FOCUS

THE NEWSLETTER OF THE MATHEMATICAL ASSOCIATION OF AMERICA

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In this Issue

Winner of the 1997 Morgan Prize Called a "Leading Mathematician of His Generation"

Jade P. Vinson, now a graduate student in mathematics at Princeton University, has won the 1997 Morgan Prize for outstanding undergraduate research in mathematics. The honor, conferred jointly (and on a rotating basis) by the MAA, AMS, and SIAM carries a $1000 award. This is the third time the prize has been given.

Honorable mention went to Vikaas Sohal, a Harvard graduate who plans to enter postgraduate studies at Stanford University this fall. The prizes will be presented by SIAM in Toronto in July.

Vinson, who graduated in 1997 from Washington University in St. Louis, was cited for his "wide-ranging research in analysis and geometry, represented by some nine papers with a number of other students and mathematicians, all written while he was an undergraduate." His work includes fractals, sphere packing and other areas of computational convexity theory, and Bloch and Landau constants for coverings of disks by holomorphic functions. The work that Vinson presented answers difficult questions posed by experienced mathematicians at a high level of sophistication.

Jade P. Vinson

At Washington University, Vinson was a member of the university's award-winning team in the 1997 Mathematics Modeling Contest. Faculty members called him the "most remarkable undergraduate encountered in 30 years of teaching...destined to be a world-class mathematician" and "one of the leading mathematicians of his generation."

See *Morgan Prize* on page 4

NSF Announces Major Changes in Undergraduate Education Programs

The National Science Foundation Division of Undergraduate Education (DUE) has announced a new program (NSF 98-45) entitled Course, Curriculum, and Laboratory Improvement (CCLI). CCLI provides an integrated program structure that incorporates many features of the former Instrumentation and Laboratory Improvement (ILI) and Course and Curriculum Development (CCD), including the option to submit instrumentation or equipment-only proposals. In addition, CCLI gives increased priority to improving undergraduate education through adaptation and implementation of previously developed materials and educational practices.

Two of the three major CCLI tracks are particularly designed to invite proposals developed in two- or four-year colleges or universities: Education Materials Development (EMD); and Adaptation and Implementation (A & I).

EMD projects are expected to result in the development of innovative materials that incorporate effective educational practices to improve student learning in science, mathematics, engineering, and technology (SMET) content areas. These projects should have the potential for national distribution, adaptation, and implementation.

See *NSF* on page 7

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President Reports on the Baltimore Meetings

by Gerald Alexanderson

As a Californian, I had confidence that the Baltimore Meetings were going to go well when I arrived in Baltimore to find the blue sky and temperatures in the low '70s. As it turns out, both the weather and the meetings program turned out quite splendid during the week of the January joint meetings. Of course, while we were enjoying the confortable temperatures, we were well aware that this would not have been a good year to be meeting in Montreal!

At the conclusion of the Joint Prize Session, Constance Reid, the winner of the 1997 JPBM Communications Award, received congratulations from Don Albers, MAA Associate Executive Director. As the author of **From Zero to Infinity** *(1955),* **Hilbert** *(1970),* **Courant** *(1976),* **The Search for E. T. Bell** *(1993), and* **Julia: A Life in Mathematics** *(1996), she was cited for "a special talent for understanding mathematicians and their culture...She is the Boswell for mathematics."*

The committee members who planned the program and the local arrangements deserve high praise for their setting up one of the best meetings I can remember in years. Of course, my enthusiasm could also be colored by the fact that I found more time to attend sessions that I have on a number of previous occasions. I would hate to have people conclude that the MAA president has nothing to do— but I did find that I had more opportunity to get around and attend sessions than when I was MAA secretary.

The mathematical side of the meetings started for me with John Stillwell's talk on exceptional cases (I couldn't make it to Marjorie Senechal's earlier talk on symmetry, but I heard very positive reports). Stillwell's talk, with a strongly geometrical flavor, was predictably thought-provoking and stimulating. (Why are there those strange polytopes in some dimensions with no analogues in others?)

Edward Witten's Gibbs Lecture was remarkably understandable to someone well outside the field and, again, raised some interesting questions. Our own president-elect, Tom Banchoff, in his invited address, demonstrated how to cope brilliantly with the balky computer that refused to make a connection on the Internet at a critical time. It gave us hope that we too can manage to handle them with the same grace and skill. The talk was full of beautiful things.

Herb Wilf's talk was remarkable in that we learned all kinds of new things about elementary topics that we thought we knew something about. A very impressive demonstration. At a somewhat more challenging level, and still excellent, was Dusa McDuff's AMW Noether Lecture on symplectic structures and Gian-Carlo Rota's Colloquium Lectures.

The presentations by the winners of the Deborah and Franklin Tepper Haimo Awards were, as usual, fascinating. Further, I should comment on the success (at least in my view) of the panel concerning the review of the NCTM Standards.

Of course, there was much, more at the Baltimore meetings: A symbolic mortgage burning by G. Baley Price (yes, the MAA has paid off its mortgage on the Washington, D.C. headquarters property!), a Joint Prize Session with some touching moments, a fine closing AMS banquet with remarks by AMS President Arthur Jaffe demonstrating that we still have work to do in convincing the public and policy makers of the importance of mathematics.

And I could go on. But at this point, we're looking ahead to Toronto and San Antonio. See you there! ■

Three Calls for Help in Baltimore

by Keith Devlin

Three major addresses at the Baltimore Meetings in January reminded attendants that mathematicians need to stay in close touch with the outside world.

The Director of the U.S. National Security Agency, USAF Lt. General Kenneth A. Minihan, called on the mathematics community to join with the NSA in working to ensure that the rapidly growing electronic information network remains secure. In an era where the communication media are public and open, only mathematics could provide the necessary security, Minihan observed.

Taking as his title "The State of Mathematics Education: Building a Strong Foundation for the Twenty-First Century," Secretary for Education Richard W. Riley told a packed conference hall that it was time to bring end to the current "math wars" in K-12 education. Those involved in K-12 mathematics education should declare a truce and work together to find a mix of information and styles that work, Riley advised.

Professional mathematicians must make the education of the next generation of mathematics teachers a major priority, Riley stressed, adding, "The message should come from you." He called on university mathematicians to create new partnerships with their local communities, with museums, with high schools, and with local businesses, to help get the word out.

Another call for help came from plenary speaker Gail Burrill, president of the National Council of Teachers of Mathematics. Burrill observed that the generation coming through the K-12 system are different from those who teach them. Having been born into the information age, today's students view calculators and computers as devices to aid thinking. Burrill told her audience., "They are doing something fundamentally different from us." Teaching them requires very different skills from those we learned in our K-12 education.

A longer version of this article appears in the February issue of "Devlin's Angle" on MAA Online (www.maa.org/devlin/devlin_2_2_98.html). ■

Mathematics Awareness Week to Stress Connections Between Math and Imaging

The Joint Policy Board for Mathematics has announced that Mathematics Awareness Week—April 26-May 2—will focus on mathematics and imaging. It represents an excellent opportunity for mathematicians, students, and others to spotlight and communicate the every day relevance of mathematics.

Mathematics is an essential element of the technique of imaging in, for example, medicine, computer science, space exploration, and criminal investigation. Medical science benefits from tomography, which improves the detection of cancerous tumors. Computer imaging techniques make use of a whole range of mathematical tools. Image compression is one of the essential tools of space exploration. The technique of wavelet image compression enables the FBI to store and retrieve data from its huge archive of fingerprint records.

The numerous ways of promoting Mathematics Awareness Week and as well as a deeper look into the connection between mathematics and imaging can be found on the MAW website,forum. swarthmore.edu/maw. ■

Eight Students Win Awards at Student Poster Session in Baltimore

The student poster session at the Joint Meetings in Baltimore in January attracted a good deal of interest from professional as well as budding mathematicians.

They had the opportunity see the work of 41 students, who presented 35 posters demonstrating the results of their research projects in mathematics.

L to R: Andrew Hetzel,Margret Hjalmarson, Daniel Tenny, Kathy Paur, and Rafe Jones.

Eight students were rewarded for their efforts.

Five students received monetary awards from the Council on Undergraduate Research (CUPM) and the MAA. They were Andrew Hetzel (University of Dayton), Margret Hjalmarson (Mount Holyoke College), Rafe Jones (Amherst College), Kathy Paur (MIT), and Daniel Tenny (Harvard).

In addition, three students were awarded books from Houghton Mifflin. They were Omar Colon-Reyes (University of Puerto Rico), Andy Danner and Jay Henniger (Gettysburg College), and Michael Dekker (Calvin College).

All the participates and their advisors are to be congratulated for an excellent job. The CUPM subcommittee on Research by Undergraduate Students sponsored the session, which organized by Judith Palagallo (University of Akron). The subcommittee plans to hold a similar session at the 1999 Joint Meetings in San Antonio. ■

***Morgan Prize* from page 1**

Vinson left high school in 1993 after his junior year to begin undergraduate studies at Washington University. "My decision was influenced by the example of Stephen Semmes," he said, "who had many years earlier skipped high school in Savannah, taken classes at Armstrong, and then studied at Washington University." At Washington University he complemented mathematics study by surveying its applications to physics, economics, and electrical engineering. He was an active member of Pi Mu Epsilon, helping to organize mathematics colloquia for undergraduates and the annual high school mathematics contest. He was a member of the 1996 and 1997 Mathematical Contest in Modeling teams (with Lance Finney, Daniel Scholz, and Derek Zaba) and was on the 1993-1996 Putnam teams.

After his freshman year he worked with Professor Carl Bender as a research assistant. Their results on continued exponentials were published in the *Journal of Mathematical Physics*. After his junior year he attended the Research Experience for Undergraduates (REU) program at Cornell University, working with Robert Strichartz, Karoly Bezdek, Kyallee Dalrymple, J.P. Lund, and Shelly Harvey.

One skill that often aids his mathematical research is the ability and willingness to program a computer. "I think that computers create an opportunity for undergraduates to collaborate successfully with mathematics professors," he notes, especially with "math professors who did not grow up using computers and often have ideas which they are unable to test because of the complexity of calculations involved." Enlisting the help of an undergraduate to implement an idea on a computer may not only lead to a test of the original idea but also draw the student into research. The hope, of course, is that the student will eventually become familiar with the professor's research and begin contributing his or her own ideas. "This is precisely how I began collaborating with Dr. Baernstein during my junior year," recalled Vinson.

◆◆◆◆

Vikaas S. Sohal

Honorable mention winner Vikaas S. Sohal won the award for his outstanding work in applied mathematics. As an undergraduate at Harvard University, Sohal used mathematical methods to study biological processes within the hippocampus and the cortex. The material in his exceptional senior thesis was cited as "an important contribution to the analysis of the dynamics of neural systems. Optimization techniques reveal new areas for neurophysiological research on several areas of the brain.

Sohal has used model building and simulation to investigate the role of two neuromodulators in the formation of new memories, episodic memory functions, and spatial navigation. The optimal solution suggests a plausible model that should lead to new results. Two papers have been accepted for publication, and several other papers have been submitted. Sohal will continues his studies at the University of Cambridge, and then go on to Stanford University.

Aside from the excellent research demonstrated in his work, the quality of the writing and the synthesis of difficult science and mathematics made Vikaas Sohal a worthy choice for monorable mention.

Sohal, who was born in Houston and grew up in Idaho Falls, developed his interest in mathematical problem solving in junior high by participating in Mathcounts and in high school by studying nonlinear dynamics through the University of Texas Young Scholars' Program. After heading East to study applied mathematics at Harvard University, Sohal became interested in neuroscience.

He was recommended to the Morgan Prize Committee by Professor Michael Hasselmo, with whom he studied mathematical models of learning and memory. His undergraduate thesis, which was based on this work, was awarded a Thomas T. Hoopes prize. He also received a Barry Goldwater Scholarship for his undergraduate studies.

Further information on the Morgan Prize and past winners can be found on MAA Online (www.maa.org). ■

Letter to the Editor

To the Editor:

My reaction to Keith Devlin's December 1997 FOCUS editorial crying for change in teaching mathematics was, on first glance, negative: just another erosion of good solid public school education. But a later, appreciative reading compelled me to write to you.

I'm quite prepared to be drummed out of the Pythagorian Corps for this but I endorse your thesis and recommend strongly getting on with it. And this from a victim of arithmetic and mathematics: I never really passed a course in public school; I got "good boy" Cs. But later in college I made the dean's list and even merited a graduate fellowship in mathematics.

Of course math teachers, junior high and high school, and up through college education schools, teach what they can. Obviously what is mathematics and what is its role in things are not part of what they are able to teach: few of their students, even the better-educated of them, learn this or have a clue about mathematics, then or later in life.

To persist in trying to inculcate difficult skills that evidently have almost zero retention and utility is pretty silly.

Skill in mathematics has, has had, and will have little relevance to the quality of life for most people. And in the large, the development of human kind has made its progress mostly without the vast majority of people having any math skills. You can hardly defend that had they had greater math skills, their progress would have been noticeably improved in some way.

The argument that recent emphasis on teaching math in the last hundred years, and particularly, in post-World War Two years, has even facilitated the rapid technological development is realistically unsupportable. For the vast majority of those subjected to this math emphasis they retained or used little or none of it beyond school.

What might I do to help further your cause?

Duncan Morrill
Merrimack, NH

Remembering Bob Davis

by James J. Kaput

Mathematics education lost a founder and prescient leader this past December when Rutgers University Professor Robert B. Davis died of an apparent heart attack in his New Jersey home at the age of 71. He had moved to Rutgers in 1988 after 16 years at the University of Illinois-Urbana. He served as a high level advisor to government agencies—in the United States and elsewhere—as well as to Childrens Television Workshop, and on boards of research centers, publishers, and software developers.

In 1956, responding to what he viewed as radically inadequate mathematics teaching, learning and curriculum in the schools, he developed the first-of-its- kind 15 year curriculum development and research endeavor, the Madison Project, renowned for its innovations and insights, some of which are captured in the 1966 classic, *Discovering Mathematics: A Text for Teachers.*

Bob Davis led the international mathematics education community into students' minds, taking the view, long before it became standard, that we cannot expect to improve the teaching and learning of mathematics until we understand how students think mathematically. He drew a memorable analogy in his 1984 book, *Learning Mathematics: The Cognitive Science Approach to Mathematics Education*:

"How can the study of mathematics be so old, and the study of mathematical thinking be so new? The answer is probably that mathematics education is in this respect somewhat like medicine—centuries ago there was very little sense of control, and more acceptance of fate, in both fields. If many infants died, that was what happened; only in recent years have we adopted the point of view that every single infant death must have a rational cause, that these causes must become known, and that this knowledge must be on so fundamental a level that appropriate interventions can be devised...It has been known for centuries that some people acquire a powerful command of mathematics, but most people do not. This, too, used to be considered part of the natural scheme of things."

In 1971, with Herbert Ginsburg, Davis founded the influential *Journal of Children's Mathematical Behavior* "to address...the notion of what 'mathematical thought' means with children, how it develops, and how one might study it." Bob's profound influence extended well beyond his deep insights into student thinking, the task-based interview methodology for "seeing" that thinking which he pioneered, and the curricular innovations he developed.

He brought many people into the field, including this author (in 1970), partly through his deep respect for mathematics and how mathematics becomes real through human thought, but mostly through his openness and generosity to others, *their ideas, their thinking*. This openness and generosity seemed to be at the heart of his success as a scientist and as a leader. ■

Prime Time Television Discovers Mathematics

by Keith Devlin

This spring, PBS stations across the nation will broadcast a seven part documentary series on mathematics. Over five years in the making, Life by the Numbers is produced by WQED in Pittsburgh, with major support from the National Science Foundation and the Alfred P. Sloan Foundation, and the exclusive corporate support of Texas Instruments.

The very significant level of funding has enabled the producers to go to considerable length to make the maximum possible use of modern television technology to make the series one of the most visually stunning and exciting television science series ever. The intention is for the series to make as great an impact on the general public as the late Carl Sagan's Cosmos.

I have been involved in the project for the last three years as one of many technical consultants. When I was asked if I could help shape the series, my first question to the producer was "What is the purpose of the series?" He replied, "To overcome two thousand years of bad press for mathematics." I was hooked at once.

The producers did not set out to teach any mathematics. The aim was to inform people of the true nature of mathematics and the range of important but generally hidden roles mathematics plays in various aspects of our lives.

The seven one-hour episodes include segments on the uses of mathematics in sports, entertainment, communications, global economics, local politics, medical research, cartography, and oceanography. Some of the mathematics referred to is fairly simple; other segments take you to the frontiers of deep, abstract mathematics.

To ensure that the series captures as large an audience as possible, the production team use the latest in television technology. Movie star Danny Glover is the host. Incidental music was specially commissioned for the series.

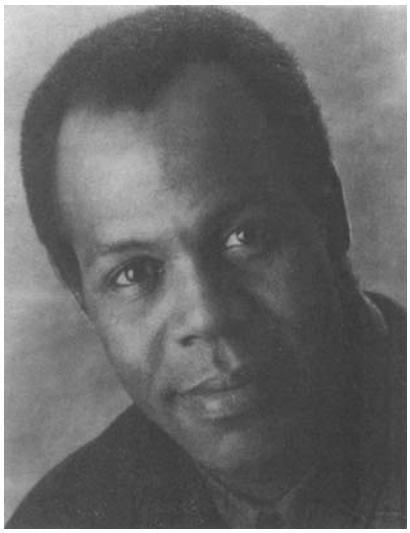
Most university mathematicians to whom I have shown previews have loved it. But some have not, saying they feel it does not provide enough detail of the mathematics. I have always replied that it was not intended to the mathematics. The over riding goal was to reach out to the millions of people, of all ages, who think they hate mathematics and, even worse, think it has no relevance to their lives. No one who watches the series will ever again think that!

While the television series itself is designed to fit the "inform and entertain" mold of broadcast television, everyone involved in its production recognized the enormous education potential as an instructional resource around which teachers can build classes.

Educators will be permitted to tape the series off air and use it in their classrooms. (Boxes sets will also be available for purchase.) Teachers packs will be available to provide ideas for ways to use the programs with K-12 students of different ages.

A web site is currently under development (www.mathlife.com). I have written a fully-illustrated (stand alone) book to accompany the series. Published by John Wiley, the *Life by the Numbers* book will go on sale in ordinary bookstores at broadcast time.

The most likely broadcast time is Sunday evening, starting in April or May. As always with television broadcasts, if you want to catch the entire series, you should check your local listings to see when the series will be shown in your area. ■



Danny Glover hosts Life By the Numbers

Keith Devlin is Dean of Science at Saint Mary's College of California and a former editor of FOCUS

Life By the Numbers

The seven episodes:

A New Age. Contrary to popular belief, mathematics is exciting, imaginative, and a bigger part of our lives than most of us realize. As we move into the 21st century, we're moving into a new age—the information age—and it's being driven by mathematics.

Chances of a Lifetime. We all use mathematics to make sense of our lives. We rely on probability to gauge chance and risk. Statistics help us to make predictions about everything from the weather to the roulette wheel.

Patterns of Nature. Why do zebras have stripes instead of spots? Can grasshoppers grow to the size of dinosaurs? How are simple ropes and strings helping scientists understand viruses? Mathematics is a tool to biologists, and by using mathematics, scientists are uncovering startling things.

Seeing Is Believing. When people go to movies to see special effects, they're paying to see mathematics in action. The first special effects ever created—Renaisance paintings—owe their existence to mathematics. From IMAX films to modern at to virtual reality, mathematics helps us define space and present our visions to the world.

Shape of the World. Centuries before Columbus, the Greeks used mathematics to determine the size and shape of the earth. This episode shows how mathematics has become a tool to explore the planet, the heavens, and the cosmos.

The Numbers Game. Sports and mathematics have long been tied together. Consider batting averages, the geometry of the baseball diamond, golf handicaps, and odds at the track. In the push to run faster, jump further, and to reach the limits of the human body, mathematics is critical to success in all sports.

Making a Difference. Around the country, dynamic educators, innovative researchers, and passionate parents are exploring new ways to make math make sense. Exciting reform initiatives are placing mathematics in a "real world" context while encouraging students to approach problems using calculators, computers, and daily journals.

MathServe Project to Involve Mathematicians in Community Service

A new project launched by COMAP and the Dana Center (at the University of Texas) aims to promote public appreciation for mathematics by inviting mathematicians to develop math-based solutions to problems facing community service programs. MathServe, funded by the Sloan Foundation, will emphasize the discipline's breadth, relevance to daily living, and ability to promote the common good.

To accomplish this, MathServe's coordinators are soliciting descriptions of successful math-based community service projects. (More on this below.) Whether using developments in operations research and discrete mathematics to aid schools with bus scheduling, or to help hospitals with assignments of volunteers, or to develop programs ensuring proper inventory control for bedding and supplies, the mathematical sciences can provide insights into important service areas.

MathServe will offer opportunities to those in higher education. College administrators and faculty advocacy groups have long debated the issue of how to assess faculty members' quality of work. While much of the debate has centered on research and teaching, little attention has been given to the question of service, especially community service. MathServes hopes to change this by involving mathematics departments and students in the following:

- To create a structure promoting the discussion of discipline-based service in mathematics.
- To generate exemplars of such service and to make them known to the mathematics community.
- To increase the numbers of mathematicians and math students in discipline-based service.
- To build a community of individuals engaged in discipline-based service.
- To construct a forum that offers the oppportunity to present and discuss discipline-based service at local, regional, and national meetings of professional organizations.
- To build a structure for the peer review of service work.

The most salient aspect of this project will be annual service prizes. COMAP will offer cash awards, plaques, and certificates to outstanding teams and successful participants.

In order to get started, MathServe is making an initial call for examples—but not entrees—of discipline-based solutions to community service projects. Based on these examples, MathServe will be in a better position to define the nature of formal submissions for awards. MathServe may be reached at: MathServe, c/o COMAP, Suite 210, 57 Bedford Street, Lexington, MA 02173; e-mail: info@comap.com. ■

Ohio Section Summer Short Course to Examine Great Theorems of Mathematics

On June 24-26, a workshop at Ashland University (Ashland, OH) will examine a beautiful collection of theorems in the history of mathematics. Called "A Mathematical Sampler: 1699-1900," the short course will consider works by Newton, the Bernoullis, Euler, Gauss, Weierstrass, Cantor, and other major mathematians as it addresses questions from the realms of analysis, number theory, algebra, geometry, and the theory of sets. The theorems will be amplified by biographical information and placed in historical context, though the primary focus will be on the genius of great mathematicians.

If this sounds a bit familiar, it is because the course will be presented by William Dunham (Muhlenberg College), author of *Journey Through Genius: The Great Theorems in Mathematics* (John Wiley, 1990).

Registration is $100, payable by the end of April. For more information, contact Professor Thomas Dence, Dept of Mathematics, Ashland University, Ashland, OH 448051 (419) 289-5262; e-mail: tdence@ashland.edu. ■

Summer Art and Math Conference

The 1998 Art and Mathematics Conference(AM98) will be held at the University of California at Berkeley, August 3-7,1998. Speakers include John Conway, Helaman Ferguson, David Hoffman, and William Thurston.

For information, contact Nat Friedman, Dept. of Math.,Univ. at Albany-SUNY, Albany NY, 12222, (518) 442-4621; fax (518) 442-4731; e-mail: artmath@math.albany.edu or Carlo Sequin, EECS, CS Div., Univ. of California, Soda Hall, Berkeley, CA 94720-1776; (510) 642-5103; fax (510) 642-5775; e-mail: sequin@cs.berkeley.edu or visit http://www.cs.berkeley.edu/~sequin/AM98/index.html ■

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A & I projects are expected to improve SMET education at institutions through adaptation and implementation of exemplary materials, laboratory experiences, and educational practices. EMD expects to support proof-of-concept awards up to $75,000 and a few full development awards up to $500,000. A & I expects to support projects that range from individual courses and laboratories ranging up to $100,000 to more comprehensive projects up to $200,000. A & I projects require a 1-1 match on the entire budget while EMD projects require a 1-1 match only on equipment. Additional cost-sharing when appropriate is encouraged.

A third track for national dissemination (ND) facilitates large-scale national professional development opportunities for faculty. Postmark deadlines are November 16, 1998 and June 7, 1999. A preliminary project description is required for the ND track at least six weeks prior to the program deadline. Information about NSF undergraduate education programs and program documents can be requested by e-mail to undergrad@nsf.gov; by calling DUE at (703) 306-1666; or visiting the DUE home page at www.ehr.nsf.gov/EHR/DUE/start. htm. The new DUE program announcement (NSF 98-45) can be accessed on the NSF web site: www.ehr.nsf.gov/EHR/DUE/documents/general/gpag.htm. ■

Call for Papers on Mathematical Modeling

The Symposium on Mathematical Modeling in the Undergraduate Curriculum (University of Wisconsin/La Crosse invites submissions for 25-minute and 50-minute presentations focusing on any aspect of mathematical modeling.

Mathematical and pedagogical themes are welcome; a student presentation session is also planned.

Plenary speakers include Solomon Garfunkel, executive director of COMAP; Martha Siegel, director of Towson State University's Applied Math Lab and MAA secretary; and W. Michael O'Fallon, chair of Health Sciences Research at the Mayo Clinic.

For further information or if you wish to present a paper, send a one-page abstract or full paper before March 15, 1988 to: Helen Skala, Mathematics Department, University of Wisconsin/La Crosse, La Crosse, WI 54601; (608) 785-6614; e-mail to skaka@math. uwlax.edu. ■

MAA to Subsidize Travel Expenses of MCM Student Winners

The MAA will subsidize the travel expenses for the two student-team winners of the 1998 Mathematical Contest in Modeling (MCM). Each team of three undergraduates will receive up to $600 to help defer costs.

This action is due to the efforts of Dick Jarvinen, chair of the Student Chapters Committee, as well as Charles Diminnie, who directs the student contributed paper sessions. The winners will also receive registration slots at the Toronto Mathfest this summer.

In 1997, the MAA sponsored two judges for the first time. Jack Robertson (Georgia College) judged the continuous problem; Kathleen Shannon (Salisbury State University, Md.) judged the discrete problem.

The Harvard University team of Charlene Ahn, Edward Boas, and Benjamin Rahn wrote the winning continuous paper, which dealt with the pursuit-evasion problem of Velociraptor vs. Thescelosaurus. The team's advisor was Howard Georgi of the department of physics.

David Castro (left) and Nicholas Weininger received congratulations from Ben Fusaro, creator of the MCM, last summer in Atlanta.

The Macalester College team of David Castro, John Renze, and Nicholas Weininger wrote the MAA winning discete paper. Dealing with the assignment of 29 board members to a series of meetings, it balanced various constraints. The team's advisor was Karla Ballman. David Castro and Weininger presented the results at last year's summer meting in Atlanta.

The Mathematical Contest in Modeling is admisistered by the Consortium for Mathematics and Its Applications (COMAP), directed by Solomon A. Garfunkel. Ben Fusaro, the creator of MCM, administered it for the first seven years.

Now in its fourteenth year, MCM is administered by COMAP associate director Frank Giordano. ■

Gifts Honoring MAA Members

Gifts listed are as of November 30, 1997

Anonymous gift in memory of Olga T. Todd

Dr. Lida K. Barrett gave a gift in memory of J. Sutherland Frame

Ms. Imogene C. Beckemeyer gave a gift in memory of John M. H. Olmsted

Gerald & Shirley Bergum gave a gift in honor of Joseph Konhauser

Dr. Jean Bee Chan gave a gift in honor of Prof. Frederick A. Valentine

Jean E. & Sylvia De Valpine gave a gift in honor of S. Ulam

Dr. Joanne Elliott gave a gift in memory of Prof. Grace E. Bates

Ms. Ellen L. Evans gave a gift in memory of Trevor Evans

Joseph M. Gani gave a gift in memory of Ruth Gani

Elliott Landowne gave a gift in memory of Dunham Jackson

Ms. Katherine P. Layton gave a gift in honor of William T. Puckett

Charles M. Lewis gave a gift in honor of: Marlene Gilbert

Warren S. Loud gave a gift in memory of John M. H. Olmsted

David M. Merriell gave a gift in memory of Paul J. Kelly

Prof. D. D. Miller gave a gift in memory of Paul Erdös

Francis D. Parker gave a gift in honor of J. Sutherland Frame

Herbert and Edrie Parrish gave a gift in memory of John Mohat

Herbert C. & Edrie M. Parrish gave a gift in honor of Landon Colquitt

John W. & Joyce H. Petro gave a gift in honor of Yousef Alavi (upon his retirement)

Dr. Irma M. Reiner gave a gift in memory of Irving R. Reiner

Dr. Irma M. Reiner gave a gift in memory of Irving Reiner

Robert A. Rosenbaum gave a gift in memory of Louise Johnson Rosenbaum

Kenneth A. Ross gave a gift in honor of Gerald J. Porter

Seymour Schuster gave a gift in memory of J. D. E. Konhauser

Stephen E. Spielberg gave a gift in memory of Martin Kummer

Rachel Theilheimer gave a gift in honor of Feodor Theilheimer

Ms. Elizabeth B. Weinstock gave a gift in memory of Paul Erdös ■

National Meetings

July 15–18, 1998 Mathfest 98, Toronto, Canada; Board of Governors Meeting July 14, 1998

January 13–16, 1999 82nd Annual Meeting, San Antonio, TX; Board of Governors January 12, 1999

January 19–22, 2000 83rd Annual Meeting, Washington, DC; Board of Governors January 18, 2000

January 10–13, 2001 84th Annual Meeting, New Orleans, LA; Board of Governors January 9, 2001

Section Meetings

Allegheny Mountain March 27–28 1998; Clarion University, Clarion, PA

Eastern PA and Delaware April 18, 1998; Shippensburg University, Shippensburg, PA

Florida March 5–6, 1999; Florida Gulf Coast Community College, Panama City, FL

Illinois March 27–28, 1998, McKendree College, Lebanon, IL

Indiana March 20–21, 1998,Ball State University, Muncie, IN; November 7, 1998, St. Mary's College, Notre Dame, IN

Intermountain April 10–11, 1998, Brigham Young University, Provo, UT

Iowa April 17–18, 1998, Luther College, Decorah, IA

Kansas March 20–21, 1998, Washburn University, Topeka, KS

Kentucky March 27–28, 1998, Morehead State University, Morehead, KY

Louisiana–Mississippi March 5–6, 1999, Jackson State University, Jackson, MS

MD–DC–VA April 17–18, 1998, Virginia State University, Petersburg, VA

Michigan May 1–2, 1998, Western Michigan University, Kalamazoo, MI

Missouri April 17–18, 1998, Southwest Missouri State University, Springfield, MO

Nebraska–Southeast South Dakota April 17–18,1998, Wayne State College, Wayne, NE

New Jersey April 4, 1998, Ocean County College, Toms River, NJ

North Central April 24–25, 1998, Augsburg College, Minneapolis, MN

Ohio April 17–18, 1998, John Carroll University, Cleveland, OH

Oklahoma–Arkansas March 27–28, 1998, University of Arkansas–Little Rock, AR

Pacific Northwest June 18–20, 1998, Washington State University, Pullman, WA

Rocky Mountain April 17–18, 1998, Araphoe Community College, Littleton, CO

Seaway April 24–25, 1998, York University, Toronto, Ontario, Canada; November 6–7, 1998, Nazareth College, Rochester, NY

Southern California October 17, 1998, Pepperdine University, Malibu, CA

Southwestern April 3–4, 1998, Pima Community College, Tucson, AZ

Texas March 26–28, 1998, Southern Methodist University, Dallas, TX

Wisconsin April 24–25, 1998, University of Wisconsin–Stevens Point, Stevens Point, WI

Professional Development Calendar

April

April 17-19
Interedisciplinary Mathematics and Science Projects *
Albany, NY
(315) 341-2890; narayan@oswego.edu

April 26-28
Foundation for Change in the Secondary Mathematics Curriculum *
Inn at Grand Glaze, Osage Beach, MO
(660) 543-8792; tag8792@cmsu2.cmsu.edu

May

May 18-19
Reconnecting Two-Year College Faculty to the Mathematical Sciences Enterprise *
DIMACS, Rutgers University, Piscataway, NJ
(732) 445-4631; epfoley@dimacs.rutgers.edu

May 28-June 2
Teaching Undergraduate Geometry *
Cornell University, Ithaca, NY
(607) 255-3523; dwh@math.cornell.edu

May 26-30
New Mexico Initiative for Math Reform Workshops*
Dona Ana Branch Community College, Las Cruces, NM
maryrobn@unm.edu

June

June 3-9
Statistical Thinking with Active Teaching Strategies*+
Emory & Henry College, Emory, VA
(202)-387-5200; jheckler@maa.org

June 8-12
Mathematical Preparation of Elementary Teachers *
Sam Houston State University, Huntsville, TX
(409) 294-1577; mth_mlk@shsu.edu

June 14-18
Teaching Dynamical Systems Across the Curriculum+
Messiah College, Grantham. PA
(717) 766-7283; jmccausl@messiah.edu

June 16-20
Elementary Statistics Laboratory Workshop *
University of South Carolina, Columbia, SC
(803) 777-5072; spurrier@stat.sc.edu

June 21-July 3
Cooperative Learning in Undergraduate Mathematics Education *+
Georgia State University, Atlanta, GA
(404) 651-0658; jgaither@cs.gsu.edu

June 24-26
A Mathematical Sampler: 1699-1900+
Ashland University, Ashland, OH
(419)-289-5262; tdence@ashland.edu

July

July
Partnerships: Interdisciplinary Workshops and Materials *+
Dartmouth College, Hanover, NH
(707) 423-6023; tstraley@ksumail.kennesaw.edu

July 6-17
Reconnecting Teaching Faculty to the Mathematical Sciences Enterprise *
DIMACS, Rutgers University, Piscataway, NJ
(732) 445-4631; epfoley@dimacs.rutgers.edu

July 7-11
Chance Workshop *
Dartmouth College, Hanover, NH
(603) 646-3507; jlsnell@dartmouth.edu

July 12-August 1
Representation Theory of Lie Groups *

(800) 726-4427; pcmi@math.ias.edu

July 15-18
MAA Minicourses, Mathfest 98
Toronto, Canada
Developing Materials for Liberal Arts Mathematics That Use Elementary Graph Theory and Emphasize Applications to Everyday Experience

A Hands-On Approach to Geometry

Cooperative Learning in Undergraduate Mathematics Education

Fuzzy Neighborhoods and the Fuzzy Unit Interval

July 16-17
Statistical Thinking with Active Teaching Strategies*
California Poly, San Luis Obispo, CA
(202) 387-5200; jheckler@maa.org

July 20-31
Institute in the History of Mathematics and its Use in Teaching *+
Catholic University, Washington, DC
(202) 387-5200; jheckler@maa.org

July 19-25
Pre-Stat *
Appalachian State Univ., Boone, NC
(704) 262-2362; perrylm@appstate.edu

July 26-August 1
Pre-Stat *
Montana State University, Bozeman, MT
(704) 262-2362; perrylm@appstate.edu

July 27-August 8
The Art and Science of Model Building *
University of Montana, Missoula, MT
(406) 243-5311; karenb@selway.umt.edu

October

October 8-10
Calculus for the 21st Century *
Inn at Grand Glaze, Osage Beach, MO
(660) 543-8792; tag8792@cmsu2.cmsu.edu

* Supported by the National Science Foundation
\+ Sponsored by the MAA or an MAA section

For additional information on these and other professional development activities for mathematics faculty, please visit the Professional Development area of MAA Online at http://www.maa.org.

EMPLOYMENT OPPORTUNITIES

MAINE

BOWDOIN COLLEGE
DEPARTMENT OF MATHEMATICS

A one-year sabbatical replacement position at the instructor or assistant professor level starting Fall, 1998. Open to applicants in all fields. Ph.D. preferred and a strong record of successful undergraduate teaching expected. Normal teaching load is two courses per semester. The department will begin reviewing applications on March 15, but applications will be accepted and considered until the position is filled. Send completed AMS application cover sheet, resume and 3 letters of recommendation to Chair, Mathematics Department, Bowdoin College, 8600 College Station, Brunswick, ME 04011-8486. Include e-mail address. Bowdoin College is committed to equal opportunity through affirmative action. Women and minorities are encouraged to apply. Bowdoin College is a private, undergraduate institution located half an hour from Portland and 2 hours from Boston. More information about the department and college can be found at the website www.bowdoin.edu.

NEW YORK

BARUCH COLLEGE
Faculty Position

Two tenure-track Assistant Professor positions in the Department of Mathematics, beginning September 1998. Duties include research, teaching, and service. Highest priority will be given to applicants with ex pertixe in areas of mathematics related to business, including partial differential equations, mathemtical probability and statistics, numerical methods, and operations research. Ideally, candidates should have some experi ence applying their education and researchto financial mathematics, possibly in financial institutions. A Ph.D. is required for an appointment as an Assistant Professor. Salary range: $40,440–$52,213, depending on qualifications and experience. Baruch Colleg is a senior college of The City University of New York and is located in the historic Gramercy Park areaof Manhattan. The College has an enrollment of approximately 15,00 under-graduate and graduate students in its three schools. Send curriculum vitae, the names of three reference, and copies of publications by April1, 19987, to Warren B. Gordon, Chair Mathematics Department, Baruch College/CUNY, 17 Lexington Avenue, Box G 0930, New York, NY 10010. An AA/EO/IRCA/ADA employer.

PENNSYLVANIA

COMMUNITY COLLEGE
OF PHILADELPHIA

The Mathematics Department anticipates one tenure track position beginning in the Fall 1998 semester. Qualification: Master's degree in mathematics, a commitment to quality teaching, both remedial and college level, and a serious interest in curriculum development. Proven record of innovative, collaborative teaching strategies and use of technology a plus.

Send resume and 3 letters of recommendation by April 30, 1998 to: Mathematics Dept. Hiring Committee, Community College of Philadelphia, 1700 Spring Garden St., Philadelphia, PA 19130. We are committed to a workforce reflective of our community. AA/EOE

SOUTH CAROLINA

COLUMBIA COLLEGE
Department of Mathematics

The department of mathematics at Columbia College invites applications for a tenure-track Assistant Professorship in Mathematics or Computer Science. Columbia College is a small private, liberal arts college for women in Columbia, South Carolina, with an emphasis in excellence in the teaching of undergraduates. The Department offers a bachelor of science degree in mathematics, a bachelor of arts degree in mathematics with the option of secondary school certification, and is interested in developing a degree in computer or information science. The department also provide mathematics courses for science major, other liberal arts areas, and for majors in elementary education. Members of the department have been extremely active in curricular reform efforts in mathematics and mathematics education.

We seek a candidate with master's level expertise in both mathematics and computer or information science and a terminal degree in either field. Although the primary consideration of the college is a commitment to excellence in teaching, research credentials or potential is also an important factor. Knowledge or experience in curricular design which might contribute to the design of a new degree would also be most attractive.

Please send vitae, a statement about your teaching philosophy, teaching experience and research interests and three letters of reference to: Dr. Laurie Hopkins, Mathematics Department Chair, Columbia College, Columbia, South Carolina, 29203. Review of applications will begin immediately and will continue until the position is filled.

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ADVERTISING INFORMATION: The 1998 rates for FOCUS Employment Advertisments are $99 per column inch. The deadlines for submission of ads are: May/June, 3/25; Aug/Sept, 7/10; Oct, 8/13; Nov, 9/24; Dec, 10/26. Visit "MAA Online" for additional ads submitted subsequent to those published in this issue at www.maa.org. Contact Joseph Watson, MAA, 1529 18th St., NW, Washington, DC 20036; (202) 387-5200; fax: (202) 265-2384; e-mail: jwatson@maa.org.

MATHEMATICA IN THE MOUNTAINS

Introductory Mathematica June 22-23, 1998
Intermediate Mathematica June 24-26, 1998
Advanced Mathematica June 29-July 2, 1998

Join us for our fifth annual event, in the historic/ resort town of Breckenridge, Colorado, nestled in the Rocky Mountains. A graded sequence of three courses about the Mathematica system, offering an opportunity to learn and practice Mathematica skills with Wolfram Research-accredited trainer, Allan Hayes (Ph.D., Cambridge University, England).

For information, visit www.mountainmath.com or contact Marcia Ruderman at 970-453-2570.

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A resource center for the dissemination of research results, insights, and ideas of professional educators and mathematicians on the wide variety of issues that pertain to the college level mathematics preparation of future K-12 teachers seeks submissions for its Spring 1999 inaugural edition. The submission deadline is October 1998.

For further information visit the IUMPST web site

www.k-12prep.math.ttu.edu

or contact one of the managing editors:

Sandra B. Cooper scooper@ttacs.ttu.edu
Gary A. Harris g.harris@ttacs.ttu.edu

Mathfest 98 Goes International

What's new in collegiate mathematics? Find out in Toronto at Mathfest 98!

Invited Addresses, Contributed Paper Sessions, Minicourses, Panel Discussions...even a Short Course on Mathematics and Magic (given by "mathemagicians" Brent Morris and Arthur Benjamin). It's all here to whet your mathematical appetite. For example:

The Hedrick Lecture Series presents "Geometric Variational Problems", three lectures by Jean Taylor; Donald Saari will speak about "The Mathematics of Voting; What Causes Lousy Election Outcomes?"; of special interest to students, the Pi Mu Epsilon J. Sutherland Frame Lecture will be given by Joseph Gallian on "Breaking Driver's License Codes" and the MAA Student Lecture features Ross Honsberger speaking about "Some Mathematical Morsels".

Maybe lectures are not your cup of tea, speaking of which, you can get a great one in Toronto, how about a contributed paper session on Multimedia and Mathematics Education, a minicourse on Cooperative Learning in Undergraduate Mathematics Education, a special session on Great Theorems of Mathematics, a workshop on Integrating Active Learning Techniques into Lectures or...dozens of other mathematical sessions, social events, and the charms of Canada in the summer.

Here are but a few of the many other events you won't want to miss:

INVITED LECTURES

- Liliane Beaulieu, *Bourbaki Choices*
- Andrew Odlyzko, *Primes and Zeros of the Zeta Function: Conjectures and Computations*
- Dorothy Buerk, *What We Say, What Students Hear*
- Margaret Wright, *Constrained Optimization*
- Nathanial Dean, *Network Visualization*

CONTRIBUTED PAPERS

- Mentoring Mathematics Students
- Innovative Ideas for Student-Collected Data

STUDENT WORKSHOP

- Mathematics in Stone and Bronze: Mathematical Problems Associated with Doing Mathematical Sculpture

MINICOURSES

- A Hands-On Approach to Geometry
- Developing Materials for Liberal Arts Mathematics That Use Elementary Graph Theory and Emphasize Applications to Everyday Experience

SHORT COURSE

- Calculated Deceptions: Mathematics and Magic

Watch for your April FOCUS with Mathfest 98's full program and registration information. But mark your calendar now!

Mathfest 98

Toronto | July 15-18

Ryerson Polytechnic University