is committed to fostering multicultural diversity and awareness in its faculty, staff, and student body and is an Affirmative Action, Equal Opportunity Employer. Women and people of color are especially encouraged to apply.

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, 2001, 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 12, 2002. Candidates must demonstrate potential excellence in research and 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.**

RENSSELAER POLYTECHNIC INSTITUTE - DEPARTMENT OF MATHEMATICAL SCIENCES - One or more tenure-track positions in applied mathematics, to begin in Aug. 2002. For details, please see the advertisement on the AWM website at www.awm-math.org. Evaluation of applications will begin 1/15/02, & will continue until a candidate is selected. RPI is an EO/AA employer and strongly encourages applications from women & underrepresented minorities.

SOUTHWEST MISSOURI STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Southwest Missouri State University Department of Mathematics anticipates a tenure track Assistant Professor position in either Applied Mathematics or Mathematics Education beginning August 2002. Applicants must have an appropriate doctorate, evidence of excellence in teaching, potential for research, commitment to professional activities, and effective communication skills. Preference may be given to applicants with research interest compatible with current faculty. Additionally, preference may be given to applied mathematics applicants with experiences or contacts in industries or businesses and to mathematics education applicants with classroom teaching experience, as well as teaching philosophies reflecting beliefs described in the NCTM Standards and related mathematics reform movements. Salary is commensurate with experience. Further information is available at <http://math.smsu.edu>. Screening of applications will begin January 15, 2002 and continue until the position is filled. Send application (resume, letter of interest, unofficial transcripts, description of current research, and preferably the AMS Standard Cover Sheet) and have three letters of reference sent to: **AME Position; Department of Mathematics; Southwest Missouri State University; Springfield, MO 65804-0094.** Fax: 417-836-6966. AA/EOE.

SOUTHWEST STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Southwest State University invites applications for a tenure track Assistant/Associate Professor of Mathematics to begin August 2002. The faculty member will teach a full range of undergraduate courses in mathematics and mathematics education and participate in department and university activities, which may include curriculum development, program review, supervising university courses taught in regional high schools, and other outreach activities in both mathematics and mathematics education. Duties also include student advising, contribution to student growth and development, evaluating student performance, scholarly activities, and service to the University and community. A doctorate in mathematics or mathematics education is required, but individuals within a year of doctoral completion will also be considered. Completion of the doctorate is required by September 1 of the tenure application year. Applicants should have good communication skills and demonstrate a strong commitment to undergraduate teaching and to working with mathematics and mathematics education students. A letter of application addressing position qualifications, a curriculum vita, teaching evaluations, official transcripts, and the name, address, and telephone numbers of three references should be submitted to: **Office of Human Resources, Southwest State University, 1501 State Street, Marshall, MN 56258.** Review of the applications will begin February 2002, and will continue until the position is filled. Southwest State University is an Equal Opportunity Educator and Employer. Applicants must be able to lawfully accept employment in the United States.

TUFTS UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for an Assistant Professorship (non tenure-track) in Dynamical Systems, with emphasis on hyperbolic, geometrically motivated, or applied dynamics, to begin September 1, 2002. Initial one-year contract, renewable to a maximum of three years. Ph.D. required. Candidates must provide evidence of excellence in teaching. Relation of research interests to those already present in the department will be a consideration in hiring. Application and letters of appraisal should be addressed to: **Prof. Boris Hasselblatt, Search Committee Chair, Department of Mathematics, Tufts University, Medford, MA 02155.** Review of applications will begin January 25, 2002 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 (non tenure-track) to begin September 1, 2002. 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 area preferred: Geometric group theory. The teaching load will be two courses per semester. Applicants should send a curriculum vitae and have three letters of recommendation sent to: **Mauricio Gutierrez, Search Committee Chair, Department of Mathematics, Tufts University, Medford, MA 02155.** Review of applications will begin January 25, 2002 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.

UNITED STATES NAVAL ACADEMY - DEPARTMENT OF MATHEMATICS - The Department anticipates at least one tenure-track position (subject to approval and funding) at the Assistant Professor level to start in August 2002 or January 2003. Candidates must have a Ph.D., demonstrate a strong commitment to undergraduate teaching, and show potential to continue an active scholarly program. See web site <http://www.usna.edu/MathDept/website/Faculty/Hire/Hire.htm> for full information. Tel: 410-293-6700; Fax: 410-293-4883; Email: amg@usna.edu. The United States Naval Academy is an Affirmative Action/Equal Employment Opportunity Employer.

UNIVERSITY OF CONNECTICUT - DEPARTMENT OF MATHEMATICS - Assistant Professor - The Department of Mathematics anticipates several openings for tenure-track positions at the Assistant Professor level, starting Fall, 2002. Appointments at higher levels are possible in exceptional cases. Candidates must have a Ph.D. and strong evidence of excellent research and teaching ability. Targeted areas of hiring are financial mathematics and computational methods in mathematics. Preference will also be given to candidates whose research interests strengthen existing programs within the department, in particular, analysis and topology. Salary is commensurate with experience. The review of applications will begin in December 2001. Send resume and at least three letters of recommendation to: **Hiring Committee, Dept. of Mathematics, U-9, University of Connecticut, Storrs, CT 06269.** The University of Connecticut is an Equal Opportunity and Affirmative Action Employer. We encourage applications from underrepresented groups, including minorities, women and people with disabilities.

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UNIVERSITY OF CONNECTICUT - DEPARTMENT OF MATHEMATICS - Postdoctoral Fellow - The Department of Mathematics anticipates 3-5 openings for Postdoctoral Fellow positions beginning in Fall, 2002. Candidates must have received a Ph.D. within the last four years and demonstrate evidence of excellent teaching ability and outstanding research potential. The positions are for a maximum of three years. Postdoctoral Fellows normally teach two courses a semester and are expected to participate in the research activities of the department. Preference will be given to candidates whose research interests intersect those of the permanent faculty. The review of applications will begin January 1, 2002. Send resume and at least three letters of recommendation to: **Hiring Committee, Dept. of Mathematics, U-9, University of Connecticut, Storrs, CT 06269.** The University of Connecticut is an Equal Opportunity and Affirmative Action Employer. We encourage applications from underrepresented groups, including minorities, women and people with disabilities.

UNIVERSITY OF HOUSTON - DEPARTMENT OF MATHEMATICS - Senior position - We invite applications for a senior position in computational mathematics/numerical analysis. Candidates should have a record of exceptional scientific achievement and leadership in areas that complement the interests of existing faculty and are supportive of the strategic goals of the department and the university. An excellent record of funding, clear evidence of the ability to develop and direct multidisciplinary program projects, and a successful history of directing graduate research are essential. The University of Houston is an equal opportunity/affirmative action employer. Minorities, women, veterans and persons with disabilities are encouraged to apply. The search will continue until the position is filled. The application package should contain a complete CV and a list of at least three references for the department to contact. Applications should be sent to: **Search Committee for Computational Mathematics Department of Mathematics, University of Houston, Houston, Texas 77204-3008.**

UNIVERSITY OF HOUSTON - DEPARTMENT OF MATHEMATICS - Junior Position - We invite applications for one or more junior positions in applied probability/stochastic analysis or dynamical systems/differential equations. We are looking for a person with a strong record, evidence of exceptional scientific research ability and potential, excellent communication skills, and a commitment to both graduate and undergraduate teaching. Ideally candidates should have held the Ph.D. degree for at least two years. The University of Houston is an equal opportunity/affirmative action employer. Minorities, women, veterans and persons with disabilities are encouraged to apply. Although the focus of the search will be on junior personnel senior researcher may also apply. The search will continue until the positions are filled. The application package should contain a complete CV and a list of at least three references for the department to contact. Applications should be sent to: **Search Committee AP/SA, Department of Mathematics, University of Houston, Houston, Texas 77204-3008.**

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL - DEPARTMENT OF MATHEMATICS - The Department of Mathematics at the University of North Carolina at Chapel Hill seeks to fill a distinguished chaired position. An exceptional research record is the fundamental criterion for this position. Applications are invited from mathematicians working in the area of Partial Differential Equations, with strong ties to both pure and applied mathematics. The search will continue in earnest until the position is filled. We expect interviews to commence after February 15, 2002. Applicants should send a letter of application and a complete curriculum vita to: **Distinguished Chair Search, Mathematics Department, University of North Carolina at Chapel Hill, CB #3250 Phillips Hall, Chapel Hill, NC 27599-3250.** For further information on the Department, please visit our website at <http://www.math.unc.edu>. UNC-CH is an EO/AA Employer. Women and minorities are encouraged to identify themselves voluntarily.

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO - DEPARTMENT OF MATHEMATICS - Applications are invited for one tenure-track assistant professorship, to start in Fall 2002. Preference will be given to applicants in algebra, but strong candidates in all fields will be given serious consideration. Applicants must have the Ph.D. in mathematics or applied mathematics by August 2002. Duties include teaching three courses (9 hours) per semester, continuing research, and university service. The department offers the BS, BA, MA degrees in mathematics, and the BS, MS degrees in computer science. The application should include an AMS cover sheet, curriculum vitae, statement on current research and on teaching, and three letters of recommendation, including one letter addressing the candidate's teaching abilities. Send to: **Theresa Vaughan, Chair, Mathematics Search Committee, Department of Mathematical Sciences, University of North Carolina at Greensboro, Greensboro NC 27402.** Applications received by January 31, 2002 will be guaranteed full consideration. The University of North Carolina at Greensboro is an affirmative action, equal opportunity employer. EEO/AA:W/M/V/D We are unable to process email applications. <http://www.uncg.edu/mat/jobs.html>

UNIVERSITY OF PITTSBURGH AT BRADFORD - DEPARTMENT OF MATHEMATICS - Anticipated tenure-track assistant professor position to begin in January 2002 or September 2002. Ph.D. in math earned or near completion. A strong commitment to undergraduate education on a small rural campus and potential in scholarly work are essential. Applicants with Computer Science or Information Technology background or a willingness to develop this expertise will be given favorable consideration. Send application letter, vita, official transcripts and 3 letters of reference to: **Dr. Yong-Zhuo Chen, Math Search Committee, University of Pittsburgh at Bradford, 300 Campus Drive, Bradford, PA 16701-2898.** Selection process will start as soon as possible and continue until the positions are filled. Women and minorities are encouraged to apply. AA/EOE.

UNIVERSITY OF PITTSBURGH AT JOHNSTOWN - DEPARTMENT OF MATHEMATICS - Mathematics: non-tenure-stream Instructor/Assistant Professor to begin late August 2002. Three-year renewable contract. Required: Masters in Mathematics, Statistics, or Mathematics Education (Ph.D. applicants considered at Assistant Professor level); strong commitment to teaching excellence; demonstrated organizational and supervisory skills; and proficient communication skills in English. Duties: 9 credit hours teaching per semester in lower-level courses fulfilling General Education courses in Mathematics; maintaining professional currency; college service; and a 3-credit load per semester as General Education Quantitative Reasoning Coordinator including work with the Math Placement Exam, courses, assessments, advising, decision-making processes, evaluation of transfer courses, and liaison service related to the Quantitative Reasoning Competency requirement of the General Education Curriculum. Send letter indicating specific interest in UPJ, vita with email address and statement of eligibility to work in US, transcripts of all college degrees (originals from granting institutions only), 3 letters of recommendation (originals directly from references or university placement service), and statement of teaching philosophy to: **Attn: Instructor, Mathematics Search Committee, 130 Krebs Hall, University of Pittsburgh at Johnstown, Johnstown, PA 15904.** For full consideration, apply by December 15, 2001; however applications accepted until position filled. The University of Pittsburgh is an Affirmative Action, Equal Opportunity Employer. Women and minorities are encouraged to apply.

UNIVERSITY OF PITTSBURGH AT JOHNSTOWN - DEPARTMENT OF MATHEMATICS - Mathematics: tenure-stream Assistant Professor to begin late August 2002. Required: Ph.D. in Mathematics with specialization in Algebra, Analysis, or Discrete Mathematics; strong commitment to teaching excellence; continued professional development; and university service. Teach 12 credits per semester (3-4 classes). Send letter indicating specific interest in UPJ, vita with email address and statement of eligibility to work in US, transcripts of all college degrees (originals from granting institutions only), 3 letters of recommendation (originals directly from references or university placement service), and statements on teaching philosophy and professional development to: **Attn: Tenure, Mathematics Search Committee, 130 Krebs Hall, University of Pittsburgh at Johnstown, Johnstown, PA 15904.** For full consideration, apply by December 15, 2001; however, applications accepted until position filled. The University of Pittsburgh is an Affirmative Action, Equal Opportunity Employer. Women and Minority group members are encouraged to apply.

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UNIVERSITY OF NORTH TEXAS - DEPARTMENT OF MATHEMATICS - The Mathematics Department expects to have a tenured or tenure track positions to fill for 2002-2003 pending administrative approval. Preference will be given to applicants whose area of research is **differential equations**, although strong candidates in any area of pure or applied mathematics would be considered. The teaching load is two courses per semester. The department offers undergraduate and graduate degrees in mathematics including the Ph.D. degree. The search committee will begin reviewing applications after December 1, 2001 and continue to consider applications until the positions are filled. The University of North Texas is an ADA/AA/EOE that encourages applications from minority group members and women. Apply online at <http://www.mathjobs.org> or send vita, three letters of recommendation, transcripts, and cover letter to: **Search Committee, Department of Mathematics, P.O. Box 311430, University of North Texas, Denton, TX 76203-1430.**

UNIVERSITY OF NORTH TEXAS - DEPARTMENT OF MATHEMATICS - The Mathematics Department expects to have a tenured or tenure track position to fill for 2002-2003 pending administrative approval. The department seeks an individual with a strong mathematics background who is actively involved in **Mathematics Education Research**. Candidate will also be expected to establish strong collaborations with area public education. The teaching load is two courses per semester. The department offers undergraduate and graduate degrees in mathematics including the Ph.D. degree. The search committee will begin reviewing applications after December 1, 2001 and continue to consider applications until the position is filled. The University of North Texas is an ADA/AA/EOE that encourages applications from minority group members and women. Apply online at <http://www.mathjobs.org> or send vita, three letters of recommendation, transcripts, and cover letter to: **Search Committee, Department of Mathematics, P.O. Box 311430, University of North Texas, Denton, TX 76203-1430.**

THE UNIVERSITY OF TEXAS AT AUSTIN - DEPARTMENT OF MATHEMATICS - Openings for Fall 2002 include: (a) Instructorships, some that have R.H. Bing Faculty Fellowships attached to them and others that are VIGRE Instructorships, and (b) four or more positions at the tenure-track/tenure level. (a) **Instructorships** at The University of Texas at Austin are postdoctoral appointments, renewable for two additional years. It is assumed that applicants for Instructorships will have completed all Ph.D. requirements by August 28, 2002. Other factors being equal, preference will be given to those whose doctorates were conferred in 2001 or 2002. 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 \$39,000 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 \$42,000, which is supplemented by a travel allowance of \$1,000. Pending satisfactory performance of teaching duties, the Fellowship can be renewed for two additional years. Applicants must show outstanding promise in research. Bing Fellowship applicants will automatically be considered for other departmental openings at the postdoctoral level, so a separate application for such a position is unnecessary. **VIGRE Instructorships** are partially funded by an NSF VIGRE Grant awarded to the department (in partnership with the Texas Institute for Computational and Applied Mathematics). The combined Instructorship-VIGRE Postdoctoral Fellowship carries a nine-month stipend of \$40,000, with an annual allocation of \$2500 to cover equipment, supplies, and travel. The position also includes summer support in the amount of \$6500 for the first two summers of the appointment. The teaching load for VIGRE Instructors is one course per semester. Only citizens, nationals and permanent residents of the U.S. are eligible for VIGRE Instructor appointments. Furthermore, a VIGRE Instructor must have received the Ph.D. within eighteen months of the date the appointment becomes effective. All eligible applicants for postdoctoral positions in either the Mathematics Department or TICAM will automatically be considered for a VIGRE Instructorship. Those wishing to apply for Instructor positions are asked to send a vita and a brief research summary to the above address c/o Instructor Committee. Transmission of the preceding items via e-mail (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 the **Recruiting Committee, Department of Mathematics, University of Texas at Austin, Austin, TX 78712.** Transmission of the preceding items via e-mail (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, 2001. The University of Texas at Austin is an equal opportunity employer.

UNIVERSITY OF WISCONSIN, MADISON - DEPARTMENT OF STATISTICS AND DEPARTMENT OF BIostatistics AND MEDICAL INFORMATICS - The Departments seek candidate for joint tenure-track Assistant Professor position with an interest in biostatistical research to start in Fall of 2002. The position will require teaching one course per semester and collaborating with scientists in the UW Comprehensive Cancer Center. Expertise in clinical trials or computational statistics is of special interest. Send resume, summary of thesis/research papers, 3 letters of reference to: **Hiring Committee, UW Department of Statistics, 1210 W. Dayton, Madison, WI 53706.** Women & minorities encouraged to apply. Deadline: January 31, 2002. AA/EOE. Unless confidentiality requested in writing, candidate information must be released upon request. See: www.stat.wisc.edu

WESTERN ILLINOIS UNIVERSITY - DEPARTMENT OF MATHEMATICS - Two Tenure-Track Positions, Assistant Professor, August 2002. One position is open to applicants from all areas of mathematical sciences. The second position is in statistics. Expertise in Financial Mathematics is desirable. Three-course teaching (with appropriate integration of computing technology), research, and service expected. **QUALIFICATIONS:** Ph.D. (or imminent) in a mathematical sciences area; demonstrated, or potential for, excellence in teaching; a record of, or potential for, research; a record of, or commitment to, service. **SCREENING BEGINS** December 15, 2001; continues until position filled. Preliminary interviews at San Diego Joint Meeting. Send letter, vita, teaching philosophy, research description, three reference letters, and transcripts (photocopies) to: **Iraj Kalantari, Chair, Mathematics Department, Western Illinois University, Macomb, IL 61455-1390.** URL: <http://www.wiu.edu/mathematics>. WIU is an Equal Opportunity and Affirmative Action employer. We are especially interested in applications from women and minorities, and individuals with disabilities. All positions are subject to State funding.

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS AND STATISTICS - Tenure-track position in statistics, beginning fall 2002, 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. at the time of appointment are required. Please send a vita and have three letters of recommendation on teaching and research sent to the **Statistics Hiring Committee, Department of Mathematics and Statistics, Williams College, Williamstown MA 01267.** Evaluation of applications will begin on or after December 10. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS AND STATISTICS - Tenure-track position in mathematics or statistics, beginning fall 2002, 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. by time of appointment are required. Please send a vita and have three letters of recommendation on teaching and research sent to the **Hiring Committee, Department of Mathematics and Statistics, Williams College, Williamstown, MA 01267.** Evaluation of applications will begin on or after December 10. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

Association for Women in Mathematics
2000/2001 MEMBERSHIP FORM

AWM's membership year is from October 1st to September 30th. Please fill-in this information and return it along with your DUES to:
AWM Membership
 4114 Computer & Space Sciences Building
 University of Maryland
 College Park, MD 20742-2461
 The AWM Newsletter is published six times a year and is part of your membership. Any questions, contact AWM at awm@math.umd.edu; (301) 405-7892 or refer to our website at: <http://www.awm-math.org>

LAST NAME _____ FIRST NAME _____ M.I. _____
 ADDRESS _____

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

Email: _____ Home Phone: _____ Work Phone: _____
 do not publish home number do not publish work number

Date of Birth (optional): _____ (MMDDYYYY) [the date of birth field is to strictly help prevent duplicate entries]

PROFESSIONAL INFORMATION:

Position: _____ If student, GRADUATE or UNDERGRADUATE (circle one)
 Institution/Company: _____ If not employed, leave position & institution blank
 City, State, Zip: _____

DEGREES EARNED:

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

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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	_____
All payments must be in U.S. Funds using cash, U.S. Postal orders, or checks drawn on U.S. Banks.		
BENEFACTOR [\$2,500] or FRIEND [\$1,000] (circle one).....	\$	_____
<input type="checkbox"/> I am enclosing a DONATION to the "AWM GENERAL FUND".....	\$	_____
<input type="checkbox"/> I am enclosing a DONATION to the "AWM ALICE T. SCHAFER PRIZE".....	\$	_____
<input type="checkbox"/> I am also enclosing a DONATION to the "AWM ANNIVERSARY ENDOWMENT FUND".....	\$	_____
Indicate if you wish for your contribution(s)/donation(s) to remain ANONYMOUS ⇔ <input type="checkbox"/>		
Dues in excess of \$15 and all cash contributions/donations are deductible from federal taxable income.		

INSTITUTIONAL DUES SCHEDULE

<input type="checkbox"/> CATEGORY 1 (includes 10 student memberships; 1 free ad; 25% off additional Newsletter & online ads*)..	\$250	_____
<input type="checkbox"/> CATEGORY 2A (includes 3 student memberships; 1 free ad; 10% off additional Newsletter & online ads*)....	\$125	_____
<input type="checkbox"/> CATEGORY 2B (includes 6 student memberships; 10% off Newsletter & online ads*).....	\$125	_____

ADVERTISING: Institutional members on Categories 1 and 2a receive ONE FREE job link ad or ONE FREE Newsletter ad (up to 4 lines) for the membership year Oct. 1st to Sept. 30th. All institutional members receive discounts on other eligible* advertisements (25% off for Category 1 and 10% off for Categories 2a and 2b). *Eligible advertisements: The institutional discount applies to both classified and job link online ads as well as classified *Newsletter* ads, but it does not apply to *Newsletter* display ads. If institutional dues have not been received by the invoice date, the full advertising rate will be charged. *Newsletter* advertising deadlines are the 1st of every EVEN month. All institutions advertising are Affirmative Action/Equal Opportunity Employers. **STUDENT NOMINEES:** Institutions have the option to nominate students to receive the newsletter as part of their membership. List names and addresses of student nominees on opposite side or attach a separate page. [ADD \$15 (\$23 for foreign members) to the listed institutional rate for each student add-on over the initial 10 students for Category 1; over the initial 3 students for Category 2a & over the initial 6 students for Category 2b]. For more info see www.awm-math.org

Indicate if GIFT membership FROM: _____ **TOTAL ENCLOSED \$** _____

ADDRESS CORRECTION FORM

- Please change my address to:
- Please send membership information to my colleague listed below:
- No forwarding address known for the individual listed below (enclose copy of label):

(Please Print)

Name _____

Address _____

City _____ State _____ Zip _____ - _____

Country (if applicable) _____ E-mail Address _____

Position _____ Institution/Org. _____

Telephone: Home _____ Work _____

I DO NOT wish for my AWM membership information to be released for the **Combined Membership List (CML)**.

MAIL TO:

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

or E-MAIL:

awm@math.umd.edu

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