

AWM

ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 32, Number 3

NEWSLETTER

May–June 2002

PRESIDENT'S REPORT

Hello to all AWM members!

As you look ahead to make plans for the summer, note that there are AWM activities at the SIAM 50th Anniversary Meeting in Philadelphia, July 8–12, and at the MAA MathFest in Burlington, Vermont, August 1–3. We are pleased to announce an AWM-SIAM invited lecture at the SIAM meeting; Cathleen Morawetz of Courant Institute will be giving this lecture on Monday, July 8th. We are hosting a workshop for female graduate students and recent Ph.D.'s at the SIAM meeting. Our poster session will be held jointly with the SIAM student poster session on that Monday evening and will feature a dessert reception. We gratefully acknowledge the support of the Air Force Office of Scientific Research and the Office of Naval Research for this workshop.

At MathFest, we are continuing the tradition started last year that the Hay Award winner, this year Annie Selden of Tennessee Technological University, will deliver the AWM-MAA lecture. AWM and MAA will also be hosting a reception at MathFest.

Congratulations to the AWM members who have recently won major awards. Etta Falconer received an AAAS Lifetime Mentor Award, while William Golden (*aka* our past president Jean Taylor's husband) earned the AAAS Lifetime Achievement Award. AWM past president and founding member Mary Gray was presented with a 2002 Presidential Award for Educators in Math, Science and Technology. For more information, see the Awards and Honors section that begins on page six.

A committee including representatives from Europe, Canada, Asia, and the US selected the Emmy Noether Lecturer for the International Congress of Mathematicians in Beijing, China, August 20–28. We are pleased to announce that Hu Hesheng from Fudan University in Shanghai, China, will be the ICM Noether Lecturer for 2002. There will also be a panel discussion

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A W M
 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.

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organized by AWM at the ICM. We are cooperating with the European Women in Mathematics to write a proposal to the International Mathematical Union that would formalize the continuation of the Noether Lecture series at these important meetings. The EWM organization was founded in 1986 and has its office in Helsinki, Finland. See its website www.math.helsinki.fi/EWM for more information and background. (*Attending ICM 2002? See box at bottom of page 4.*)

We would like to note that the Conference Board of the Mathematical Sciences has a new web address, www.cbmsweb.org. If you have never looked into the variety of activities and organizations involved in CBMS, check out this website. There are sixteen member organizations of CBMS, ranging from the Benjamin Banneker Association to the Association of State Supervisors of Mathematics.

I would like to ask you to consider making nominations for the Alice T. Schafer prize for female undergraduate math majors and the Louise Hay Award in mathematics education; those deadlines are October 1st. We will be having our Essay Contest on Biographies of Contemporary Women in Mathematics again this fall. Our Online Discussion Forums on our website www.awm-math.org have had very little activity during 2002. Check out the discussion topics involving general AWM, career and education issues and you may want to contribute to the discussions.

Contact me at lenhart@math.utk.edu if you have any suggestions or ideas about AWM activities.

Enjoy your summer!

Suzanne Lenhart

Suzanne Lenhart
 University of Tennessee and
 Oak Ridge Labs
 March 28, 2002



WOMEN & MATHEMATICS NETWORK SESSION

On January 8th at the Joint Mathematics Meetings in San Diego, the Women and Mathematics Network sponsored the session "Successful Mathematics Outreach Programs for Women and Girls." It began with a presentation by Jennifer Hontz from Meredith College. She described the administration and organization of their program, Math Week. This is a one-week residential camp for young women who are rising high school sophomores. Using information from Charlene Morrow, who was unable to come to San Diego, Betsy Yanik described many of the special characteristics of SummerMath, a summer program at Mt. Holyoke. Yanik also described the summer conference, Women Count, which was held at the University of Wisconsin on the day preceding MathFest. The next speaker, Betty Levitin, executive director of Math/Science Network, discussed the history of the Math/Science Network organization. This organization is well known for its sponsorship of the Expanding Your Horizons conferences held annually across the country. The Expanding Your Horizons conference is a daylong event in which middle school girls meet with women professionals in mathematical and scientific careers. A lively discussion followed these presentations, and several Tensor awardees in the audience briefly described their projects.

Betsy Yanik, Emporia State University

ALICE TURNER SCHAFFER: A CORRECTION

We apologize to Alice for an error introduced during the editorial process in the article "Alice Turner Schaffer: A Personal Perspective" by Pao-Hseng Shu which appeared last issue. Two vital words were inadvertently omitted: her undergraduate career was spent at the University of Richmond in Virginia, not at the University of Virginia as stated. At that time, the University of Virginia did not admit women to any of its colleges.

MEMBERSHIP AND NEWSLETTER INFORMATION

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

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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.

EDUCATION COLUMN

AWM ONLINE

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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>

Online Discussion Forums

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

AWM-Net Editor

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AWM-Net

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

AWM DEADLINES

NSF-AWM Travel Grant: October 1, 2002 and February 1, 2003

AWM Workshop, Baltimore, January 2003: September 1, 2002

Alice T. Schafer Prize: October 1, 2002

Louise Hay Award: October 1, 2002

AWM CALENDAR

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

AWM CONTACT INFO

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ATTENDING ICM 2002?

AWM is looking for volunteers to help with the AWM Events at the **ICM 2002 in Beijing, China, August 20-28, 2002.**

If you are interested, please contact Dawn Wheeler, Director of Meetings at awm@math.umd.edu

ICM 2002 information can be found at: <http://www.icm2002.org.cn/>

There are some causes in life that are worthy and admirable in the abstract, but become vastly more compelling and interesting in the concrete. I have just experienced such a change in point of view, and am correspondingly devoting this column to the cause in question.

As those of you who checked out the set of websites listed in the previous AWM *Newsletter* are aware, there is an ongoing series of conferences called "Expanding Your Horizons." They are sponsored and supported and generally kept afloat by the Math/Science Network. The motivation for the conferences is a bunch of facts with which most of us in AWM are all too familiar: "Only 19% of the science, engineering and technology workforce is female"; "By eighth grade, twice as many boys as girls show an interest in science, engineering and mathematics careers"; "Nearly 75% of tomorrow's jobs will require use of computers but fewer than 33% of participants in computer courses and related activities are girls" (all quoted with proper references in an Expanding Your Horizons handout.) This is not a problem that any single approach is going to solve, but letting adolescent girls see and hear and talk with women with highly enjoyable careers in math, science and technology is certainly one strong tactic. Expanding Your Horizons conferences have been doing just that since 1976, and have so far reached some 550,000 young women.

That is the admirable and impressive abstract situation. Since the cause is dear to my heart, the woman who called me last autumn from nearby Shoreline Community College was not required to exercise any arm-twisting skills at all to persuade me to sign on for an EYH conference this spring. I looked forward to it with vague pleasure, and duly put together a workshop on probability. I even dutifully took myself to the orientation dinner a week before the conference, and prepared to exert my best company manners to listen politely while 35 different women gave 90-second self-introductions, complete with a description of one role model. And that is when the switch from abstract to concrete kicked in. Those 90-second introductions were absolutely riveting. The career range was vast, from structural engineering to physical therapy (and I suddenly saw the similarity as each of the two discussed the joy of analyzing how a structure works), from computer consultant to veterinarian, from statistician to environmental attorney. Career paths were similarly diverse, from "I decided to go into nursing when I was three and I have now done every field of nursing except obstetrics" to "Well, this is my fourth career ... so

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

far." I was particularly taken with the graduate student who said cheerfully "I like science and I like climbing trees, so here I am in forestry." Of the role models one pair completely overshadowed the others for me—the parents of a woman Ph.D. who themselves had been financially unable to go beyond high school, and who nonetheless raised their children in such a way that all five completed college and several went beyond.

Came the day of the conference, the Shoreline campus duly swarmed with hundreds of bright-eyed young women. Myself, I don't know how they managed to choose among the sessions—40 workshops and career panel, with titles like "The Great Penny Mystery", "Try These Genes on for Size" and "Robot Soccer"—but choose they did. Thanks to some really classy organizing on the part of the Shoreline folks who were running the conference, they also found the sessions once they had made their choices. The "passing periods" displayed a cheerful and upbeat mass of humanity. Clearly a good day for the girls.

So what does an adult get out of taking part in an Expanding Your Horizons conference? The plenary speaker told a charming tale of a woman who kept receiving invitations to lift-offs at Cape Canaveral. Her mystification only cleared up after several years when there appeared on her doorstep a young woman who said that she had been influenced at an EYH conference to go into science and had wound up as an astronaut. The

invitations were her form of thank you to the woman who had done the influencing.

I'm not holding my breath for that to happen to me—I doubt if many of us toss pebbles that launch quite such an avalanche. But there was a young woman who stuck around after my session to test out a theory she had developed. And another who went out saying in tones of some astonishment, "That was actually kind of fun!" For them and their likes, I would happily repeat my efforts. And if enough of us produce enough of these miniscule scraps of influence on enough young girls, then among us we will have a not-at-all-miniscule impact on the future.

AWM ELECTION

Phase two of the election is now complete, and all the Bylaws changes have been approved. The updates to the Bylaws will be posted soon to the AWM website, www.awm-math.org.

Thanks to all who voted for helping us bring our Bylaws into line with current practices. Thanks also to everyone on the Executive Committee who helped prepare these changes, especially our former Clerk Sue Geller.

CALL FOR NOMINATIONS: LOUISE HAY AWARD

The Executive Committee of the Association for Women in Mathematics has established the Louise Hay Award for Contributions to Mathematics Education, to be awarded annually to a woman at the Joint Prize Session at the Joint Mathematics Meetings in January. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense. The annual presentation of this award is intended to highlight the importance of mathematics education and to evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being.

The nomination documents should include: a one to three page letter of nomination highlighting the exceptional contributions of the candidate to be recognized, a curriculum vitae of the candidate not to exceed three pages, and three letters supporting the nomination. It is strongly recommended that the letters represent a range of constituents affected by the nominee's work. *Five* complete copies of nomination materials for this award should be sent to: The Hay Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. Nominations must be received by **October 1, 2002**. For more information, phone (301) 405-7892, email awm@math.umd.edu or visit www.awm-math.org. Nominations via email or fax will not be accepted.

MMSETS IN NORTHERN NEW ENGLAND

Five years ago I joined the ranks of Israel Gelfand, George Berzsenyi, Arnold Ross, David Kelly, Glenn Stevens, Martin Isaacs and others by starting the Maine Mathematics Science and Engineering Talent Search Program (MMSETS). Our Talent Search Program is unique in three aspects: we have over two thousand participants, mostly from the State of Maine; we extend our program through middle school and high school (offering separate problems for these age ranges); and I may be the first female mathematician ever to direct such a program and succeed with it, granted that five years and two thousand participants signals success.

When I initiated MMSETS, my aim was to emulate *KoMal*, Hungary's eminent high school mathematics journal, which is rightly credited for Hungary's prominence not only in mathematics, but in engineering and in the sciences as well. From Hungary has come the model for the USA Mathematical Talent Search (USAMTS), first run by George Berzsenyi out of Rose Hulman Institute of Technology and later operated by the National Security Agency. Berzsenyi's USAMTS, with an associated NSF-funded Summer program, offers sets of long-answer questions to almost 1,000 students in grades 9–12 nationwide.

In addition to this national program we felt there was a great need for regional talent searches, which would feature more accessible problems for larger numbers of students beginning with grades 6–12. The well-known Wisconsin Mathematics, Engineering and Science Talent Search, directed by Martin Isaacs, has fulfilled that need in part of the Midwest for nearly forty years. There were several attempts in other parts of the country to do likewise, but only our Maine Mathematics, Science and Engineering Talent Search managed to attract similarly many and promising students. There is a great need for such programs; our talented students truly deserve them.

The purpose of the program is to encourage and assist the development of the problem-solving skills of all the middle level and high school students of Maine. While most other similar competitions have strict time limits, the MMSETS program allows for more reflection on the part of the participants. Typical competitions require

solutions within minutes; MMSETS allows students a five-week time period not only to solve the problems but also to allow for detailed reasoning for the solutions. MMSETS strives to foster creativity as well as the equally important virtues of commitment, reliability, and punctuality. It is free of charge and students are invited to join at any time. At the end of each round, MMSETS makes problem set solutions available. MMSETS hopes that the instructional value of the solutions will be appreciated and utilized not only by the participants, but also by teachers of mathematics. MMSETS welcomes correspondence about the problems, their solutions, and references to related problems, clarifications, corrections, and so forth.

Each MMSETS annual competition has seven rounds of problem sets of 10 questions. The problem sets are graded; complete solutions receive full credit, but partial credit is given for other work having some merit. Participants accumulate scores through seven rounds. At the end of the seventh round, winners are announced for each grade level. The winners receive various book prizes and gift subscriptions to mathematical publications that are made possible by the sponsors of MMSETS. The winners on the 11th and 12th grade levels receive scholarships from the University of Maine System.

My five years with the MMSETS program has been the most challenging and most rewarding part of my professional life. I have learned that young people like mathematics, granted that we offer funny and challenging problems that trigger their imaginations. I have learned that we have to deal with the issue of our individual mortality by nurturing new mathematicians to take over from the current generation. The State of Maine will need many more engineers, mathematicians and scientists in the future. Through year-round mathematical problem solving, MMSETS strives to encourage students to pursue these careers.

I have learned that from grade six to ten we have almost equal numbers of male and female participants in MMSETS. After grade ten the female students gradually disappear from the competition. But attention to interested female participants, making math social, developing friendships should help remove the stigma of competition. MMSETS should make mathematics a

Eva J. Szillery, University of Maine System and Maine Mathematics and Science Alliance

more social and friendly activity to all participants. Mathematical talent is not limited to persons of any gender, race, nationality, or region. It is not necessarily inherited, and it is not just a male domain. The aim of MMSETS is that every mathematically talented student in Maine will attain his or her potential.

I have learned that teachers are interested in challenges. Teachers are also interested in challenging their students. Most teachers are willing to learn additional problem solving skills at their own pace. MMSETS assists both teachers and students by offering class visits and help sessions for interested students and teachers together. Not only the gifted and talented teachers and Math league coaches but also many parents welcome our challenges. In addition, many teachers in regular math programs visit us on campus and make use of our services. With the 6,000 miles I have traveled within Maine I have positively influenced audiences who originally discounted me because of my gender and foreign origin.

This report ends with a selection of problems from our ongoing competition.

First is a problem for students in grades 6–9. So far this is the most popular problem of the fifth year of our competition, where “popularity” of a problem is measured in the combination of solutions, attempts to solve and number of questions received before and after the solution deadline.

Brian, an electrician has the following problem: An electric cable that goes across the river is made of seven

individual wires that are grouped together. Unfortunately, all the wires have identical colors. As a result, he does not know which wire on one side of the river matches with which wire on the other side of the river. He has to solve this problem. He has already decided to choose one wire and tape a “#1” label on it and somehow find out which one is the other end of #1 on the other side of the river. Likewise, he will mark the second cable as #2 and find the other end on the other side, etc. There is electricity available on both sides of the river; Brian has a light bulb, a voltmeter and a boat for crossing the river. How many times does he have to cross the river and come back to solve this problem? How many times should he cross the river if the cable is roped together from 49 identical colored wires?

The trigonometry problem that follows is for high school students.

Given $S = \sin^4 2^\circ + \sin^4 7^\circ + \sin^4 12^\circ + \dots + \sin^4 87^\circ$ and $T = \sin^4 3^\circ + \sin^4 8^\circ + \sin^4 13^\circ + \dots + \sin^4 88^\circ$, find the value of $S + T$. Do not use a calculator.

One may try to use De Moivre’s Theorem as well as a formula for the sum of a series of cosines in arithmetic progression. Both of these strategies will work.

After solving the problem, however, one can look back and get a “revelation” and solve the problem in a much more elegant way. There is a solution without any esoteric knowledge. One does not need De Moivre or the sum of cosines in arithmetic progression, there is a much more snappy, clever solution.

CALL FOR NOMINATIONS: ALICE T. SCHAFFER MATHEMATICS PRIZE

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schaffer Mathematics Prize to be awarded to an undergraduate woman for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize. The nominee may be at any level in her undergraduate career, but must be an undergraduate as of October 1, 2002. She must either be a U.S. citizen or have a school address in the U.S. The thirteenth annual Schaffer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in Baltimore, Maryland, January 15–18, 2003.

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

With letter of nomination, please include a copy of transcripts and indicate undergraduate level. Any additional supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, recommendation letters from professors, colleagues, etc.) should be enclosed with the nomination. Send *five* complete copies of nominations for this award to: The Alice T. Schaffer Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. Nominations must be received by **October 1, 2002**. If you have questions, phone 301-405-7892 or email awm@math.umd.edu or visit www.awm-math.org. Nominations via email or fax will not be accepted.

This last problem is also aimed at high school students: A gecko was observed by several people over a six-minute period. Each observer watched it for one minute, and each noted that during that minute, the gecko progressed one yard. No one watched the gecko outside this six-minute interval. During the six minutes someone was watching the gecko at all times. However, an "outsider" who was not among the observers noted that the gecko traveled 10 yards during the six minutes. Is this possible? If so, how?

Yes, it is possible. At first, we may read the problem superficially, and we read things into the problem that are not there. We may infer that the gecko travels one yard in each minute, in which case it would indeed travel six yards in six minutes. However, this is not the case.

Clearly the gecko does not move at a uniform motion. There has to be a succession of faster and slower intervals which somehow combine to result in the observations given in the problem. Also, there must be overlaps in the observations.

How could we combine these observations to "produce" 10 yards in six minutes?

Assume that one observer starts at the beginning of the first minute. At this time the gecko is running fast, gets tired and stops before the second observer comes. The second observer arrives when the gecko is resting. It does not move while the first and the second observer are present together. When the first observer leaves, and only the second one is present, the gecko travels another yard, before the arrival of the third. And so forth.

AWARDS AND HONORS

AAAS Awards

WILLIAM T. GOLDEN was an investment banker when he joined the U.S. Navy in World War II, but he had such a scientific turn of mind that he invented a device that decreased by two-thirds the scarce ammunition that gunners needed to practice on their anti-aircraft guns.

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 next three deadlines for receipt of applications are **October 1, 2002**, **February 1, 2003**, and **May 1, 2003**.

Though his passion was science, Golden had chosen Wall Street after reading "a romantic novel" during his senior year in college. Money was only a means, however, and once he had it, Golden, now 92, launched himself into a career in public life that this year earned him the American Association for the Advancement of Science (AAAS) Lifetime Achievement Award.

Golden is best known for his notion that the nation should have an office of science advisor to the president, and for convincing President Harry S. Truman in 1950 to move forward on the idea. Fifty years and 10 presidents later, there is still a science advisor at The White House, as well as a presidential science advisory committee, another one of Golden's concepts. Most recently, Golden played a major role in convincing the US State Department to open a position for its own science advisor.

"Bill Golden has devoted his life to advancing science and to making sure that public officials base their decisions on sound scientific principles," said AAAS CEO Alan I. Leshner. "His stature and his love of all things scientific have made him the perfect spokesperson for the worlds of science and engineering."

For 31 years—until 1999—Golden was treasurer of AAAS. With both financial support and guidance he helped build the Association's headquarters in Washington, DC, at 12th and New York Avenue. He also paid for the first year of AAAS's 30-year-old Congressional fellowship program, which has multiplied, annually sending dozens of young scientists and engineers out into the various branches of government to learn policy and provide expertise.

Golden does not claim a deep grasp of science. "Without being competent in the details," he says, "I feel comfortable in the midst of it."

Over the years he became interested enough to take occasional courses in biology at Columbia University. In 1979, he discovered to his surprise that he had earned enough credits for a Master's degree. "I sent in \$10, and they sent me my degree."

The grandson of Lithuanian immigrants, Golden is grateful for the opportunities he's been given in the United States. As a 13-year-old boy, he obtained his ham radio transmitting license, a defining moment. He says that his patriotism and his curiosity motivate him in the causes he chooses to support. He is particularly pleased to have served as co-chairman, with Nobel Prize Winner Joshua Lederberg, on the Carnegie Commission on

Science, Technology and Government. Golden's work with the National Academy of Sciences (NAS) earned him its highest honor, the Public Welfare Medal. Golden is responsible also for creating the Black Rock Forest Consortium, which operates a "natural living laboratory" in a 4000-acre forest along the Hudson River in New York State. He is Chairman Emeritus of the American Museum of Natural History.

ETTA ZUBER FALCONER, mathematician and Fuller E. Callaway Professor of Mathematics at Spelman College, and JAMES H. M. HENDERSON, plant biologist and Chairman Emeritus of the Division of Natural Sciences at the Tuskegee Institute, won the AAAS Mentor Award for Lifetime Achievement. Throughout their professional lives, these two professors helped students of science and mathematics overcome barriers of race and gender to make the transition from high school to college and beyond.

James H. M. Henderson has served generations of students as a role model and mentor at Tuskegee University, a historically black institution of higher learning. An exceptional academician, Henderson has devoted his entire career to research and teaching students at the pre-college, undergraduate, and graduate levels in the biological and agricultural sciences. His summer program aimed at high school students, ENHANCES, funded by the Howard Hughes Medical Institute, has seen over 40 students pursue a college education. Henderson has served as Commissioner of the Commission on Undergraduate Biological Sciences and is the former Director of the George Washington Carver Foundation.

Etta Zuber Falconer earned a B.A. in Mathematics from Fisk University, M.A. in Mathematics from the University of Wisconsin, M.A. in Computer Science from Atlanta University, and Ph.D. in Mathematics from Emory University. She is widely known for her seminal work in mathematics as well as her advocacy of women in science.

Falconer joined the staff of Spelman College in 1965 as an associate professor and has since served as chair of the mathematics department, chair of the Division of Natural Sciences, director of Science Programs and Policy, and associate provost for Science Programs and Policy. (Founded in 1881, Spelman College is the country's oldest historically black college for women.) In 1990, she became Fuller E. Callaway Professor of Mathematics. Falconer also serves as coordinator of the

NASA Undergraduate Student Research Program and chair of the Dual Degree Advisory Committee.

Falconer's professional affiliations include: the American Mathematical Society; the Mathematical Association of America, where she served on the Task Force on Minorities in Mathematics; and the Committee on Quantitative Literacy. She has also served as a member of the American Association for the Advancement of Science's Committee on Opportunities in Science and was co-founder of the Atlanta Chapter of Minority Women in Science Network. She was also a council member of the Association for Women in Mathematics and a member of the Committee on GRE Advance Mathematics Examination.

Falconer's numerous awards include two Spelman College Presidential Faculty Awards and the United Negro College Fund's Distinguished Faculty Award. Her current research and educational interests include Isotopically-closed Quasigroup Varieties Related to Abelian Groups of Prime Order; Anti-associative Loop Identities; Computer Algorithms for Quasigroup Research; and Increasing Participation of African American Women in Science and Engineering Careers.

Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring

President Bush recognized American University Professor MARY GRAY as one of this year's recipients of the sixth annual Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring. Ten individuals and ten institutions received the award for promoting participation among women, minorities and persons with disabilities in scientific and engineering careers at a ceremony December 12, 2001 in Washington, DC.

Mary Gray, a professor of mathematics and statistics in the College of Arts and Sciences, is international treasurer of Amnesty International USA. She is responsible for the finances of the 1.2-million-member worldwide organization, in which she has been involved for 25 years. As a lawyer and statistician, she furthers her commitment to human rights, including civil rights and women's rights, in researching issues such as affirmative action, discrimination, and single-sex education. She also has expertise in the areas of math education, computer science, and law. Gray is a member of Phi Beta Kappa and was a Fulbright scholar in Germany. She has

authored more than 80 articles and has given countless presentations on her areas of specialty, including testifying before Congress on income tax reform, affirmative action, pay equity, and women in science. A member of the American Bar Association, Gray is writing a book about computer law.

Chief among Gray's accomplishments leading to this award is her responsibility to graduate students, including eight African-American and nearly twenty female mathematics/statistics Ph.D.'s. She also ran a program on grant money received from the Karim Rida Said Foundation (in London), which produced 42 Palestinian and Syrian master's students at AU in computer science and statistics, 16 of whom went on to Ph.D. programs. She notes that supervising Ph.D. students is an important part of the research efforts of faculty.

Gray is known for spending time and even money to help her students finish their programs of study. With young people who come from families with no history of higher education, that extra attention from a faculty member committed to their success can make a real difference, she says. "It makes it a lot easier if there's someone looking out for you."

Centennial High School teacher PAMELA DASE of Columbus, Ohio also received a Presidential Award. Prior to Dase, all individual award recipients had been college or university professors. Dase is the first high school teacher to receive this honor in the six-year history of the award.

Pamela H. Dase is a gifted teacher of high-school mathematics who has made an extraordinary effort to mentor high-school students. In support of her classes at Centennial High School in the Columbus Public School system, she advocated for the Algebra for All pilot program for all students in her building. Centennial High School is described as an urban school with a significantly diverse student population, including students for whom English is a second language. Dase is a champion for increased math requirements; she has high expectations of her students and they respond. She provides after-school support to ensure that students are successful. One indicator of the outcome may be that Centennial's students tend to score higher than the district average on statewide proficiency tests.

Her principal describes Dase as a veteran teacher (thirty-two years) who is a trendsetter and role model, working with more junior staff to incorporate technology throughout the curriculum and in all classes. Dase's

students have gone on to achieve doctorates in molecular biology, physics, and mathematics, as well as baccalaureate degrees in diverse areas. Several of her students have become teachers of mathematics; one such student is now a teacher at the same school.

Among the other individuals being honored is a college professor who served as a mentor working with disadvantaged urban elementary school students and helped inspire many of them to pursue careers in mathematics, science and technology. A faculty member at another university worked with minority students, encouraging their interest in science, and co-authored scientific journal articles with them. A mentoring program by a professional organization has helped connect scientists and engineers with disabled people eager to pursue scientific and engineering careers. A university research laboratory established a statewide program to help minority students boost their achievement in science, technology, and mathematics.

"The president views these programs as essential to our nation's future. All barriers must be removed because research is enriched when the broadest possible range of people participate," said National Science Foundation Director Rita Colwell. "Especially at times of national crisis, we need all of our best minds working together to bring science and technology to bear on urgent issues."

The mentoring awards are administered and funded through the foundation and go to people and institutions who work with students in K-12, undergraduate or graduate level education. The award includes a \$10,000 grant and a commemorative presidential certificate. The awardees are considered exemplars for others interested in developing similar programs.

President-Elect of AMATYC

Judy E. Ackerman, Instructional Dean of Science, Engineering & Mathematics at Montgomery College, Rockville, Maryland, was elected as President Elect of the American Mathematical Association of Two-Year Colleges. She took office at the close of the 27th Annual Conference which was held in Toronto, Ontario, Canada on November 15-18, 2001 with 1200 faculty, administrators and educational professionals in attendance. Ackerman previously served two terms as AMATYC Mid-Atlantic Vice President, as well as President of the Maryland affiliate, Maryland Mathematics Association

of Two-Year Colleges (MMATYC).

Founded in 1974, the American Mathematical Association of Two-Year Colleges (AMATYC) is dedicated to the improvement of the teaching and learning of mathematics in the first two years of college. AMATYC addresses the concerns of the 20,000 full- and part-time mathematics faculty who teach in two-year colleges. In North America, more than 1200 community colleges enroll some 10.4 million students.

AMATYC's mission includes impacting positively on the preparation of scientifically and technologically literate citizens and assisting in the preparation and continuing professional development of mathematics faculty.

Adams Prize

The University of Cambridge has announced the winner of one of its most prestigious prizes.

The Adams Prize is awarded each year by the Faculty of Mathematics and St John's College to a young, UK-based researcher doing first class international research in the Mathematical Sciences.

This year's topic is Number Theory, and the winner is Susan Howson, who currently holds a Royal Society Dorothy Hodgkin Research Fellowship in conjunction with a lectureship at the University of Nottingham.

Howson has previously held a Moore Instructorship at the Massachusetts Institute of Technology, and a European Union Training and Mobility of Researchers post-doctoral position at the University of Paris 13. Her interest in mathematics was sparked by her middle school teacher, David Womersley.

Howson has done research of great promise on the study of the arithmetic of elliptic curves via the p-adic methods of Iwasawa theory. Her work involves novel techniques from non-commutative algebra, combined with number-theoretic arguments.

Professor John Coates, Chairman of the Adams Prize Adjudicators, said:

The arithmetic of elliptic curves is one of the oldest parts of mathematics, and the beauty and mystery of its unsolved problems have kept it at the forefront of international research today. It is also an area which has important applications to cryptography. British mathematicians have made some of the greatest contributions to the arithmetic of elliptic curves, starting with L. J. Mordell's

proof of his celebrated finite basis theorem in 1922.

Much of current international research in the field has been inspired by the p -adic methods first introduced by the great Japanese mathematician K. Iwasawa to study the arithmetic of cyclotomic fields. Although only 29, Dr Howson has played a major role in developing highly promising new methods from non-commutative algebra and the theory of p -adic Lie groups to be used in the Iwasawa theory of elliptic curves.

The Adams Prize is named after the mathematician John Couch Adams and was endowed by members of St John's College. It is currently worth £12,000.

It commemorates Adams' discovery of the planet Neptune, through calculation of the discrepancies in the orbit of Uranus. Previous winners have included the physicist James Clerk Maxwell.

Visit education.guardian.co.uk/higher/maths/story/0,9842,661660,00.html to see the related story "Lecturer makes history in maths" by Karen Gold on the GuardianUnlimited website.

Other Awards and Honors

NANCY REID of the University of Toronto has been elected to the Royal Society of Canada. Reid has made many fundamental contributions to the mathematical theory of statistics. She was inducted into the Society in a ceremony in Ottawa, Ontario in November 2001.

MARGARET H. WRIGHT (Bell Laboratories – Lucent Technologies) and OLGA A. LADYZHENSKAYA (Steklov Institute) were elected to membership in the American Academy of Arts and Sciences in 2001.

Three mathematicians are among those who received funded postdoctoral fellowships from the Radcliffe Institute for Advanced Study at Harvard University for the 2001-2002 academic year.

MEGAN M. KERR of Wellesley College will conduct research on the geometry of symmetric spaces, solvable groups, and harmonic manifolds. She proposes to describe the family of Einstein solvmanifolds "near" a certain hyperbolic space which lies within a twelve-dimensional family. TATIANA TORO of the University of Washington will study the two-sided free boundary regularity problem with rough boundary data. She

intends to establish that weak notions of regularity are for many purposes sufficient to answer basic questions in analysis and geometry. NANNY WERMUTH of the Johannes Gutenberg University, Mainz, will study joint responses in graphical Markov models. She intends to design simple algorithms to derive important implications of a given process, no matter which type of variables and which type of distributions of variables are involved.

FUMEI LAM, Massachusetts Institute of Technology and CAROL MEYERS, Pomona College have received National Defense Science and Engineering Graduate Fellowships given by the Department of Defense. Lam received her fellowship from the Office of Naval Research, and Meyer, from the Army Research Office.

SUN-YUNG ALICE CHANG, Princeton University and FRANCES CLARE KIRWAN, University of Oxford, will be plenary speakers at the International Congress of Mathematicians 2002 in Beijing. 45-minute invited speakers will include: Logic: ELISABETH BOUSCAREN, Université de Paris 7-CNRS; Algebra: CHERYL ELISABETH PRAEGER, University of Western Australia; Number Theory: ANNETTE HUBER, Universität Leipzig; Topology: ELENY-NICOLETA IONEL, University of Wisconsin at Madison and ULRIKE LUISE TILLMANN, Oxford University; Algebraic and Complex Geometry: HELENE ESNAULT, Universität Essen; Lie Groups and Representation Theory: MARIE-FRANCE VIGNERAS, Université de Paris 7; Mathematical Physics: SVETLANA JITOMIRSKAYA, University of California at Irvine; and Applications of Mathematics in the Sciences: NICOLE EL KAROUI, École Polytechnique and NANCY JANE KOPPEL, Boston University. GABRIELE KAISER (moderator), Universität Hamburg; DEBORAH LOEWENBERG BALL, University of Michigan; and CELIA MARY HOYLES, University of London, will participate in panel discussions on Mathematics Education and Popularization of Mathematics.

MATILDE MARCOLLI of the Max-Planck-Institut für Mathematik in Bonn received a Sofya Kovalevskaya Prize. The funds will not only cover her cost of living from 2001 to 2003 but will also enable her to set up her own group of young researchers at the research institute of her choice in Germany, which she will do at Max-Planck-Institute.

Marcolli received her doctoral degree from the University of Chicago in 1997. Her research combines mathematics and theoretical physics. She is mainly interested in non-commutative geometry, hyperbolic geometry, and arithmetic. She works on the development of calibration theories in mirror-image symmetries and the fractal quantum-Hall effect.

AMS sponsors the AMS Award for Outstanding Pi Mu Epsilon Student Paper Presentation each year. Awards of \$150 were received by BRENDA JOHNSON, South Dakota State University for her paper "Disjunctive Rado Numbers" and by KATHY WOODSIDE, North Carolina State University for "Protecting the Public Health: Predicting PM Fine in Forsyth County."

In the AMS elections of 2001, the following women were elected to office: CAROL S. WOOD, Wesleyan University, Trustee; SYLVIA T. BOZEMAN, Spelman College and IRENE M. GAMBA, University of Texas at Austin, Members-at-Large of the Council; SVETLANA JITOMIRSKAYA, University of California, Irvine, Editorial Boards Committee; and JANE HAWKINS, University of North Carolina, Chapel Hill, Nominating Committee.

SIJUE WU, University of Maryland, received a silver Morningside Medal of Mathematics from the International Congress of Chinese Mathematicians held in Taiwan in December 2001 for her establishment of local well-posedness of the water wave problems in a Sobolev class in arbitrary space dimension. Funded by the Morningside Group of Hong Kong, a silver medal carries a cash prize of US\$5,000.

The AMS has made awards to nine undergraduate students through the Waldemar J. Trjitzinsky Memorial Fund, which provides assistance to needy students in mathematics. The young women receiving such awards this year were ANN SMITH, Henderson State University; ANDREA C. FORNEY, John Carroll University; SINÉAD POLLOM, Seattle University; VIRGINIA ROBERTS, University of Texas at Austin; and MEGAN LALLY, Worcester Polytechnic Institute. See the September 2001 *Notices* for more information on these fine students.

ALEXANDRA OVETSKY (Central High School, Philadelphia) won second place overall in the Siemens Westinghouse Science and Technology National Competition

for her project "Surreal Dimensions and their Applications." She was awarded a \$50,000 scholarship. Fourth place in the team competition went to REBECCA WILLIAMS (North Lamar High School, Paris, TX), CYNTHIA CHI (William P. Clements High School, Sugar Land, TX), and CHARLES HALLFORD (Texas Academy of Mathematics and Science, Denton, TX) for their joint project "The Generalization of the deBruijn Edge Sums." They will receive scholarships worth \$30,000.

JENNIFER SHYAMALA SAYAKA BALAKRISHNAN, Junior, Harvest Christian Academy, Guam received an honorable mention AMS Menger Award at the 2001 Intel-International Science and Engineering Fair in 2001 for her project "An Analysis of Elliptical Coordinate Systems," as did LINDSEY JO CABLE, Junior, De Soto High School, De Soto, MO, for "Proving POTS."

VIRTUAL CENTER FOR SUPERNETWORKS

The Isenberg School of Management announces the creation of the Virtual Center for Supernetworks. Supernetworks are "above and beyond" existing networks, i.e., networks of large scale and scope in such areas as transportation, logistics, finance, economics, and social interactions. The new interdisciplinary center will expand the knowledge base of network research and bring together faculty, students, and participants from industry and government for education and collaboration in disseminating information about networks and their management in the Information Age and the Network Economy. The center will focus on applications in transportation and logistical networks, telecommunications networks, and economic and financial networks and their interactions. Specific topics of study will include supply chains, telecommuting versus commuting, decision making, electronic commerce, and financial networks with intermediation.

The virtual center was established with funding from several grants from the National Science Foundation as well as the John F. Smith Memorial Fund. The center currently supports, in part, four doctoral students and five undergraduates in the Operations Management

major at the Isenberg School. It also includes participants from universities and corporations in the United States and abroad.

According to the center's director, John F. Smith Memorial Professor Anna Nagurney (a faculty member in the Isenberg School's Department of Finance and Operations Management), "We live in extraordinary times in which the importance of networks, from transportation to telecommunications networks, to business, the economy, and social interactions, has never been more essential. This virtual center and its products will be accessible to everyone interested in the exchange and pursuit of knowledge about supernetworks."

The virtual center, which can be accessed at <http://supernet.som.umass.edu>, includes publications, bibliographies, a tutorial, book and book series information, visual presentations, and links to journals and centers. Future additions will include demonstrations and software.

The idea for the center emanated from Professor Nagurney's April 5, 2000 Distinguished Faculty Lecture, "Networks for Fun and Profit," and a related invited article, "Navigating the Network Economy," published in the June 2000 issue of *OR/MS Today*. Nagurney's book, co-authored with June Dong, *Supernetworks: Decision-Making for the Information Age*, Edward Elgar Publishers, is now available.

SKHS DAY REPORT

Funded through grants from the National Security Agency and Coppin State College. Thanks to our funding agencies!

East Tennessee State University

The first annual Sonia Kovalevsky High School Mathematics Day at East Tennessee State University (ETSU) was held on Friday, September 14, 2001.

Ninety-two girls from five different high schools in the region participated. They were accompanied by six of their teachers. All had arrived at the University Center Auditorium by 8:30 A.M. for a full day of activities. A hearty welcome and orientation session with refreshments started the day. During the orientation in the auditorium, the girls were given a schedule from which

they could select three workshops out of the five offered. They could also select the order in which they wanted to attend these workshops. The choices included workshops on Maple, Statistics, The $3x+1$ Problem, Flexagons, and Counting Principles.

Two of the workshops were held in the morning, and then it was time for lunch. After a lunch break in the university cafeteria, the girls attended a keynote address by Kalpana Godbole, a statistician working in industry. Her well-planned PowerPoint presentation gave the girls a clear example of how statistics can be a key player in the decisions made in industry. After the keynote address, the participants went to the third and final workshop for the day.

For the workshop on Maple, the participants trekked across campus to the mathematics computer laboratory where the director of the lab was waiting. For most of the students, this was their first encounter with this powerful computer algebra system. Another workshop on Flexagons was the favorite of many of the girls. With the help of geometry, the relationship of mathematics with creativity was very obvious in this hands-on activity. The $3x+1$ Problem helped demonstrate that a problem can be described, just in terms of addition and multiplication, that is so simple and still not solved, even by the greatest minds in the world! Counting the number of elements in a set when the set is the intersection and union of other sets can be tricky, but a few rules on what to do can greatly simplify things. Here, some real life examples helped illustrate the power and helpfulness of these counting principles. How people use statistics and what kind of careers are available for statisticians was the focus of the statistics workshop. Everyone enjoyed the day, organizers and participants alike. "Interesting and informative" were the two most common comments, followed closely by "Fun!"

The co-directors of the event were Janice Huang, Debra Knisley and Edith Seier. All three are professors in the department of mathematics at ETSU. Debra Knisley and Edith Seier conducted two of the workshops, The $3x+1$ Problem and Statistics, respectively. Genie Jackson, an ETSU graduate student in the mathematics department, conducted the workshop on Flexagons. Jeff Knisley, also a professor in the mathematics department, provided the computer laboratory experience in Maple. Corliss Robe and Joanne Pumariega, both instructors in the mathematics department, provided the workshop on Counting Principles.

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: The next AWM Workshop to be held in conjunction with the annual Joint Mathematics Meetings will take place in Baltimore, Maryland, January 15–18, 2003. The workshop is scheduled to be held on Saturday, January 18, 2003 with an introductory dinner and discussion group on Friday evening, January 17.

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

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

ELIGIBILITY: Applications are welcome from graduate students who have made substantial progress towards their theses and from women who have received their Ph.D.'s within approximately the last five years (whether or not they currently hold a postdoctoral or other academic position). Women with grants or other sources of support are still welcome to apply. All non-US citizens must have a current US address. All applications should include a cover letter, a concise description of research (two to three pages), a title of the proposed talk or poster, a curriculum vitae, and at least one letter of recommendation from a faculty member or research mathematician who knows her research. In particular, a graduate students should include a letter of recommendation from her thesis advisor. Nominations by other mathematicians (along with the information described above) are also welcome. For some advice on the application process from some of the conference organizers see the AWM web site.

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 **September 1, 2002**.
Applications via email or fax will not be accepted.

MATH-NET PAGE LAUNCHED

The International Mathematical Union (IMU) has just released Math-Net, a worldwide electronic information and communication system for mathematics (see www.math-net.org). Today, almost every mathematics department or research institute offers information online. But the content, structure, and presentation of these pages vary widely, making it difficult for users to navigate and find information. Math-Net has been developed as an alternative, effective way for academic departments and research institutes to present structured basic information about themselves and their programs consistently. Math-Net has been designed to facilitate access to high quality mathematical information worldwide, both by human users and search engines.

A special feature of Math-Net is the Math-Net Page, a web gate for mathematics departments and institutes. It serves as an additional entry point to institutional information, immediately accessible from the department's homepage. Using this secondary homepage, mathematicians, scientists, students, and the news media can easily find relevant data, such as staff, student programs, colloquia, seminars, and publications.

The Math-Net Page is an enhanced version of a web page that originated in a project in Germany. A tool for creating Math-Net pages as well as assistance are available at no charge at www.math-net.org/Math-Net_Page_Help.html. The Math-Net Pages are collected by the Math-Net service NAVIGATOR (see www.math-net.org/navigator) that gathers the local information and makes it globally available. Other services are MPRESS (see mathnet.preprints.org) for collecting information about mathematical preprints and PERSONA MATHEMATICA, a search engine for mathematical researchers (see www.mi.uni-koeln.de/Math-Net/persona_mathematica).

Math-Net aims at paving the way towards the open and free exchange of information within and for the international mathematics community. In May 2000, the IMU adopted the Math-Net Charter (see www.math-net.org/Charter/). The IMU's Committee on Electronic Information and Communication (CEIC) has issued a recommendation that universities and institutes worldwide install the Math-Net Page.

The International Mathematical Union (IMU) is an international non-governmental and non-profit-making

scientific organization, with the purpose of promoting international cooperation in mathematics. It is a member of the International Council for Science (ICSU).

SCIENCE BASED SCIENCE POLICY

Last year I addressed an AAAS symposium on "The War on Terrorism: What Does it Mean for Science?" I made some predictions then about the future of science in the current Bush administration, and remarked on the state of science, but the talk focused on the war against terrorism. This morning I would like to expand on these remarks in the context of the President's budget proposal for Fiscal Year 2003, released last week. Important things are happening in science no less than in world affairs, and the policies guiding the allocation of resources for science, engineering, and education are evolving too. It is my great privilege to serve science during this time of change, and this meeting where all the sciences come together is a good occasion to report my perceptions of these policies and the assumptions that underlie them. Let me restate some remarks I made last December that have been widely quoted:

This administration is determined not to let terrorism deflect America from its trajectory of world leadership in science. Our nation's prowess in technology, especially information technology and instrumentation, has opened extraordinary new vistas in science. It has made it possible to visualize and manipulate matter on the atomic scale, leading to unprecedented understanding and control of the processes of life as well as of inanimate matter. Having produced the means for great strides in science, and in accompanying technologies for improved health care, economic competitiveness, and quality of life, it would be foolish to turn aside now from the course of discovery while we engage the monster of terrorism—an evil force that denies the benefits of progress and the search for truth. Thus I expect

John Marburger, Presidential Science Advisor, delivered this address at the AAAS Annual Meeting on February 15, 2002.. The text may be found at www.ostp.gov/html/02_02_20html.

that science in America and the world will forge ahead relatively unaffected by the war against terrorism. I expect the President's prior commitment to increase funding for health related research to be realized. I expect the tremendous momentum in the information sciences to roll forward. I expect the technologies of measurement and analysis—atomic scale microscopy and manipulation, light sources, probes, detectors and analyzers—to continue to win new ground on the frontiers of complexity as well as of scale. Science has its own intrinsic imperative and this nation will continue to pursue it.

The President's FY03 budget proposal provides some data points to test these expectations. It does add nearly \$4 billion to the budget of the National Institutes of Health. It does favor research in computing and information technology, and it favors as well the collection of activities we are calling nanotechnology. I will mention some numbers in a moment, but there is no doubt that this budget expresses priorities. It provides substantial new funding for science, and it acknowledges that the nation's highest priorities—the war against terrorism, homeland security, and economic revival—are all served by investments in science, engineering, and education.

As a university president and national laboratory director, I wrestled with the reality of annual budgets, and I deplored the processes that left funding gaps in research programs that were demonstrably productive. I am well aware that improvements "on the average" are usually achieved by peaks of prosperity in a landscape that includes valleys of poverty. That is inevitable whenever opportunities exceed resources. It is desirable when the opportunities differ in their promise. Having a science policy at all implies that we have a systematic way of ordering the opportunities so finite resources can be invested to best effect.

As a scientist, I believe science policy should reflect what I referred to as the "intrinsic imperative of science." Let me explain. Galileo and Hooke launched the first generation of instruments for extending our senses to perceive the very large and the very small. They crafted their instruments at a time when powerful conceptual tools of theory and analysis also began to appear, exemplified by the work of Isaac Newton. During the centuries since that dawn of modern science, the frontiers of discovery have been defined by the limits of technology.

This is one of the imperatives of science—that exploration at the frontier entails advances in technology—and it is also a powerful and pragmatic argument for supporting basic science. Many of us were drawn to science by the urge to know. Society supports us because that urge is even more productive for the improvement of the human condition than are the immediate necessities that are often said to be the mother of invention. The spin-offs of basic science are fundamentally new technologies that never would have been discovered solely in response to the needs they ultimately address. Think of the laser, of nuclear fission, or even of molecular biology, whose origins derive from a whole array of technologies developed for other purposes.

Today the frontiers of the large and the small—of astronomy and particle physics—remain unconquered. But they have receded so far from the world of human action that the details of their phenomena are no longer very relevant to practical affairs. Not by accident, the instrumentation required to explore them has become expensive. Because we can no longer expect that society will benefit materially from the phenomena we discover in these remote hinterlands, the justification for funding these fields rests entirely on the usefulness of the technology needed for the quest, and on the joy we experience in simply knowing how nature works. (A joy, I am afraid, that is shared fully by a rapidly declining fraction of the population.)

I believe society will continue to support the exploration of the traditional frontiers of large and small, but it will do so with increasing insistence on careful planning, careful management, and the widest possible sharing of costs for the necessarily expensive equipment. Fortunately, these fields today do possess excellent planning processes, and for the most part the great accelerators and telescopes have been well built and well managed.

But the greatest opportunities in science today are not to be found at these remote frontiers. The inexorable ratcheting advance of technology and conceptual tools has brought science to a new and previously inaccessible frontier. It seems to me—and I am not the first to point this out—that we are in the early stage of a revolution in science nearly as profound as the one that occurred early in the last century with the birth of quantum mechanics.

The quantum technologies of the chemistry and physics of atoms, molecules, and materials developed rapidly through several generations during the Cold War.

By 1991, when the Soviet Union finally dissolved, scientists were beginning to wield instruments that permitted the visualization of relatively large-scale functional structures in terms of their constituent atoms. The importance of this development cannot be overstated. The atom-by-atom understanding of functional matter requires not only exquisite instrumentation, but also the capacity to capture, store, and manipulate vast amounts of data. The result is an unprecedented ability to design and construct new materials with properties that are not found in nature.

The revolution I am describing is one in which the notion that everything is made of atoms finally becomes operational. For the first time we have tools that give an edge to this sweeping reductionist vision. We can actually see how the machinery of life functions, atom by atom. We can actually build atomic scale structures that interact with biological or inorganic systems and alter their functions. We can design new tiny objects "from scratch" that have unprecedented optical, mechanical, electrical, chemical, or biological properties that address needs of human society. I need not give specific examples here because this conference is filled with them. Their images are ubiquitous in newspapers and magazines, and the application of our knowledge of them appear not only in technical journals, but also in the *Wall Street Journal*.

This revolution is caused by two developments: one is the set of instruments such as electron microscopy, synchrotron x-ray sources, lasers, scanning microscopy, and nuclear magnetic resonance devices; the other is the availability of powerful computing and information technology. Together these have brought science finally within reach of a new frontier, the frontier of complexity. Many fields of science converge at this frontier because most of the objects of science are made of atoms. Although complex phenomena occur in nuclear and particle physics—think of the intricate tracery of collisions imaged by the great detectors of modern particle accelerators—and in astrophysics, nothing in these fields approaches the complexity of living organisms. And yet we are now beginning to unravel the structures of life, atom by atom, using sensitive machinery under the capacious purview of powerful computing.

Let me return now to the realm of science policy. The picture of science I have portrayed—and I am aware that it is only part of science, but an important part—has immediate implications and challenges for science

policy.

First, there is the need to fund the enabling machinery for exploring the frontier of complexity. Some of this machinery is expensive, such as the great x-ray sources operated by the Department of Energy, or the Spallation Neutron Source. Even the computing power required at the frontier is expensive and not yet widely available to investigators. The continuing priority given in the President's budget to information technology is therefore well justified. Not only does information technology directly enhance the economy through commercial products, it is also of fundamental importance for the extraordinary new control of matter at the atomic level. The reason, of course, is that any physical or biological system large enough to perform a function of human interest is going to be made of a colossal number of atoms. The computing power is needed to keep track of all the types and positions of the atoms, estimate how they will move under various conditions, and produce a visual representation of all these images that the human mind can grasp.

Second is the desirability of funding research in the fields that benefit from the atomic level visualization and control of functional matter. They fall into the two categories of organic and inorganic. We call them biotechnology and nanotechnology. I like to think of biotechnology as organic nanotechnology. If the term "nanotechnology" seems vague and ill-defined, then think of the phenomena it describes as the inorganic counterpart of biotechnology, a term that is no better defined, but has the merit of having been in longer use. Both areas receive priority in the President's budget.

Many people have asked me whether I think the huge investments advocated in the budget for medical research will distort or unbalance the pattern of funding for science. Those concerned refer to a balance that must be re-established between the life sciences and the physical sciences. I think on the contrary that the opening of the frontier of complexity creates far more opportunities in the life sciences, and that given the new atomic-level capabilities the life sciences may still be underfunded relative to the physical sciences. But I do agree that new opportunities exist also for inorganic functional materials, and these need to be exploited. And of course the enabling instrumentation is largely a product of physical science and engineering research, and these too deserve continuing priority.

Third, there is the very serious problem of the

inadequacy of resources to exploit all the new opportunities that now lie before us along the vast frontier of complexity. The richness of possibility is immense, and we simply cannot afford to explore it all at once. Choices must be made. Not only must we choose among the new opportunities in bio- and nano- technology, but we must also choose between these and expanding investments at the traditional frontiers of large and small—or more generally between the issue-oriented sciences that clearly address societal needs, and the discovery-oriented sciences whose consequences are more a matter of conjecture. We need both, but how much of either?

The need for choice, and for wise allocation of resources to seize the most advantage for society from our leadership in these fields, is a strong motivation for better planning and management of the nation's science enterprise. The President's budget makes much of management and proposes many measures that are not designed particularly to save money so much as to optimize its impact. I am referring to proposals to transfer programs among agencies, to reward agencies and programs that can document the success of their projects, to find ways of making clear and explicit the basis for investment in one program rather than another. Even the horror expressed in the budget narrative at the long-standing but rapidly growing practice of congressional earmarks for science projects is consistent with the idea that the growth in opportunity requires better decision-making.

I support these science management initiatives because I believe they are essential to reassure the public—our ultimate sponsors—that the ever-increasing investment in science is being made wisely. This is particularly true for the physical sciences whose long run of support during the Cold War was linked, correctly or not, to national security concerns. Although the relevance of physics to national security is no less now than then, the end of the Cold War brought with it a reassessment of the rationale for funding physical science, especially at the national laboratories. This reassessment has left society more skeptical about the national security argument, and agencies that support this work, particularly the Department of Energy, are working hard to clarify missions and provide strong rationales for their work. The President's budget features a management pilot program at DOE that takes advantage of the wide range of research conducted in this agency.

At the dawn of the new millennium, public expectations of science are high, and public support for science is strong. Science policy needs to reflect the actual state of science and its capacity for addressing the needs of society. One requires continual contact with the scientists who lead the work, the other depends upon the processes of government to frame key social issues. The Office of Science and Technology Policy stands at the strategic intersection of science and government. I am grateful for this opportunity to give my perspective on this critical juncture.

BRIEF NOTES

ABC's Good Morning America aired a three-part series attacking some of the basic science funded by taxpayer dollars. Using some of the same tactics applied by Senator Proxmire for his Golden Fleece Awards, Diane Sawyer introduced the series by suggesting that "squirrel sex" is not an appropriate topic for a project receiving federal funding. See more.abcnews.go.com/sections/GMA/GoodMorningAmerica/GMA020403Squirrel_sex_taxdollars.html for further information on the first episode of this series.

The Exploratorium in San Francisco recently presented a work-in-progress screening of a film about Julia Robinson (1919-1985), the first woman mathematician elected to the National Academy of Sciences and the first woman to serve as president of the American Mathematical Society. Constance Reid (Robinson's sister who is also interviewed in the film) and filmmaker George Csicsery were present to talk about Julia Robinson and the process of putting her life on film. The working title of the film is "Julia Robinson and the Solution to Hilbert's 10th Problem."

Concerns of Young Mathematicians, the electronic newsletter of the Young Mathematics Network contained an interesting article in its January 2002 post-Joint Meetings issue. It summarized the MAA-YMN Panel Discussion on "Closing the Deal." Organized by Chawne Kimber (Lafayette College) and Dave Kung (St. Mary's College of Maryland), the panelists were Carl Cowen (Purdue), Gwen Fisher (CalPoly-San Luis

Obispo), Thomas Pfaff (Ithaca College) and Carol Wood (Wesleyan University). The discussion covered how to handle an on-campus interview and how to negotiate a deal once an offer has been made. Lots of good advice!

Russian Math. Surveys [Vol. 56, No. 4, pp. 739–743] contains an obituary on Vera Nikolaevna Maslennikova, a talented Russian woman mathematician who taught at the Patrice Lumumba University in Moscow, established to educate students came from the developing world and renamed People's Friendship University in 1992. She was head of the department of Differential Equations and Functional Analysis.

IWITTS, Institute for Women in Trades, Technology, & Science, is trying to develop review programs for career materials and for software, written from the perspective of how appropriate these products are for female students. To date, one college student has published a few reviews of software. More submissions are desired! See www.iwitts.com and click on the Reviews button near the top of the page.

IWITTS also reports on the following: Children Now has come out with an excellent 30-page report on video games that has a large section on gender. Video games are frequently the entryway for children into the computer world. This report does a statistical analysis of video game characters and themes by gender and race and finds that females and people of color are largely missing or negatively portrayed. Is the low enrollment of women and people of color in computer courses nature or nurture? This report makes a strong statistical case for "nurture"; don't miss it: www.childrennow.org/media/video-games/2001/.

Donate a Phone is a national wireless phone collection drive designed to provide domestic violence victims and organizations with one of the most powerful tools in the fight against domestic violence ... a wireless phone. The program is a partnership between the Wireless Foundation, the National Coalition Against Domestic Violence and Motorola who have worked together since 1996 to provide free phones to victims of domestic violence through the CALL to PROTECT program. Free emergency airtime is donated by CTIA member wireless service providers. Wireless phones are reprogrammed with emergency phone numbers and redistributed free of charge to victims in need.

To donate your used wireless phone to help fight domestic violence, mail the phone, battery, and charger to: CALL to PROTECT, c/o Motorola, 1580 E. Ellsworth Road, Ann Arbor, MI 48108. For further information, see www.wirelessfoundation.org/12give/.

Each year, the AAAS fellowship programs awards 30–50 Congressional Fellowships and about 50 more Fellowships for work in executive branch agencies. These fellowships are supported by AAAS and about 30 other societies. A new fellowship program, the AAAS/NTI Fellows in Global Security Program, is offered in conjunction with the Nuclear Threat Initiative, a non-profit foundation established by former Senator Sam Nunn and Ted Turner to reduce global threats from nuclear, biological and chemical weapons. Scientists interested in bringing their public health and medical expertise to bear on issues relating to biological weapons, bioterrorism nonproliferation and federal response efforts are invited to apply. This year's funding cycle is complete; check this summer for opportunities for 2003.

The 1994 publication *From the Lab to the Hill* is now available for the first time online in pdf format. This collection of nearly 60 essays penned by former congressional Fellows about their yearlong experiences working on Capitol Hill provides compelling, first-hand accounts of life on the Hill. The publication may be accessed at www.fellowships.aaas.org/experiences.html

COMPASS (Curricular Options in Mathematics Programs for All Secondary Students) is a secondary school implementation project funded in part by the National Science Foundation. Its goal is to assist schools, teachers, administrators, parent groups, and other community members and constituencies interested in improving secondary school mathematics opportunities and experiences for their students. The need for reform, particularly in K–12 mathematics education, is supported by hundreds of teachers, teacher educators, mathematicians, school administrators and other policy makers.

The mission of COMPASS is to focus specifically on the implementation of five multi-year, comprehensive high school curriculum development projects. Implementation of any of these programs is a *systemic* undertaking requiring *many* considerations in order to get the most out of each program. For more information, see www.ithaca.edu/compass/project.htm.

AWM IN SAN DIEGO



At the Business Meeting: Mary Gray, Bettye Anne Case,
Susan Gerstein, and Anne Leggett



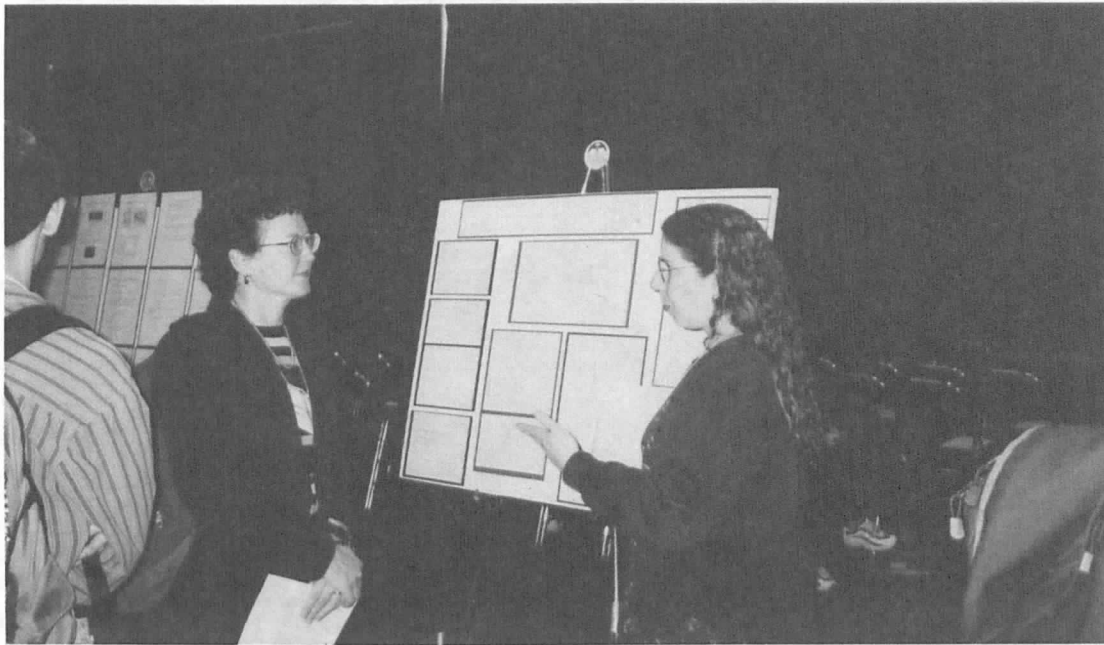
Recent Ph.D.'s at the Workshop: Rodica D. Costin, Ann Bravo, Adela Vraciu,
Yevgenia Kashina, Sara Faridi, Jianyuan Kathy Zhong,
Alexandra Smirnova, and Mireille Boutin



AWM Workshop Panel, *Launching a Career in Mathematics*: Nancy Wyshinki, Judy Walker, Kristin Lauter, Cathy Kriloff, and Jodi Novak (moderator)



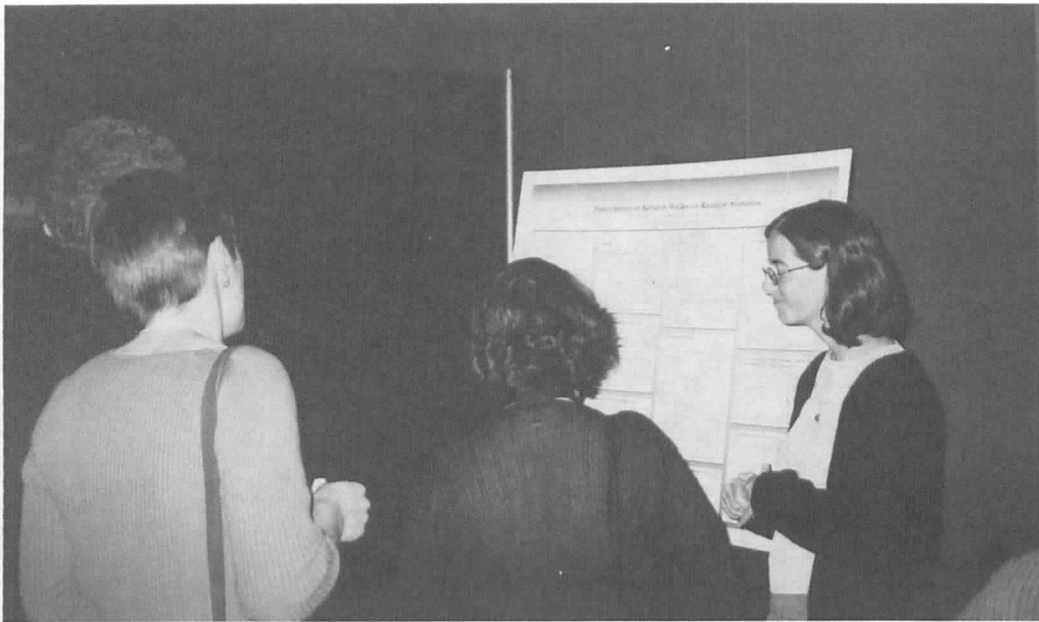
AWM Presidents, Past and Present: Lenore Blum, Jean Taylor, Carol Wood, Sylvia Wiegand, Linda Rothschild, Suzanne Lenhart and Mary Gray



AWM Workshop Poster Session: Robin Endelman (r.) explaining her poster to Suzanne Lenhart (l.)



AWM Workshop Poster Session: Karen Socha explaining her poster



AWM Workshop Poster Session: Karen Ball explaining her poster



AWM Workshop Poster Session: Karen Ricciardi (r.) explaining her poster to Sue Geller (l.)

AWM WORKSHOP: Focus on Research & Career Experiences

held in conjunction with the SIAM 50th Anniversary and 2002 Annual Meeting (July 8 - 12, 2002)
Philadelphia Marriott Hotel, Philadelphia, Pennsylvania

schedule as of April 24, 2002

The Association for Women in Mathematics (AWM) plans a workshop from Monday mid-day through Tuesday, July 8-9, 2002. These events are held in conjunction with the SIAM 50th Anniversary and 2002 SIAM Annual Meeting. AWM and SIAM welcomes your participation.

The sessions focus on showcasing the research of women graduate students and recent Ph.D. mathematicians and helping individuals to prepare for careers in the mathematical sciences. Our Tuesday morning session is a minisymposium which focuses on career planning and experiences. The workshop also has two research minisymposia presented by recent Ph.D. mathematicians and a poster session presented by graduate students. In addition, on Monday AWM kicks off its events with a luncheon followed at 3:00 p.m. by a special AWM-SIAM Invited Plenary talk presented by Cathleen Morawetz (CIMS) in honor of SIAM's 50th Anniversary.

There is NO registration fee for this AWM workshop. The invited plenary talk, minisymposia and poster session are open to all SIAM meeting attendees. Pre-registration for the AWM luncheon is required. Individuals can inquire about availability by contacting the AWM Office, 4114 Computer & Space Sciences Bldg., University of Maryland, College Park, MD 20742-2461; phone 301-405-7892 or email awm@math.umd.edu. For further information on the workshop, contact the workshop chair, Suzanne Lenhart (lenhart@math.utk.edu) or Dawn Wheeler at AWM (awm@math.umd.edu).

AWM is grateful to SIAM and their Meetings Department for all their efforts on behalf of the workshop and all AWM activities. AWM also wishes to thank all the AWM members who volunteered their time and expertise for these activities. A special thank you is extended to Professors Suzanne Lenhart (University of Tennessee and Oak Ridge National Laboratory) and Elsa Schaefer (Marymount University) who kindly served as the 2002 Workshop co-organizers. AWM also wishes to express its gratitude to the Office of Naval Research (ONR) and Air Force Office of Scientific Research (AFOSR) for support of the AWM workshop.



SIAM 50th Anniversary
and 2002 Annual Meeting
July 8-12, 2002
Philadelphia Marriott Hotel
Philadelphia, PA USA
www.siam.org/meetings/

LOCATION: [rooms location subject to change ↓]

Monday, July 8, 2002

Location: TBA

12:30 p.m. - 2:00 p.m.

AWM Luncheon

[see AWM staff on-site for ticket availability or email awm@math.umd.edu prior to the meeting]

Location: TBA

3:00 p.m. - 3:00 p.m.

AWM-SIAM Invited Plenary Talk (IP0)

"Existence Theorems: We Need Some More in Fluid Dynamics"

Speaker: **Cathleen Synge Morawetz**, Courant Institute of Mathematical Sciences, New York University

Abstract: The focus is on Euler's equations for compressible flow, its special difficulties and the need for theorems on existence and uniqueness of weak solutions, that is flows with discontinuities, and their behavior for large times.

Location: TBA

4:00 p.m. - 6:00 p.m.

AWM Minisymposium Dynamical Systems - Partial Differential Equations and Stochastic Processes (MS22)

This minisymposium will feature talks by female post-docs working with partial differential equations and stochastic models. The PDE applications include shallow water equations and nonlinearly dispersive waves. The stochastic models involve Markov chains and Brownian motion for prices of stocks.

Organizer: **Elsa Schaefer**, Marymount University

Speakers:

- 4:00 p.m. "Stability of Hybrid Dynamic Systems
Modulated by Singularly Perturbed Markov Chains"
- 4:30 p.m. "Numerical Solution of the Shallow Water Equations in
Lagrangian Coordinates"
- 5:00 p.m. "Pricing Equity Linked Endowments via the Principle of
Equivalent Utility"
- 5:30 p.m. "Time Smoothing Techniques and Applications to the
Camassa-Holm Equation"

Grazyna Badowski, University of Maryland, College Park

Jodi L. Mead, Boise State University

Kristen Moore, University of Michigan

Milena Stanislavova, University of Massachusetts, Amherst

- continued on next page -

AWM WORKSHOP: Focus on Research & Career Experiences

Location: TBA

Monday, July 8, 2002 (continued)

8:30 p.m. - 10:30 p.m. Poster and Dessert Reception (PP1)

AWM Poster Presentations by Women Graduate Students will be part of the SIAM Poster and Dessert Reception on Monday evening, from 8:30 p.m. to 10:30 p.m. AWM invites all SIAM attendees to join us.

The AWM Women Graduate Student Presenters in this session are:

"Optimal Control of Treatment in an HIV Immunology Model"	Laurie Battle, University of Tennessee
"Bayesian Inference for Cluster Analysis of Microarray Data"	Angela Cheng Mejeur, University of Tennessee
"Model of Brownian Motion Effects in Respiratory Fluid Mechanics"	Vera Cherepinsky, Courant Institute of Mathematical Sciences
"Dependence of Eigenvalues on Problem Data for Self-Adjoint Boundary Value Problems"	Jennifer K. W. Chesnutt, Mississippi State University
"Topology of Spiral Waves in Excitable Media"	Irma Cruz-Rodriguez, Florida State University
"A Variational Study of the Electrical Impedance Tomography Problem"	Genetha A. Gray, Rice University
"Dynamics of the Optical Parametric Oscillator"	Sarah E. Hewitt, University of Washington
"Topology of Type II Topoisomerases"	Jennifer Mann, Florida State University
"Mathematical Properties of Time Windowing in Neural Systems"	Colleen C. Mitchell, Duke University
"Mechanics of yeast growth: a model system for tissue growth and development"	Baochi Nguyen, Massachusetts Institute of Technology
"Determining the Infectiousness of HIV"	Brandy Rapatski, University of Maryland, College Park
"Determining and Evaluating the Repeat Structure in a Genome"	Suzanne Sindi, University of Maryland, College Park
"A model for Pseudo-Nitzschia multiseriales, a toxic algae species"	Maria Siopsis, University of Tennessee

Tuesday, July 9, 2002

Location: TBA

10:30 a.m. - 12:30 p.m. AWM Minisymposium on Career Opportunities and Perspectives (MS33)

This minisymposium will feature four mathematicians with a variety of careers and experience levels. The speakers will discuss their career perspectives and give some advice. Academic and industrial careers will be included.

Organizers: Suzanne M. Lenhart, University of Tennessee and Oak Ridge National Laboratory and Elsa Schaefer, Marymount University

Speakers:

10:30 a.m. "Career Opportunities in Mathematical Bioscience"	Avner Friedman, Ohio State University
11:00 a.m. "Mathematician as Manager"	Rosemary Chang, Coastcom
11:30 a.m. "A Career as an Industrial Mathematician: What to Expect and How to Prepare"	Grace E. Cho, The Boeing Company
12:00 p.m. "Some Suggestions for Obtaining and Retaining the Cherished Academic position"	Rosemary A. Renaut, Arizona State University

Location: TBA

4:00 p.m. - 6:00 p.m. AWM Minisymposium on Applications of Mathematical Biology (MS47)

This minisymposium will feature talks by female post-docs on modeling applications of mathematics in biology. The models include benzene interaction with bone marrow, the male reproductive endocrine system, intercellular calcium waves, and the human nasal passages.

Organizer: Suzanne M. Lenhart, University of Tennessee and Oak Ridge National Laboratory

Speakers:

4:00 p.m. "Benzene's Effect on Erythropoiesis"	Cammy Cole, Meredith College
4:30 p.m. "A Mathematical Model for the Kinetics of the Male Reproductive Endocrine System"	Laura K. Potter, University of North Carolina, Chapel Hill
5:00 p.m. "Stability of Intracellular Calcium Pulses"	Monica M. Romeo, Duke University
5:30 p.m. "Effect of Boundary Conditions on Particle Deposition Predictions in Human Nasal Passages"	Rebecca Segal, CIIT Centers for Health Research

Volunteers Needed: If you are interested in volunteering to help with the Workshop, contact Suzanne Lenhart, lenhart@math.utk.edu

Association for Women in Mathematics
2001/2002 MEMBERSHIP FORM

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

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

I **DO NOT** wish for my AWM membership information to be released for the **Combined Membership List**.
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 Institution/Company: _____ If **not** employed, leave position & institution blank
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DEGREES EARNED:
 Doctorate: _____ Degree(s) _____ Institution(s) _____ Year(s) _____
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 Bachelor's: _____

MJ_02

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.....	\$ 30	_____
(NO newsletter) Please indicate regular family member: _____		
CONTRIBUTING MEMBERSHIP.....	\$100	_____
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Indicate if you wish for your contribution(s)/donation(s) to remain ANONYMOUS ⇔
 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	_____
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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 advertising/membership info see www.awm-math.org

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