

# Contents

THE NEWSLETTER OF THE MATHEMATICAL ASSOCIATION OF AMERICA

## FOCUS

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*Photographs of Phoenix courtesy of the Greater Phoenix  
Convention and Visitors Bureau.*

# Joint MAA-AMS Invited Addresses and Joint Sessions

## JOINT INVITED ADDRESSES



Bonnie Berger

### TITLE TO BE ANNOUNCED

Bonnie Berger, Massachusetts Institute of Technology  
*Friday, 11:10 a.m.*

### TITLE TO BE ANNOUNCED

Stephen Wolfram, Wolfram Research Inc.  
*Wednesday, 11:10 a.m.*



Stephen Wolfram

### GOVERNMENT SPEAKER MAA COMMITTEE ON SCIENCE POLICY-AMS SCIENCE POLICY COMMITTEE

*Friday, 4:20 p.m.*

Speaker and title to be announced.

## JOINT SPECIAL SESSIONS

### CLASSICAL AND NONLINEAR SPECIAL FUNCTIONS

Peter A. Clarkson, University of Kent, Francisco Marcellan, Universidad Carlos III, and Peter A. McCoy, U. S. Naval Academy; (AMS-SIAM)

*Friday and Saturday mornings and Friday afternoon*

### CODING, GEOMETRY, AND HYPERBOLIC DYNAMICS

Svetlana R. Katok, Pennsylvania State University, and Boris Hasselblatt, Tufts University; (AMS-AWM)

*Thursday and Friday afternoons and Friday morning*

### HISTORY OF MATHEMATICS

Joseph W. Dauben, Lehman College (CUNY), and David E. Zitarelli, Temple University; (MAA-AMS)

*Friday and Saturday mornings and afternoons*

### INFINITE COMBINATORICS AND INNER MODEL THEORY

Matthew D. Foreman and Martin Zeman, University of California Irvine; (AMS-ASL)

*Wednesday afternoon and Thursday morning*

### MATHEMATICAL TECHNIQUES IN MUSICAL ANALYSIS

Judith L. Baxter, University of Illinois at Chicago, and Robert W. Peck, Louisiana State University; (MAA-AMS)

*Friday and Saturday afternoons and Friday morning*

## MATHEMATICS AND EDUCATION REFORM

William H. Barker, Bowdoin College, Jerry L. Bona and Naomi Fisher, University of Illinois at Chicago, Kenneth C. Millett, University of California Santa Barbara, and Bonnie Saunders, University of Illinois at Chicago; (MAA-AMS-MER)  
*Wednesday and Thursday mornings and Wednesday afternoon*

## RESEARCH IN MATHEMATICS BY UNDERGRADUATES

Darren A. Narayan, Carl V. Lutzer, and Tamara A. Burton, Rochester Institute of Technology; (MAA-AMS-SIAM)  
*Thursday morning and afternoon*

## OTHER JOINT SESSIONS

### PRIZE SESSION AND RECEPTION

*Thursday, 4:25 p.m.*

In order to showcase the achievements of the recipients of various prizes, the MAA and AMS are cosponsoring this event. A cash bar reception will immediately follow. All participants are invited to attend. The MAA, AMS, and SIAM will award the Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student. The MAA prizes include the Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics, the Chauvenet Prize, the Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics, and Certificates of Meritorious Service. The AMS will present the Award for Distinguished Public Service, Levi L. Conant Prize, JPBM Communications Award, E. H. Moore Research Article Prize, Oswald Veblen Prize in Geometry, Norbert Wiener Prize in Applied Mathematics, and the Leroy P. Steele Prizes. The AWM will present the Louise Hay Award for Contributions to Mathematics Education and the Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman.



# 87th Annual Meeting of the MAA

## MAA invited ADDRESSES



*Manjul Bhargava*

### TITLE TO BE ANNOUNCED

Manjul Bhargava, Harvard University  
*Thursday, 10:05 a.m.*

### SELECTIONS FROM THE CALCULUS MUSEUM

William W. Dunham  
Muhlenberg College  
*Wednesday, 3:20 p.m.*



*William W. Dunham*



*Erica L. Flapan*

### WHEN TOPOLOGY MEETS CHEMISTRY

Erica L. Flapan, Pomona College  
*Saturday, 9:00 a.m.*

### FALLACIES IN ELEMENTARY STATISTICS (RETIRING PRESIDENTIAL ADDRESS)

Ann E. Watkins, California State  
University Northridge  
*Saturday, 10:05 a.m.*



*Ann E. Watkins*

### PRESENTATIONS BY TEACHING AWARD RECIPIENTS

*Friday, 2:30 p.m. - 4:00 p.m.*

Winners of the Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching will give presentations on the secrets of their success.



*Andrew C-F Liu, left, and Olympia Nicodemi, right, are two of the Haimo award winners presenting talks in Phoenix. Not shown: Tom Garrity, the third winner.*

### FRACTIONAL CALCULUS WITH APPLICATIONS (STUDENT LECTURE)

Mark M. Meerschaert, University of Nevada  
*Friday, 1:00 p.m.*

### THE ON-LINE ENCYCLOPEDIA OF INTEGER SEQUENCES, OR CONFESSIONS OF A SEQUENCE ADDICT

Neil J. A. Sloane  
AT&T Shannon Labs  
*Wednesday, 2:15 p.m.*



*Neil J. A. Sloane*

## MAA *mini* COURSES

Minicourses are open only to persons who register for the Joint Meetings and pay the Joint Meetings Registration fee in addition to the appropriate minicourse fee. The MAA reserves the right to cancel any minicourse that is undersubscribed.

### MINICOURSE #1

DESIGNING AND EVALUATING ASSESSMENTS FOR INTRODUCTORY STATISTICS

**Organized by Beth L. Chance and Allan J. Rossman, California Polytechnic State University, San Luis Obispo; and Robert C. Del Mas, University of Minnesota**

**Part A: Wednesday, 9:00 a.m. to 11:00 a.m.**

**Part B: Friday, 9:00 a.m. to 11:00 a.m.**

Statistics teachers find it challenging to construct student assessments that focus on conceptual understanding, allow consistent scoring, and provide informative feedback. Participants will be involved in constructing assessment instruments for use in introductory courses using an online assessment resource, ARTIST, and in evaluating the results. We will discuss guidelines of effective assessment, resources for assessment material categorized by concept and level of difficulty, suggestions for evaluating student performance through examinations and performance assessments, and use of a comprehensive first-course exam. Participants will be invited to pilot items, contribute new items, and share outcome data for comparison across institutions through ARTIST. Cost is \$90; enrollment limit is 30.

### MINICOURSE #2

HANDS-ON DISCRETE MATH WITH TECHNOLOGY

**Organized by Douglas E. Ensley and Kate McGiveny, Shippensburg University**

**Part A: Wednesday, 2:15 p.m. to 4:15 p.m.**

**Part B: Friday, 1:00 p.m. to 3:00 p.m.**

Discrete math is a course that serves students studying math and computer science. The goals for these two disciplines can be different, so the goals for this course are often debated. This minicourse will focus on three particular topics—sets/relations, combinatorics/probability, and writing mathematical proofs—that are common to most discrete math courses. We will use Maple and the TI-83 for the first two topics and simple Flash movies for the third. Some familiarity with Maple syntax and TI calculators is required, but no experience with Flash will be assumed. Cost is \$90; enrollment limit is 30.

### MINICOURSE #3

COMPUTATION AND DISCOVERY IN THE NUMBER THEORY CLASSROOM

**Organized by Clifford A. Reiter, Lafayette College**

**Part A: Wednesday, 4:30 p.m. to 6:30 p.m.**

**Part B: Friday, 3:15 p.m. to 5:15 p.m.**

While proofs remain central to number theory, technology offers opportunities for discovering theorems and investigating conjectures in the number theory classroom. The instructor has developed several J-based computer classroom laboratories which will be shared with participants. No experience with J is expected. Sample lab topics include the sieve of Eratosthenes and twin primes, discovering quadratic reciprocity, public key codes, factoring, and elliptic curves. Participants are expected to share their ideas, reactions, and experiences. Cost is \$90; enrollment limit is 30.

### MINICOURSE #4

JAVA APPLETS IN TEACHING MATHEMATICS

**Organized by Joe Yanik, Emporia State University, and David M. Strong, Pepperdine University**

**Part A: Thursday, 8:00 a.m. to 10:00 a.m.**

**Part B: Saturday, 9:00 a.m. to 11:00 a.m.**

This minicourse will introduce the participants to the Java programming language and its use in creating mathematical activities. No previous experience in Java programming will be assumed. Through the use of a Visual Development Environment and a MathToolkit that was developed with the support of an NSF grant, this hands-on workshop will lead the participants through the creation of some sample applets and introduce them to the MathToolkit. In addition, they will be provided with a more complete tutorial that they can take home that will teach them the Java programming language and its use in creating mathematical applets. Cost is \$90; enrollment limit is 30.

### MINICOURSE #5

VISUAL LINEAR ALGEBRA

**Organized by Eugene A. Herman, Grinnell College; Michael D. Pepe, Seattle Central Community College; and Eric P. Schulz, Walla Walla Community College**

**Part A: Thursday, 10:15 a.m. to 12:15 p.m.**

**Part B: Saturday, 1:00 p.m. to 3:00 p.m.**

This minicourse will introduce participants to a new, visual approach to teaching linear algebra. The primary objective is to create a dynamic learning environment in which students are actively engaged in learning the central concepts of linear algebra. Course materials cover the entire first course in linear

## MAA mini COURSES

algebra; they stress the development of visualization skills to acquire strong geometric intuition. Participants will have the option of working with the materials in Maple, Mathematica, or webMathematica. Cost is \$90; enrollment limit is 30. N.B. Those interested must register in advance; there is no on-site registration for this minicourse.

### MINICOURSE #6

USING INTERACTIVE LABS TO EXPLORE  
ABSTRACT ALGEBRA TOPICS

**Organized by Allen C. Hibbard, Central College, and Kenneth M. Levasseur, University of Massachusetts at Lowell**

**Part A: Thursday, 1:00 p.m. to 3:00 p.m.**

**Part B: Saturday, 3:15 p.m. to 5:15 p.m.**

Using Mathematica, participants will become engaged in examining interactive laboratory activities focusing on groups, rings, and morphisms. The notebooks, designed for exploration and investigation of these structures, are intended to expand upon or motivate classroom discussions. No programming with Mathematica is necessary (though minimal familiarity with the software is helpful) since packages are imported that define the required functionality. A CD with our packages and notes will be distributed. (On Thursday, 12:30 p.m. to 1:15 p.m., there will be a preliminary session available to acquaint those unfamiliar with Mathematica.) Go to <http://www.central.edu/eaam/> for more information. Cost is \$90; enrollment limit is 30.

### MINICOURSE #7

ORIGAMI IN UNDERGRADUATE MATHEMATICS COURSES

**Organized by Thomas C. Hull, Merrimack College**

**Part A: Wednesday, 9:00 a.m. to 11:00 a.m.**

**Part B: Friday, 9:00 a.m. to 11:00 a.m.**

Those who have studied origami may have unfolded their creations and marveled at the pattern of creases in the paper that result. Lovely mathematics, from geometry, combinatorics, and algebra lurks behind these creases. This material is easily understood by undergraduate majors, leads to numerous open questions, and offers a great opportunity for hands-on, discovery-based learning. This workshop will offer participants hands-on experience with the main areas of “origami-math” (modular origami, geometric constructions, and combinatorial modeling) to incorporate into their own classes. Experience either in paperfolding or in teaching geometry, algebra, or combinatorics would be useful. Cost is \$70; enrollment limit is 30.

### MINICOURSE #8

SOME MATHEMATICS OF LEONHARD EULER

**Organized by William W. Dunham, Muhlenberg College, and Edward C. Sandifer, Western Connecticut State University**

**Part A: Wednesday, 2:15 p.m. to 4:15 p.m.**

**Part B: Friday, 1:00 p.m. to 3:00 p.m.**

Euler wrote and published over 850 books and papers. They form the basis for huge segments of modern mathematics. We will survey his many contributions and take a close look at a few of them. We will demonstrate how to use Euler’s 18th-century mathematics in a 21st-century environment, and we will show by example why Laplace was giving good advice when he said, “Read Euler, read Euler. He is the master of us all.” Cost is \$60; enrollment limit is 60.

### MINICOURSE #9

PMET (PREPARING MATHEMATICIANS TO EDUCATE TEACHERS):  
GRADES 7–12

**Organized by Holly Hirst, Appalachian State University, and Jack Y. Narayan, SUNY College at Oswego**

**Part A: Wednesday, 4:30 p.m. to 6:30 p.m.**

**Part B: Friday, 3:15 p.m. to 5:15 p.m.**

What background does a mathematician need in order to teach mathematics courses for future teachers? This is the question being addressed by the PMET initiative funded by NSF and MAA. This minicourse will provide an overview of the initiative and will share videos, hands-on activities, presentations, and discussions related to teaching prospective middle grades and secondary teachers. Participants will also learn about resources that PMET has developed as well as programs planned for the future. Cost is \$60; enrollment limit is 60.

### MINICOURSE #10

TEACHING LINEAR ALGEBRA WITH APPLICATIONS

**Organized by Gilbert Strang, Massachusetts Institute of Technology**

**Part A: Thursday, 9:00 a.m. to 11:00 a.m.**

**Part B: Saturday, 9:00 a.m. to 11:00 a.m.**

Linear algebra is a crucial subject in the teaching and applications of mathematics. We hope to suggest new ideas in its presentation. Among those ideas is a range of problems whose exploration (by hand and mind, not by computer) will lead us to the major themes of linear algebra. The pure and applied parts of this subject will be intertwined in the minicourse, as they are in reality. In a way, the minicourse itself will try to show the fascination of teaching and learning and using linear algebra. The problems will be distributed (with some solutions!), and we describe our use of the course page, [web.mit.edu/18.06/www](http://web.mit.edu/18.06/www), and of computing, all open for discussion. Cost is \$60; enrollment limit is 60.

## MINICOURSE #11

### DEVELOPING YOUR DEPARTMENT'S ASSESSMENT PLAN

**Organized by William G. Marion, Valparaiso University, and Bonnie Gold, Monmouth University**

**Part A: Thursday, 1:00 p.m. to 3:00 p.m.**

**Part B: Saturday, 1:00 p.m. to 3:00 p.m.**

Most universities and, thus, individual departments are under pressure from accrediting agencies to develop and implement assessment plans to assess student learning. During the minicourse pairs (or larger groups) of members of a mathematical sciences department will develop, in workshop format, a proposed departmental mission statement and the skeleton of its individualized assessment plan. Sample assessment programs (developed by teams of mathematics faculty under the auspices of the MAA's NSF-funded assessment project, Supporting Assessment in Undergraduate Mathematics) will be discussed, and participants will share ideas with groups from similar departments to develop their own program. Cost is \$60; enrollment limit is 60.

## MINICOURSE #12

### INCORPORATING DISCRETE MATHEMATICS IN THE PREPARATION OF K–12 MATHEMATICS TEACHERS

**Organized by Lolina Alvarez, New Mexico State University**

**Part A: Wednesday, 9:00 a.m. to 11:00 a.m.**

**Part B: Friday, 9:00 a.m. to 11:00 a.m.**

More than a fixed set of topics, discrete mathematics is a way of thinking that deals with important and interesting problems in contemporary mathematics. Using some of these problems as starting points, we will expose, at different levels of sophistication, the mathematics of each situation. We will emphasize the interplay between mathematical content and methods of teaching and learning, and the insertion in the school curriculum of topics from discrete mathematics. Each participant will receive a collection of materials, including ready-to-use assignments. Cost is \$60; enrollment limit is 60.

## MINICOURSE #13

### THE FIBONACCI AND CATALAN NUMBERS

**Organized by Ralph P. Grimaldi, Rose-Hulman Institute of Technology**

**Part A: Wednesday, 2:15 p.m. to 4:15 p.m.**

**Part B: Friday, 1:00 p.m. to 3:00 p.m.**

In introductory courses in discrete or combinatorial mathematics one encounters the Fibonacci numbers and sometimes the Catalan numbers. This minicourse will review and then extend this first encounter as it examines some of the properties these numbers exhibit as well as applications where these sequences arise. A survey of applications dealing with chemistry, physics, computer science, linear algebra, set theory, graph theory, and number theory will show why these sequences are of interest and importance. Cost is \$60; enrollment limit is 60.

## MINICOURSE #14

### INTRODUCTION TO MATHEMATICAL CARD TRICKS

**Organized by Colm K. Mulcahy and Jeffrey A. Ehme, Spelman College**

**Part A: Wednesday, 4:30 p.m. to 6:30 p.m.**

**Part B: Friday, 4:30 p.m. to 6:30 p.m.**

Card tricks liven up any gathering—including mathematics classes—and can help to convince people that math is fun and that there is a rational explanation for some seemingly impossible events. This interactive introduction to mathematical card tricks will survey applications of permutations, binary and ternary numbers, probability and more, and will feature classic tricks based on the Gilbreath principle and faro shuffle. Cost is \$60; enrollment limit is 60.

## MINICOURSE #15

### FAIR ENOUGH? MATHEMATICS OF EQUITY

**Organized by John C. Maceli and Stanley E. Seltzer, Ithaca College**

**Part A: Thursday, 9:00 a.m. to 11:00 a.m.**

**Part B: Saturday, 9:00 a.m. to 11:00 a.m.**

Topics of fairness make terrific subject matter for a contemporary mathematics course. This minicourse introduces some fairness topics—apportionment, voting power, elections, fair allocation and equity, the census—with the goals of helping participants learn about these topics, see and use activities that support a course in fairness, and prepare to teach such a course. We will provide sample activities, projects, and a list of resources, including original papers accessible to undergraduates. Active participation is expected. Cost is \$60; enrollment limit is 60.

## MINICOURSE #16:

### GETTING STUDENTS INVOLVED IN UNDERGRADUATE RESEARCH

**Organized by Aparna W. Higgins, University of Dayton, and Joseph A. Gallian, University of Minnesota, Duluth**

**Part A: Thursday, 1:00 p.m. to 3:00 p.m.**

**Part B: Saturday, 1:00 p.m. to 3:00 p.m.**

This course will cover many aspects of facilitating research by undergraduates, such as finding appropriate problems, deciding how much help to provide, and presenting and publishing the results. Examples will be presented of research in summer programs and research that can be conducted during the academic year. Although the examples used will be primarily in the area of discrete mathematics, the strategies discussed can be applied to any area of mathematics. Cost is \$60; enrollment limit is 60.

# 87th Annual Meeting of the MAA

## MAA Contributed & Invited Paper SESSIONS

See the complete descriptions and instructions on how to participate in these sessions, beginning on page 25 in the May/June issue of FOCUS or at [http://www.ams.org/amsmtgs/2078\\_maacontrib.html](http://www.ams.org/amsmtgs/2078_maacontrib.html). Please note that the days and times listed are tentative.

Submitters should be aware that if your talk cannot be accommodated in the session of your choice, it will be submitted to the General Contributed Paper Session organizer for consideration. Please do not submit multiple abstracts.

### TEACHING A HISTORY OF MATHEMATICS COURSE

Joel K. Haack, University of Northern Iowa, and Amy E. Shell-Gellasch, SIAM-Germany  
*Wednesday morning*

### TEACHING OPERATIONS RESEARCH IN THE UNDERGRADUATE CLASSROOM

Dipa Choudhury, Loyola College, and Steven M. Hetzler, Salisbury State University  
*Wednesday morning*

### MATHEMATICAL EXPERIENCES FOR STUDENTS OUTSIDE THE CLASSROOM

Laura L. Kelleher, Massachusetts Maritime Academy, and Mary S. Hawkins, Prairie View A&M University  
*Wednesday morning*

### USES OF THE WWW THAT ENRICH AND PROMOTE LEARNING

Marcelle Bessman, Jacksonville University; Marcia P. Birken, Rochester Institute of Technology; Mary L. Platt, Salem State College; and Brian E. Smith, McGill University  
*Wednesday and Saturday afternoons*

### COURSES BELOW CALCULUS: A NEW FOCUS

Mary Robinson, University of New Mexico, Valencia Campus; Florence S. Gordon, New York Institute of Technology; Arlene H. Kleinstein, SUNY at Farmingdale; Norma M. Agras, Miami Dade Community College; Laurette B. Foster, Prairie View A&M University; and Linda Martin, Albuquerque T-VI.  
*Wednesday afternoon and Thursday morning*

### GETTING STUDENTS TO DISCUSS AND WRITE ABOUT MATHEMATICS

Sarah L. Mabrouk, Framingham State College  
*Wednesday afternoon*

### THE EFFECTIVE USE OF COMPUTER ALGEBRA SYSTEMS IN THE TEACHING OF MATHEMATICS

L. Carl Leinbach, Gettysburg College, and Edward A. Connors, University of Massachusetts  
*Wednesday afternoon*

### PLACEMENT STRATEGIES

Janet P. Ray, Seattle Central Community College; Susan L. Forman, Bronx Community College, CUNY; and Patricia R. Wilkinson, Borough of Manhattan Community College, CUNY  
*Thursday morning*

### CHAOTIC DYNAMICS AND FRACTAL GEOMETRY

Denny Gulick, University of Maryland, and Jon Scott, Montgomery College  
*Thursday morning*

### TRUTH IN USING THE HISTORY OF MATHEMATICS IN TEACHING MATHEMATICS

Victor J. Katz, University of the District of Columbia, and Eisso J. Atzema, University of Maine  
*Thursday morning*

### INNOVATIONS IN TEACHING DISCRETE MATHEMATICS

William E. Fenton, Bellarmine University, and Nancy L. Hagelgans, Ursinus College  
*Thursday afternoon*

### INITIATING AND SUSTAINING UNDERGRADUATE RESEARCH PROJECTS AND PROGRAMS

James A. Davis, University of Richmond, and Joel S. Foisy, State University of New York  
*Thursday afternoon*

### MATHLETS FOR TEACHING AND LEARNING MATHEMATICS

David M. Strong, Pepperdine University; Thomas E. Leathrum, Jacksonville State University; and Joe Yanik, Emporia State University  
*Thursday afternoon*

### STATISTICS EDUCATION DISCOURSE ON INFERENCE

John D. McKenzie Jr., Babson College, and Carolyn K. Cuff, Westminster College  
*Friday morning*

### MATH AND THE ARTS

Ann Robertson, Connecticut College; John M. Sullivan, University of Illinois, Urbana; Reza Sarhangi, Towson University; and Nathaniel A. Friedman, State University of New York, Albany  
*Friday morning*

### **APPLICATIONS OF MATHEMATICS IN COMPUTER SCIENCE**

William A. Marion, Valparaiso University  
*Friday morning*

### **MATHEMATICS EXPERIENCES IN BUSINESS, INDUSTRY, AND GOVERNMENT**

Philip E. Gustafson, Mesa State College, and Michael G. Monticino, University of North Texas  
*Friday morning*

### **TEACHING AND LEARNING OF UNDERGRADUATE MATHEMATICS**

Anne E. Brown, Indiana University South Bend; Marilyn P. Carlson, Arizona State University; and Draga D. Vidakovic, Georgia State University  
*Friday afternoon and Saturday morning*

### **MY FAVORITE DEMO: INNOVATIVE STRATEGIES FOR MATHEMATICS INSTRUCTORS**

David R. Hill, Temple University, and Lila F. Roberts, Georgia Southern University  
*Friday afternoon and Saturday morning*

### **MATHEMATICAL MODELS OF THE ENVIRONMENT**

Karen D. Bolinger, Clarion University; William D. Stone, New Mexico Institute of Mining and Technology; and Ahlam E. Tannouri, Morgan State University  
*Friday afternoon*

### **PHILOSOPHY OF MATHEMATICS**

Roger A. Simons, Rhode Island College, and Satish C. Bhatnagar, University of Nevada, Las Vegas  
The session will be punctuated with light refreshments and informal conversation, and will be followed by its annual business meeting at 6:00 p.m. If you have an interest in the philosophy of mathematics, please join us on Friday.  
*Friday afternoon*

### **FOCUS ON INTEGRATING GRAPHIC HANDHELDS INTO COLLEGIATE MATHEMATICS**

Charles E. Hofmann; LaSalle University, and Joseph R. Fiedler, California State University, Bakersfield  
*Saturday morning*

### **MATHEMATICS AND SPORTS**

Sean L. Forman, Saint Joseph's University, and Douglas Drinen, University of the South  
*Saturday morning*

### **TECHNOLOGY IN MATHEMATICS TEACHER PREPARATION COURSES**

Mary Ann Connors, Westfield State College, and Christine Browning, Western Michigan University, Kalamazoo  
*Saturday afternoon*

### **STRATEGIES THAT WORK TO POSITIVELY CHANGE STUDENT ATTITUDES TOWARD MATHEMATICS**

Caren L. Diefenderfer, Hollins University; Janet L. Andersen, Hope College; and Elizabeth G. Yanik, Emporia State University  
*Saturday afternoon*

### **GENERAL CONTRIBUTED PAPER SESSION**

Laura J. Wallace, California State University San Bernardino; Jacqueline Jensen, University of Oregon; and Gary Townsley, SUNY at Geneseo

*Wednesday–Saturday afternoons, and Saturday morning*

Papers may be presented on any mathematical topic. Papers that fit into one of the other sessions should be sent to that organizer, not to this session. Any paper that cannot be accommodated in one of the named contributed paper sessions will be diverted automatically to this session; therefore, papers should not be sent to more than one session organizer.





## MAA SESSIONS

### OPEN DISCUSSION ON BEGINNING-LEVEL COURSES

Organized by Donald B. Small, U.S. Military Academy  
*Wednesday, 9:00 a.m. to 10:20 a.m.*

An explosion of interest in the role of beginning-level courses has arisen within the past few years. The recognition that the large majority of students enrolled in mathematics are in the beginning level courses and the awareness that these courses are not successfully serving a “feeder” function into other mathematics courses has led to questions concerning their roles, content, and pedagogy. Panelists include Norma M. Agras, Miami-Dade Community College, and Bob Mayes, West Virginia University. The panel will be moderated by Jack Bookman, Duke University, and is sponsored by the CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY).

### QUANTITATIVE LITERACY ACROSS THE CURRICULUM

Organized by Rick Gillman, Valparaiso University; Kim Rheinlander, Dartmouth University; Emily Decker Larder and Gillie Malnarich, Evergreen State University  
*Wednesday, 2:15 p.m. to 3:35 p.m.*

Many institutions have made quantitative literacy a priority and are now in the process of changing their curriculum or instituting new requirements to meet that goal. This past summer, two MAA PREP workshops were held at which participants adapted and created QL materials appropriate for their own courses and students, drawing on materials developed at sites across the country. In addition, participants discussed a general framework for quantitative literacy by reading and discussing *Mathematics and Democracy* and *Radical Equations*. They developed strategies for assessing the effectiveness of the curricular changes they are promoting. Our panelists, participants from these workshops, will describe their experiences at the Northeast and Northwest PREP workshops on Quantitative Literacy Across the Curriculum. They will describe the programs that they envisioned at the workshops and their experiences at initiating these programs once they returned to their home campuses. The session is sponsored by the CUPM Subcommittee on Quantitative Literacy Requirements.

### SERVICE LEARNING IN MATHEMATICS: THEY WROTE THE BOOK

Organized by Jerry F. Dwyer, Texas Tech University  
*Wednesday, 2:15 p.m. to 3:35 p.m.*

This session presents descriptions of service learning activities as graded sections of mathematics classes. The organization of these activities and related implementation and grading issues will be discussed. Contributions in all areas of service learning in mathematics are solicited. Presentations related to preservice teacher training are particularly welcome for this session. Panelists include Josh Sabloff, Haverford College; Richard A. Zang, University of New Hampshire at Manchester; Perla L. Myers, University of San Diego; Dana S. Craig,

University of Central Oklahoma; and Lida McDowell, University of Southern Mississippi.

### WRITING TEXTBOOKS IN MATHEMATICS

Organized by Revathi Narasimhan, Kean University  
*Wednesday, 2:30 p.m. to 4:00 p.m.*

At some point or another, many of us have thought about writing a mathematics textbook. What does this involve? The panel, composed of experienced authors and acquisitions editors, will discuss various aspects of the textbook writing process, including reasons for writing a textbook, current market trends in textbooks at various levels, writing proposals for a textbook and the editorial process, what editors look for when evaluating a proposal, textbook writing and promotion and tenure issues, and some “nuts and bolts” details of producing a manuscript. There will be time for questions and answers from the audience. Panelists include Lynn Cox, Houghton-Mifflin; J. Douglas Faires, Youngstown State University; William Hoffman, Addison-Wesley; and Dan Kalman, American University. This session was organized by the 1994–99 Project NExT Fellows and is sponsored by MAA Project NExT.

### THE IMPACT OF LAPTOP COMPUTERS ON CLASSROOM INSTRUCTION

Organized by Donald B. Small, U.S. Military Academy  
*Wednesday, 3:45 p.m. to 5:05 p.m.*

Laptop computers are changing many, if not all, aspects of instruction. For example, is hand computation of derivatives and integrals an essential part of a calculus course in which students have laptop computers? What approximation skills are required to validate the output of computer algebra systems? How does the use of laptop computers effect testing? The panelists will discuss curricula impact of students using laptops in the classroom. They will share their experiences and lessons learned. Panelists include Panama Geer, Bryn Mawr College; Michael Huber, U.S. Military Academy; and Jim Rolfe, U.S. Air Force Academy. The session will be moderated by Joseph D. Myers, U.S. Military Academy, and is sponsored by the CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY).

### HISTORY OF MATHEMATICS (HOM) SIGMA ANNUAL MEETING AND INAUGURAL ANNUAL ADDRESS

Organized by Amy Shell-Gellasch, SIAM-Germany  
*Wednesday, 6:00 p.m. to 8:00 p.m.*

In addition to our annual meeting, The HOM SIGMA executive council is pleased to announce the inauguration of our first annual guest lecture. Peggy Kidwell and Amy Ackerberg-Hastings will present “Making sense of your department’s material culture”. In this talk you will learn how to identify, understand, and arrange mathematical objects and books you might find in your department. In many cases, math professors don’t need to leave their home institutions to explore the material culture of mathematics. Historic models, devices, and books may be tucked away in the drawers and closets of their own departments. For more information, visit the HOM

SIGMAA website, accessible from the MAA website, or contact Amy Shell-Gellasch at amy.shellgellasch@us.army.mil.

### **THE IMPACT OF TECHNOLOGY IN CALCULUS COURSES ON LONG-TERM STUDENT PERFORMANCE AND EMPLOYMENT**

Organized by Susan L. Ganter, Clemson University, and Jack Bookman, Duke University

*Thursday, 9:00 a.m. to 10:20 a.m.*

More than fifteen years after the funding of the first NSF calculus reform projects, there is very little consensus about the degree to which these efforts—and particularly technology—have succeeded in improving the post-calculus achievement of the participating students. This panel will address this issue by discussing results from a multiinstitutional project that includes data for the purpose of comparing the performance of reform and traditional calculus students in courses beyond calculus, examining students prior to graduation from college to determine these students' fundamental notions of calculus, determining the extent to which potential employers value the ideals supported by calculus reform efforts, and training a group of on-site evaluators capable of developing and sustaining a viable evaluation plan on multiple campuses beyond this project. Panelists include Betsy Darken, University of Tennessee at Chattanooga; Elton Graves, Rose-Hulman Institute of Technology; Glenn Ledder, University of Nebraska; and Howard L. Penn, U.S. Naval Academy. The session is sponsored by the CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY).

### **NATIONAL SCIENCE FOUNDATION PROGRAMS SUPPORTING LEARNING AND TEACHING IN THE MATHEMATICAL SCIENCES**

Organized by Elizabeth J. Teles, Calvin L. Williams, Lee L. Zia, NSF Division of Undergraduate Education; John Bradley, NSF Division of Elementary, Secondary, and Informal Education; James H. Lightbourne, NSF Division of Graduate Education; and Lloyd E. Douglas, NSF Division of Mathematical Sciences

*Thursday, 9:00 a.m. to 10:20 a.m.*

A number of NSF divisions offer a variety of grant programs that support innovations in learning and teaching in the mathematical sciences. These programs will be discussed along with examples of successful projects. In addition, anticipated budget highlights and other new initiatives for the next fiscal year will be presented.

### **SUMMA SPECIAL PRESENTATION**

Organized by William A. Hawkins Jr., MAA and the University of the District of Columbia

*Thursday, 9:00 a.m. to 10:20 a.m.*

Panelists will discuss programs for increasing diversity among mathematics students. The panel will be moderated by William A. Hawkins Jr., director of the SUMMA (Strengthening Underrepresented Minority Mathematics Participation) program. Panelists include Jong Pil Lee, SUNY College at Old Westbury, and Thomas Martin, California State University at Chico. The panel is sponsored by the MAA Committee on

Minority Participation in Mathematics (CMPM). There will be ample time for discussion.

### **MENTORING NEW FACULTY**

Organized by T. Christine Stevens, St. Louis University; Joseph A. Gallian, University of Minnesota Duluth; and Aparna W. Higgins, University of Dayton

*Thursday 9:00 a.m. to 10:20 a.m.*

Panelists Emily Ann Hynds, Sanford University; Jim Lewis, University Nebraska, Lincoln; Catherine M. Murphy, Purdue University Calumet; and Thomas Q. Sibley, Saint John's University, will discuss formal and informal mentoring programs and practices for new faculty offered in their departments. What new faculty desire in the way of mentoring will also be addressed. This session is sponsored by MAA Project NExT.

### **UNDERGRADUATE PROGRAMS AND COURSES IN THE MATHEMATICAL SCIENCES: A CUPM CURRICULUM GUIDE**

Organized by Harriet S. Pollatsek, Mount Holyoke College, and Susan L. Ganter, Clemson University

*Thursday, 10:45 a.m. to 12:05 p.m.*

The MAA Committee on the Undergraduate Program in Mathematics (CUPM) periodically reviews its curricular recommendations for college and university departments and revises them as needed to fit new circumstances. The 2004 CUPM Curriculum Guide is the first explicitly to address the needs of nonmajors as well as majors. The panelists, William H. Barker, Bowdoin College; David M. Bressoud, Macalester College; Susanna Epp, DePaul University; Susan L. Ganter; Clemson University, and Bill Haver, Virginia Commonwealth University, will describe the new CUPM recommendations and discuss implementation issues. The CUPM Curriculum Guide has been formed by the CRAFTY Curriculum Foundations Project, and from the MAA report CUPM Discussion Papers about Mathematics and Mathematical Sciences in 2010: What Should Students Know?, and other reports, plus focus groups on earlier drafts. Most recently, it was revised based on feedback from MAA committees, individual mathematicians, and professional societies in the mathematical sciences and allied disciplines. The session will be moderated by Harriet Pollatsek and is sponsored by the Committee on the Undergraduate Program in Mathematics (CUPM).

### **FINDING YOUR NEXT JOB**

Organized by Chawne M. Kimber, Lafayette College, and David T. Kung, St. Mary's College of Maryland

*Thursday, 10:45 a.m. to 12:05 p.m.*

Panelists will present strategies for conducting a search for a second job. Many angles will be covered, including postdoc to tenure-track, academic to industry, liberal arts college to research institution, and just one job to another. The session is cosponsored by the Young Mathematicians' Network and MAA Project NExT.

## MAA SESSIONS

### ASSESSMENT IN A REFOCUSED COLLEGE ALGEBRA PROGRAM

Organized by Donald B. Small, U.S. Military Academy  
*Thursday, 10:45 a.m. to 12:05 p.m.*

Refocusing college algebra to emphasize modeling/problem solving, communications skills, and conceptual understanding requires changing the focus and means of assessment. The lack of suitable assessment tools and guidelines is often a barrier to implementing change. For example, how does one assess a student's development of modeling/problem solving, communication skills, or conceptual understanding? The speakers will address these particular questions as well as others. Panelists include Paul Dirks, Miami-Dade Community College; Laurette B. Foster, Prairie View A & M University; and Bruce C. Crauder, Oklahoma State University. The panel will be moderated by Norma Agrass, Miami-Dade Community College, and is sponsored by the CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY).

### SUCCESSFUL ACTIVITIES FOR A MATH CLUB

Organized by Jennifer M. McNulty, University of Montana, and Janet C. Woodland, University of Arkansas  
*Thursday, 1:00 p.m. to 2:20 p.m.*

Undergraduate education can be enhanced through activities outside the classroom. For example, attending a lecture on Ramsey Theory, viewing a movie about chaos, or hearing the experiences of an industrial mathematician. Such events are often inspiring to students. These types of activities are typically sponsored by some type of math club, be it an MAA Student Chapter, a Pu Mu Epsilon Chapter, or university club. In this session activities that have increased student enthusiasm for mathematics are discussed and avenues for future growth are explored. Panelists Jean Bee Chan and Elaine McDonald, Sonoma State University; J. Douglas Faires, Youngstown State University; Donna L. Flint, South Dakota State; Philip K. Hotchkiss, Westfield State College; Timothy R. Ray, Southeast Missouri State University; and Robert S. Smith, Miami University, will share their experiences. Audience participation, both in regard to questions as well as ideas for activities, is encouraged.

### MATHEMATICS EDUCATION IN A RESEARCH-INTENSIVE DEPARTMENT: WHAT MAKES IT WORK?

Organized by David A. Gay, Deborah Hughes Hallett, William G. McCallum, and Fred Stevenson, University of Arizona  
*Thursday, 1:00 p.m. to 2:20 p.m.*

Research mathematicians and mathematics educators at universities have traditionally worked in different colleges. In many cases there was little or no interaction between them. But times are changing. Educators and mathematicians are finding that each has a lot to offer the other. Mathematics faculties are now finding ways of bringing educators into their ranks. This session will focus on examples of how this is being accomplished at several research-intensive universities. The session will begin with an overview of how the collaboration

of mathematician and educator has successfully taken root and grown. Panelists Marilyn P. Carlson, Arizona State University; Jim Lewis, University of Nebraska-Lincoln; Joan R. Leitzel, MSEB; William G. McCallum and Fred Stevenson, University of Arizona, will discuss how this has occurred over the past decade at their respective institutions. A national perspective from the MSEB will wrap up the session.

### TECHNOLOGY AND THE MATHEMATICS MAJOR

Organized by Ioana Mihaila, California State Polytechnic University at Pomona  
*Thursday, 1:00 p.m. to 2:30 p.m.*

There has been much discussion in the mathematical community about changing the traditional mathematics major to reflect new technologies and changing emphases. These changes affect both the standard mathematics curriculum and the way that courses are taught. The panelists will offer their expertise and advice on how to wisely incorporate technology into the math major. The panelists are active mathematicians from academe and from organizations involved in mathematics education and research. This session was organized by the 1994–99 Project NExT Fellows to address issues of concern to faculty who have four to ten years of teaching experience. All meeting participants are invited to attend. Panelists include Bernard W. Banks, California State Polytechnic University, Pomona; Robert L. Lopez, Rose-Hulman Institute of Technology and Waterloo Maple; Olympia E. Nicodemi, State University of New York, Geneseo; and Kathleen G. Snook, Consortium for Mathematics and its Applications. The session is sponsored by MAA Project NExT.

### MAA PROJECT NEXT AND YMN POSTER SESSION

Organized by Kevin E. Charlwood, Washburn University, and Kenneth A. Ross, University of Oregon  
*Thursday, 2:00 p.m. to 4:00 p.m.*

Project NExT and the Young Mathematicians' Network invite submissions of abstracts for this session. We expect to accept thirty posters from different areas within the mathematical sciences. Only trifold, self-standing 48" by 36" tabletop posterboard will be provided. Additional material or equipment is the responsibility of the presenters. Applications should be submitted via email to Kevin Charlwood, [kevin.charlwood@washburn.edu](mailto:kevin.charlwood@washburn.edu), or Kenneth Ross, [ross@math.uoregon.edu](mailto:ross@math.uoregon.edu), by December 9, 2003. This session is sponsored by the Young Mathematicians' Network and MAA Project NExT.

### THE UNDERGRADUATE MATHEMATICAL STATISTICS SEQUENCE

Organized by Carolyn K. Cuff, Westminster College  
*Thursday, 2:40 p.m. to 4:00 p.m.*

A two-course sequence in mathematical probability and statistics has traditionally been part of the mathematics major. Computer technology, AP Statistics, courses in the concepts of statistics, demands of industry, and graduate school admission requirements may necessitate changes in these courses. Panelists Matthew J. Hassett, ASA, AdvancePCS; Elliot A. Tanis, Hope

College; Douglas A. Wolfe, The Ohio State University; and Deborah Nolan, UC Berkeley, will present their perspective on the current and future relevance of the sequence. The session will be moderated by Allan J. Rossman, California Polytechnic State University at San Luis Obispo, and is sponsored by the MAA SIGMAA on Statistics Education.

### **THE HISTORY OF APPLICATIONS IN TEACHING UNDERGRADUATE MATHEMATICS: 1950–2000**

Organized by Joseph Malkevitch, York College, CUNY; Walter Meyer, Adelphi University; and Jack Winn, SUNY at Farmingdale

*Thursday, 2:40 p.m. to 4:00 p.m.*

Today one often finds applications in undergraduate mathematics courses, but it wasn't always so. This panel will discuss how and why the greater emphasis arose. Questions will include: What were the major milestones in bringing about the change? What were the reasons behind the push toward applications? Did new ideas in research influence the changes at the undergraduate level? Was it an internal development in pedagogy? Did factors outside mathematics (such as developments in other disciplines, perceived national needs, the role of mathematics in World War II, Sputnik, NSF policies, the availability of computers, changes in the student body, or the "relevance" movement of the 60s) have an influence? Was the change uncontroversial? Is there more or less distinction between mathematics and applications today? Panelists drawn from both the teaching and research communities include Peter D. Lax, Courant Institute; Donald W. Bushaw, University of Washington at Pullman; Chandler Davis, University of Toronto; Andrew M. Gleason, Harvard University; and Daniel P. Maki, Indiana University. The session is sponsored by the MAA SIGMAA on History of Mathematics.

### **WEB SIGMAA PANEL DISCUSSION AND INAUGURAL BUSINESS MEETING**

Organized by Kirby A. Baker, UCLA, and Marcelle Bessman, Jacksonville University

*Thursday, 5:45 p.m. to 7:15 p.m.*

The focus of the new WEB SIGMAA is mathematics instruction using the World Wide Web. The panel members will discuss the ongoing efforts of the MAA in this area and the ways in which the members of WEB SIGMAA and others can contribute. Light refreshments will be served. All interested participants are encouraged to attend.

### **PREPARING MATHEMATICIANS TO EDUCATE TEACHERS**

Organized by Alan C. Tucker, SUNY at Stony Brook, and Bernard L. Madison, University of Arkansas at Fayetteville

*Friday, 9:00 a.m. to 10:20 a.m.*

The MAA's project Preparing Mathematicians to Educate Teachers (PMET) is a multifaceted initiative of the MAA to help mathematical sciences departments enhance their capacity to improve K–12 mathematics teaching. As mathematics departments seek to offer high-quality college courses on the mathematical knowledge needed for K–12 teaching, they face a major challenge in finding qualified instructors. Mathematics

faculty know the mathematics well but are normally ill-prepared to help teachers connect it to K–12 instruction. The major components of PMET are minicourses and summer workshops, minigrants, regional networks, and a variety of dissemination efforts. Panelists Ed Dubinsky, Cincinnati, Ohio, and Alan C. Tucker will address some of the results of PMET and how others can become involved. PMET is funded by NSF with additional support from Texas Instruments.

### **PROPOSAL WRITING WORKSHOP FOR GRANT APPLICATIONS TO THE NSF DIVISION OF UNDERGRADUATE EDUCATION**

Organized by Elizabeth J. Teles, Calvin L. Williams, and Lee L. Zia, NSF Division of Undergraduate Education

*Friday, 9:00 a.m. to 10:20 a.m.*

Presenters will describe the general NSF grant proposal process and consider particular details relevant to programs in the Division of Undergraduate Education. Attendees of this session will have an opportunity to read sample proposals and take part in a mock panel review of proposals.

### **WRITING EXPOSITORY MATHEMATICS**

Organized by Jed Herman, University of Wisconsin at Stevens Point; Jennifer Hontz, Meredith College; and George W. Moss, University of Virginia's College at Wise

*Friday, 9:00 a.m. to 10:20 a.m.*

Are you interested in writing expository articles in mathematics? This panel discussion includes experienced authors of expository articles and current or former editors of MAA or AMS publications. Panelists Lowell W. Beineke, Indiana University-Purdue; Ezra Brown, Virginia Tech; Frank A. Farris, Santa Clara University; Underwood Dudley, DePauw University; and Keith J. Devlin, Stanford University, will provide advice about writing and publishing expository articles in mathematics. They will discuss how to identify suitable topics, how to organize and write such articles, and how to choose a suitable journal. This session was organized by the 1994–99 MAA Project NExT Fellows.

### **ASSESSMENT OF STUDENT LEARNING IN UNDERGRADUATE MATHEMATICS: WORKS IN PROGRESS**

Organized by William E. Haver, Virginia Commonwealth University, and Bernard L. Madison, University of Arkansas

*Friday, 9:00 a.m. to 11:00 a.m.*

Posters are invited that describe an institution's program of assessment of student learning in a curricular block of undergraduate mathematics courses. This poster session is aimed at assessment programs that are in the early stages of development and implementation. We expect that those presenting their programs will seek guidance and suggestions from those who attend the poster session. The session is sponsored by the NSF-supported MAA project Supporting Assessment in Undergraduate Mathematics (SAUM). The curricular blocks that have been identified as focus areas by SAUM are (1) mathematics major, (2) mathematics for teachers, (3) general education (or quantitative literacy) courses, (4) placement/developmental programs, (5) mathematics for and

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in mathematics-intensive majors, and (6) innovations (e.g. reform courses). Programs of assessment in these six focus areas are especially invited, but programs of assessment in other curricular blocks may be contributed. Contributions should present a clear description of the assessment design and preliminary results. The following outline is suggested to the extent that the assessment program has been implemented: Background and Goals: What did we hope to accomplish? Description: What did we do? For example, developing the assessment program, details of the assessment program, and revisions based on initial experience (if applicable). Insights: What did we learn? For example, findings and success factors, use of the findings, and next steps and recommendations. More details can be found at <http://www.maa.org/SAUM/index.html>. The deadline for submissions is December 9, 2003. Abstracts of posters should be sent to Bernard L. Madison, [bmadison@mail.uark.edu](mailto:bmadison@mail.uark.edu).

### MATHEMATICS FOR BUSINESS DECISIONS

Organized by Richard Thompson and Christopher Lamoureux, University of Arizona

*Friday, 9:00 a.m. to 11:00 a.m., 1:00 p.m. to 3:00 p.m., 5:00 p.m. to 7:00 p.m.*

After five years of development, and testing by thousands of students, the Mathematical Association of America is publishing the electronic texts *Mathematics for Business Decisions, Parts 1 and 2*. Jointly written by a mathematician and a professor of finance, these e-texts feature four interdisciplinary, multimedia projects for lower division students in business and public administration. The projects involve: Loan Work Outs, Stock Option Pricing, Marketing Computer Drives, and Bidding on an Oil Lease. The two course sequence, including probability, simulation, calculus, and optimization, is designed to replace the traditional combination of finite mathematics and brief calculus. We will demonstrate the new materials, discuss the challenges and rewards of teaching the program, and allow plenty of time for hands-on computer experimentation with the texts. Participants will receive a Guided Tour CD with video and narrated interactive PowerPoint demonstrations. Examination copies of both e-texts will also be provided.

### VOICES OF THE PARTNER DISCIPLINES: BUILDING ON THE MAA CURRICULUM FOUNDATIONS PROJECT

Organized by Tevian Dray, Oregon State University; Deborah Hughes Hallett, University of Arizona; Matthias Kawski, Arizona State University; and William G. McCallum, University of Arizona

*Friday, 1:00 p.m. to 2:20 p.m.*

As part of the Curriculum Foundations Project of the MAA, faculty in other disciplines made recommendations for the mathematics curriculum through a series of eleven workshops

held from 1999 to 2001, culminating in the MAA report *A Collective Vision*. This session builds on these workshops by bringing the conversations between mathematicians and those in partner disciplines to a larger audience. Panelists Corinne A. Manogue, Department of Physics at Oregon State University; Ron Roedel, Associate Dean for Academic Affairs, Arizona State University College of Engineering and Applied Sciences; and Michael Zeilik, Department of Physics and Astronomy, University of New Mexico, will speak on the mathematical needs and desires of their respective disciplines, both present and future, for the courses taken by their students.

### SESSION FOR CHAIRS: THE CHAIR'S ROLE IN TEACHING TEACHERS

Organized by Catherine M. Murphy, Purdue University Calumet, and Daniel P. Maki, Indiana University

*Friday, 1:00 p.m. to 2:20 p.m.*

A panel of leaders experienced in programs to develop preservice teachers of mathematics will present their perspective on the topic. This will be followed by a question and answer period. Panelists include Benjamin M. Freed, Clarion University; Sidney Graham, Central Michigan University; Jim Lewis, University of Nebraska-Lincoln; and Alan C. Tucker, SUNY at Stony Brook.

### PROJECTS SUPPORTED BY THE NSF DIVISION OF UNDERGRADUATE EDUCATION

Organized by Jon W. Scott, Montgomery College

*Friday, 1:00 p.m. to 3:00 p.m.*

This poster session will feature principal investigators (PIs) presenting progress and outcomes from various NSF-funded projects in the Division of Undergraduate Education. Ample opportunity will be permitted for attendees to engage in small group discussions with the PIs and to network with each other. Information about each presenter and her/his project will appear in the program. Only trifold, self-standing 48" by 36" tabletop posterboard will be provided. Additional material or equipment is the responsibility of the presenters.

### PRESENTATIONS BY TEACHING AWARD RECIPIENTS

*Friday, 2:30 p.m. to 4:00 p.m.*

Winners of the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching will give presentations on the secrets of their success.

### CINEMATH: MATHEMATICS ON THE SILVER SCREEN

Organized by Charlie L. Smith, Park University

*Friday, 4:15 p.m. to 6:00 p.m.*

The motion picture, a relatively recent technological development, can become a marvelous tool for introducing many mathematical topics, ranging from the Pythagorean Theorem to the Twin Prime Conjecture. This presentation will consist of film excerpts with mathematical content, each followed by a rigorous analysis and explanation of the material. A list of movies containing mathematical references will be provided.

### **SIGMAA ON RESEARCH ON UNDERGRADUATE MATHEMATICS EDUCATION SESSION AND BUSINESS MEETING**

Organized by Anne E. Brown, Indiana University South Bend  
*Friday, 4:00 p.m. to 6:00 p.m.*

This SIGMAA is a group formed for mathematics educators and professional mathematicians interested in research on undergraduate mathematics education. There will be welcoming comments, the business meeting, the election of officers, and an invited address by Chris Rasmussen of Purdue University, Calumet exemplifying research on undergraduate mathematics education.

### **NONPERMANENT INSTRUCTORS: IMPLICATIONS AND ISSUES**

Organized by Teri J. Murphy, University of Oklahoma, and Natasha M. Speer, Michigan State University  
*Saturday, 9:00 a.m. to 10:20 a.m.*

Nontenured/tenure-track instructors teach a large proportion of college mathematics courses, especially lower-division. Panelists will identify and discuss issues for these instructors as employees, issues for departments as employers, and the need for professional development opportunities for nontenured/tenure-track instructors. The session is sponsored by the MAA-AMS Committee on Teaching Assistants and Part-Time Instructors.

### **MATHEMATICIANS AND MATHEMATICS TEACHER EDUCATORS WORKING TOGETHER TO IMPROVE K–12 MATHEMATICS EDUCATION**

Organized by Jodie D. Novak, University of Northern Colorado  
*Saturday, 9:00 a.m. to 10:20 a.m.*

The purpose of this panel is to present and discuss issues that arise when mathematicians and mathematics teacher educators work together with K–12 mathematics teachers. The panelists are two mathematicians and two mathematics teacher educators who have been working together over the last three years to deliver mathematics professional development for K–12 teachers. The panelists are: Jack Price, past president of the National Council of Teachers of Mathematics (NCTM); Judith E. Jacobs, former NCTM board member and past president of the Association of Mathematics Teacher Educators (AMTE); Randall J. Swift, research mathematician; and Jodie D. Novak, research mathematician. In the panel discussion we will address the following points: the importance of mathematics teacher educators and mathematicians working collaboratively as peers and developing respect for what each brings to working with teachers; the synergy created when mathematicians and mathematics educators work together; the benefits to mathematics teacher educators, mathematicians, and K–12 teachers from this collaboration; first steps for mathematicians in mathematics professional development for K–12 teachers; a natural progression of responsibility for mathematicians in working with K–12 teachers; and field experiences that will provide mathematicians a different perspective from which to understand the issues K–12 teachers face. There will be time for discussion and questions from the audience.

### **DOCTORATES IN MATHEMATICS EDUCATION: WHERE DO THEY GO? WHAT DO THEY DO? HOW CAN MATHEMATICS DEPARTMENTS CONTRIBUTE?**

Organized by Robert E. Reys, University of Missouri-Columbia  
*Saturday, 9:00 a.m. to 10:20 a.m.*

There is an acute shortage of doctorates in mathematics education, because doctorates in mathematics education pursue many different career options. Some options and career directions taken by recent graduates will be presented and different ways in which faculty in departments of mathematics might contribute will be discussed. Panelists include Douglas B. Aichele, Oklahoma State University; Rick Billstein, University of Montana; and Ira J. Papick, University of Missouri.

### **WHAT ARE COLLEGES DOING WITH STUDENTS WITH AP PLACEMENT?**

Organized by Martin E. Flashman, Humboldt State University  
*Saturday, 1:00 p.m. to 2:20 p.m.*

A rising number of students now enter colleges with high grades on the Advanced Placement Calculus Examinations. These students form an important segment of the college freshman population, with potential for continuing work in science and mathematics. This panel will consider what is happening to these students in their placement and continuation in mathematical studies, what might be done to enhance their early experiences with mathematics at colleges and universities, and current approaches that encourage them to continue work in mathematics. Panelists include Shahriar Shahriari, Pomona College; Morton Brown, University of Michigan; Wade Ellis Jr., West Valley College; and Susan Kornstein, The College Board. The session is sponsored by the CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY).

### **WHAT CAN YOU DO WITH A DEGREE IN MATHEMATICS?**

Organized by John A. Vano, University of Wisconsin-Madison, and Kim Roth, Wheeling Jesuit University  
*Saturday, 1:00 p.m. to 2:20 p.m.*

Ever wanted to know what all of your options are for careers with your math degree? This panel will talk about some of the options, from industry to grad school and other things in between. Undergraduate and graduate students are especially encouraged to attend.

### **ORAL PRESENTATIONS: LET'S TALK ABOUT IT!**

Organized by Tom J. Linton, Central College; Suzanne Dorée, Augsburg College; Nancy L. Hagelgans, Ursinus College; and Richard J. Jardine, Keene State College  
*Saturday, 1:00 p.m. to 2:20 p.m.*

This session will introduce and elaborate on the main points of using oral presentations in mathematics classes. This will be an active learning session where participants will work in small groups at various stations. These stations include: “Why do oral presentations?” “How do you do it?” “How do you prepare the students?” “How do you assess an oral presentation?”

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### REVISITING CROSSROADS: CONTINUING THE DIALOGUE ON TWO-YEAR COLLEGE MATHEMATICS

Organized by Susan S. Wood, J. Sargeant Reynolds Community College

*Saturday, 2:30 p.m. to 3:30 p.m.*

Panelists will describe a project to revisit the 1995 AMATYC Standards and the development of a vision and recommendations for two-year college mathematics education. Attention is given to the student and learning, faculty and teaching, mathematics content challenges, and outside communities. Resting upon revised basic principles, it is expected that a written document will be released in 2006 with supporting products that use a variety of media. In addition, a set of "Standards Supporting Student Learning" will complement the "Standards for Intellectual Development, Content, and Pedagogy" from the 1995 Crossroads. The goals of the session are to inform attendees about the project to revisit the 1995 AMATYC Standards, Crossroads in Mathematics: Standards for Introductory College Mathematics Before Calculus, and to collect input from attendees on the project and an annotated outline. Panelists will include Judy E. Ackerman, Montgomery College, and Susan S. Wood.

### HOW TO IMPLEMENT CURRICULUM CHANGE

Organized by Donald B. Small, U.S. Military Academy

*Saturday, 2:45 p.m. to 4:05 p.m.*

The past fifteen years has been a time of change in undergraduate mathematics. Expectantly, there will be continued improvements to college algebra, precalculus, calculus, linear algebra, differential equations, and other courses. Accessibility of new technologies, advances in learning research, and accountability to the workplace have fueled the

reform efforts. Panelists Mike Moody, Olin University; Stephen B. Maurer, Swarthmore College; and Jeff Floyd, Texas A&M University, will share their experiences and expertise in implementing change. The session will be moderated by Gary W. Krahn, U.S. Military Academy, and is sponsored by the CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY).

### INFORMAL SESSION ON ACTUARIAL EDUCATION

Organized by Krzysztof M. Ostaszewski, Illinois State University, and Curtis E. Huntington, University of Michigan

*Saturday, 2:45 p.m. to 4:45 p.m.*

This is an informal session to discuss current issues in actuarial education. The presenters will discuss latest developments in the actuarial examinations system and the relationship of professional actuarial societies to academia. Refreshments will be provided.

### HOW TO ASSESS PROBLEM SOLVING

Organized by Donald B. Small, U.S. Military Academy

*Saturday, 4:15 p.m. to 5:35 p.m.*

Developing problem-solving skills in the modeling sense is a central component in refocusing courses to emphasize process, conceptual understanding, and student growth. Assessing the extent to which a student achieves the goal of becoming a competent and confident problem solver is a very difficult. Panelists Jack Bookman, Duke University; Alex J. Heidenberg, U.S. Military Academy; Bill Haver, Virginia Commonwealth University; and Bonnie Gold, Monmouth University, will share their experience and expertise in addressing this type of assessment. The session will be moderated by Kathleen G. Snook, Consortium for Mathematics and Its Applications, and is sponsored by the CUPM Subcommittee on Curriculum Renewal Across the First Two Years (CRAFTY).

## MAA American Mathematics Competitions Program Seeks MOSP-IMO Leader

The MAA seeks a mathematician to be Academic Director of the Mathematical Olympiad Summer Program June-July, 2004 in Lincoln, NE and Leader of the US delegation to the International Mathematical Olympiad in Athens, Greece July 6-18, 2004. Must be excellent mathematical problem solver, have excellent teaching skills and be able to work with exceptionally talented high schools students, and be able to represent the USA and the MAA. Experience with AMC and Olympiad style math competitions is desired. The position is renewable for succeeding summer programs in 2005 and 2006. Please send letter of application and resume by November 1, 2003, to Prof. Steve Dunbar, MAA American Mathematics Competitions, 1740 Vine Street, Lincoln, NE. Please direct your inquiries about the position to Professor Dunbar at 1-402-472-6206 or [sdunbar@math.unl.edu](mailto:sdunbar@math.unl.edu).

## MAA student ACTIVITIES

### STUDENT LECTURE

FRACTIONAL CALCULUS WITH APPLICATIONS  
**Mark M. Meerschaert, University of Nevada**  
*Friday, 1:00 p.m.*

### UNDERGRADUATE STUDENT POSTER SESSION

**Organized by Mario U. Martelli, Claremont McKenna College, and sponsored by the Committee on Undergraduate Student Activities and Chapters (CUSAC)**  
*Friday, 4:00 p.m. to 6:30 p.m.*

Send title and abstract (not longer than half page) by e-mail to [mmartelli@mckenna.edu](mailto:mmartelli@mckenna.edu), or by regular mail to Mario U. Martelli, Mathematics Department, Claremont McKenna College, Claremont, CA 91711, by December 9, 2003. Include author's name, address, phone number, email, affiliation, name and affiliation of faculty advisor, name of the sponsoring program (NSF-REU, NSA, etc.), and request if electricity is needed for the presentation. When the poster is authored by more than one student, please indicate the one who will communicate with Mario Martelli. Notification of acceptance will be emailed two weeks after the abstract has been received. Apply early! Space is limited. The session is reserved to undergraduates and first-year graduate students submitting posters on work done while undergraduates. Each poster will be evaluated by at least three judges, and the best posters will receive monetary awards provided by the MAA, AMS, AWM, and CUR. Only trifold, self-standing 48" by 36" tabletop posterboard will be provided. Additional material or equipment is the responsibility of the presenters.

## MAA MEETINGS

**BOARD OF GOVERNORS, TUESDAY,**  
*8:30 a.m.–4:00 p.m.*

**SECTION OFFICERS, WEDNESDAY,**  
*2:30 p.m. – 5:00 p.m.*

**BUSINESS MEETING, SATURDAY,**  
*11:10 a.m.–11:40 a.m.*

**JOINT PME AND MAA STUDENT CHAPTER  
ADVISORS' BREAKFAST, FRIDAY,**  
*7:00 a.m.–8:00 a.m.*

*See the listings for various receptions in the "Social Events" section.*

## MAA short COURSE

### THE HISTORY OF MATHEMATICAL TECHNOLOGIES: EXPLORING THE MATERIAL CULTURE OF MATHEMATICS

**Organized by Amy Shell-Gellasch, SIAM-Germany, and Glen Van Brummelen, Bennington College**  
*Monday and Tuesday, January 13 and 14*

This short course will explore the history, development, use, and significance of various mathematical devices throughout history. Devices investigated will include sun dials, linkages, navigational and surveying devices, early computing devices, and early computers. Presenters will bring in actual historical devices when possible. The sessions will be a mix of traditional presentations, followed by a hands-on demonstration and question period. Topics will cover calculations and Mensuration devices from various eras, from ancient to modern times. Our finale will be a presentation on mathematical devices at world's fairs. Presenters include Lennart Berggren, Simon Fraser University; and James Evans, University of Puget Sound, Instruments of the ancient astronomers: Mathematics and history; Ed Sandifer, Western Connecticut State University, Fourier without the formula: How harmonic analyzers work; Daina Tainima, Cornell University, What linkages have to do with mathematics; David Weil, Computer Museum of America, Early computing devices; and Peggy Aldrich Kidwell, National Museum of American History, Mathematical instruments at the fairs.

Please note that there is a separate registration fee for this Short Course. To register in advance, please use the Advance Registration/Housing Form found on page 31 of this issue, or see [http://www.ams.org/amsmtg/2078\\_registration.html](http://www.ams.org/amsmtg/2078_registration.html). Advance registration fees are \$125/member; \$175/nonmember; and \$50/student, unemployed, emeritus. On-site registration fees are \$140/member; \$190/nonmember; and \$60/student, unemployed, emeritus.





## AMS invited ADDRESSES

### COLLOQUIUM LECTURES CONFORMAL INVARIANTS AND PARTIAL DIFFERENTIAL EQUATIONS

**Sun-Yang Alice Chang, Princeton University**  
*Wednesday, Thursday, Friday, 1:00 p.m.*

### JOSIAH WILLARD GIBBS LECTURE TITLE TO BE ANNOUNCED

**Eric Lander, Whitehead Institute for Biomedical Research**  
*Wednesday, 8:30 p.m.*

### THE STATUS OF THE CLASSIFICATION OF THE FINITE SIMPLE GROUPS

**Michael Aschbacher, California Institute of Technology**  
*Wednesday, 10:05 a.m.*

### TITLE TO BE ANNOUNCED

**Hyman Bass, University of Michigan**  
**(Retiring Presidential Address)**  
*Thursday, 3:20 p.m.*

### RANDOM PLANAR CURVES AND CONFORMAL INVARIANCE

**Gregory F. Lawler, Cornell University**  
*Friday, 10:05 a.m.*

### TITLE TO BE ANNOUNCED

**Eva Tardos, Cornell University**  
*Thursday, 2:15 p.m.*

### PROPERTIES OF “ALMOST EVERY” IMAGE OF COMPACT SETS

**James A. Yorke, University of Maryland**  
*Friday, 9:00 a.m.*



## AMS special SESSIONS

### ARITHMETICAL ALGEBRAIC GEOMETRY

**Kirti Joshi, Minhyong Kim, and Adrian Vasiu,**  
**University of Arizona**  
*Friday and Saturday afternoons and Saturday morning*

### CELESTIAL MECHANICS

**Samuel R. Kaplan, University of North Carolina at Asheville,**  
**and Gareth E. Roberts, College of the Holy Cross**  
*Wednesday morning and afternoon*

### CODING AND DESIGN-THEORETIC APPLICATIONS OF POLYNOMIALS

**Donald D. Mills, Southern Illinois University, Carbondale,**  
**Patrick S. Mitchell, Midwestern State University, and Kent**  
**M. Neuberger, Southeastern Louisiana University**  
*Wednesday and Thursday mornings and Wednesday afternoon*

### COMPETITIVE AND ADAPTATIVE DYNAMICS IN ECOLOGY

**Carlos Castillo-Chavez, Los Alamos National Laboratory,**  
**Yang Kuang, Arizona State University, Bai-Lian Li, University**  
**of California, Riverside, and Horst R. Thieme, Arizona State**  
**University**  
*Friday and Saturday mornings and Saturday afternoon*

### CONTINUED FRACTIONS

**James G. McLaughlin and Nancy J. Wyshinski, Trinity College**  
*Friday morning and afternoon*

### CURRENT EVENTS

**David Eisenbud, Mathematical Sciences Research Institute**  
**and University of California, Berkeley**  
*Friday afternoon*

### DISCRETE DYNAMICS AND DIFFERENCE EQUATIONS

**Saber N. Elaydi, Trinity University, Jim M. Cushing,**  
**University of Arizona, Gerasimos Ladas, University of Rhode**  
**Island, and James A. Yorke, University of Maryland,**  
**College Park**  
*Wednesday and Thursday mornings and afternoons*

### FIXED POINTS: THEORY AND APPLICATION

**Robert F. Brown and Mark S. Burgin, University of California**  
**Los Angeles**  
*Thursday and Friday afternoons and Friday morning*

### GEOMETRIC STRUCTURES ON MANIFOLDS

**Tedi C. Draghici, Gueo V. Grantcharov, and Philippe**  
**Rukimbira, Florida International University**  
*Saturday morning and afternoon*

### GEOMETRY AND COMBINATORICS

Michael J. Falk, Northern Arizona University, Eva-Maria Feichtner, ETH Zurich, and Dmitry N. Kozlov, Bern University

*Wednesday morning and Wednesday and Thursday afternoons*

### LOW-DIMENSIONAL TOPOLOGY

Tim D. Cochran, Rice University

*Friday and Saturday mornings and afternoons*

### THE MANY LIVES OF LATTICE THEORY AND THE THEORY OF ORDERED SETS, WITH CONNECTIONS TO COMBINATORICS

Jonathan D. Farley, Massachusetts Institute of Technology, and Stefan E. Schmidt, New Mexico State University

*Wednesday and Thursday mornings and afternoons*

### MATHEMATICAL MODELING IN NEUROSCIENCE, BIOMEDICINE, GENETICS, AND EPIDEMIOLOGY

Steven M. Baer, Arizona State University, Ivo D. Dinov, University of California Los Angeles, and Frank C. Hoppensteadt and Hal L. Smith, Arizona State University

*Thursday morning and Thursday and Friday afternoons*

### MATHEMATICS IN NATURAL RESOURCE MODELING

Catherine A. Roberts, College of the Holy Cross, and Suzanne M. Lenhart, University of Tennessee

*Wednesday morning and afternoon*

### MODERN FUNCTION THEORY

Beth Schaubroeck, U. S. Air Force Academy, Peter L. Duren, University of Michigan, Ann Arbor, and John A. Pfaltzgraff, University of North Carolina at Chapel Hill

*Friday afternoon and Saturday morning*

### MULTISCALE AND OSCILLATORY PHENOMENA: MODELING, NUMERICAL TECHNIQUES, AND APPLICATIONS

Richard Tsai, Princeton University, and Luminita A. Vese, University of California, Los Angeles

*Friday and Saturday mornings and Saturday afternoon*

### NONASSOCIATIVE ALGEBRA

Murray R. Bremner, University of Saskatchewan, Irvin R. Hentzel, Iowa State University, and Luiz A. Peresi, University of Sao Paulo

*Saturday morning and afternoon*

### NONLINEAR PDES AND VARIATIONAL PROBLEMS

David A. Hartenstine, University of Utah, Ahmed Mohammed, Ball State University, John M. Neuberger, Northern Arizona State University, and John W. Neuberger, University of North Texas

*Friday and Saturday mornings and afternoons*

### NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS AND CONFORMAL GEOMETRY

Jie Qing, University of California, Santa Cruz, and Yu Yuan, University of Washington, Seattle

*Wednesday and Thursday mornings and Wednesday afternoon*

### NONSTANDARD METHODS

Matt Insall, University of Missouri at Rolla, Peter A. Loeb, University of Illinois at Urbana-Champaign, and David A. Ross, University of Hawaii

*Wednesday and Thursday afternoons and Thursday morning*

### PARTIAL DIFFERENTIAL EQUATIONS AND APPLICATIONS

Xin Lu, University of North Carolina at Wilmington, Yan-Wei Qi, University of California, Santa Barbara, Weiqing Xie, California State Polytech University, and Hong-Ming Yin, Washington State University

*Thursday morning and afternoon*

### PROBABILITY AND ITS APPLICATIONS IN COMBINATORICS AND ALGORITHMS

Russell D. Lyons, Indiana University, and Yuval Peres, University of California Berkeley

*Wednesday and Thursday mornings and afternoons*

### SMOOTH DYNAMICAL SYSTEMS AND APPLICATIONS

Qiu-dong Wang and Maciej P. Wojtkowski, University of Arizona

*Saturday morning and afternoon*

### THEORY AND APPLICATIONS OF ORTHOGONAL POLYNOMIALS

Mourad E. H. Ismail, University of South Florida, and Barry Simon, California Institute of Technology

*Wednesday and Thursday afternoons and Thursday morning*

### TIME SCALES AND APPLICATIONS

Martin J. Bohner, University of Missouri at Rolla, Billur Kaymakalan, Georgia Southern University, and Allan C. Peterson, University of Nebraska

*Wednesday and Thursday afternoons and Wednesday morning*

### TOPOLOGICAL DYNAMICS AND ERGODIC THEORY

Alica Miller and Joseph Rosenblatt, University of Illinois at Urbana-Champaign

*Thursday and Friday mornings*

### VALUE DISTRIBUTION THEORY IN CLASSICAL AND P-ADIC FUNCTION THEORY

Alain Escassut, Université Blaise Pascal, Ilpo Laine, University of Joensuu, and Chung-Chun Yang, Hong Kong University of Science and Technology

*Saturday morning and afternoon*

## AMS contributed PAPERS

There will be sessions for contributed papers of ten minutes' duration. Contributed papers will be grouped by related Mathematics Subject Classification into sessions insofar as possible. The author(s) and their affiliation(s) and the title of each paper accepted will be listed in the program along with the date and time of presentation. Abstracts will be published in *Abstracts Presented to the American Mathematical Society* and should be submitted electronically. Send a blank message to [abs-submit@ams.org](mailto:abs-submit@ams.org) and type help as the subject to see your electronic options. The deadline for abstracts is October 1, 2003.

## other AMS SESSIONS

### COMMITTEE ON THE PROFESSION PANEL DISCUSSION

Wednesday, 4:30 p.m. to 6:00 p.m.

### WHO WANTS TO BE A MATHEMATICIAN

Organized by Michael A. Breen and Annette W. Emerson, AMS and William T. Butterworth, Barat College of DePaul University

Friday, 10:00 a.m. to 11:00 a.m.

Come watch ten of Phoenix's top high school students as they have the chance to compete for cash and prizes by answering questions about mathematics. There is no partial credit to agonize over, and the top prize is \$2,000. Contestants can ask for help from the audience, so the more people in the audience who know mathematics, the better it is for the contestants. You are invited to come and take part in this educational and fun presentation.

### COMMITTEE ON SCIENCE POLICY PRESENTATION

Friday, 2:30 p.m. to 4:00 p.m.

### COMMITTEE ON EDUCATION PANEL DISCUSSION

Saturday, 8:30 a.m. to 10:00 a.m.



## AMS short COURSE

This two-day course on Trends in Optimization, 2004, organized by Serkan Hosten, San Francisco State University; Jon Lee, IBM; and Rekha Thomas, University of Washington, takes place on Monday and Tuesday, January 5 and 6. Talks include Graphs and combinatorial optimization, Polyhedral methods in optimization, Integer-programming duality, Nonlinear and semidefinite programming, Approximation algorithms, Lattice basis reduction in optimization, and Algebraic methods in optimization. There are separate registration fees to participate. See the fee schedule on the registration form on page 31 of this issue.

## other AMS EVENTS

### COUNCIL MEETING

Tuesday, 1:00 p.m.

### BUSINESS MEETING

Saturday, 11:45 a.m.

The secretary notes the following resolution of the Council: Each person who attends a business meeting of the Society shall be willing and able to identify himself as a member of the Society. In further explanation, it is noted that each person who is to vote at a meeting is thereby identifying himself as and claiming to be a member of the American Mathematical Society. The Society has a Committee on the Agenda for Business Meetings. The purpose is to make business meetings orderly and effective. The committee does not have legal or administrative power. It is intended that the committee consider what may be called "quasipolitical" motions. The committee has several possible courses of action on a proposed motion, including but not restricted to:

- (a) doing nothing,
- (b) conferring with supporters and opponents to arrive at a mutually accepted amended version to be circulated in advance of the meeting,
- (c) recommending and planning a format for debate to suggest to a business meeting,
- (d) recommending referral to a committee, and
- (e) recommending debate followed by referral to a committee.

There is no mechanism that requires automatic submission of a motion to the committee. However, if a motion has not been submitted through the committee, it may be thought reasonable by a business meeting to refer it rather than to act on it without benefit of the advice of the committee.

In order that a motion for this business meeting receive the service offered by the committee in the most effective manner, it should be in the hands of the secretary by December 10, 2003.

# Activities of Other Organizations

Several organizations or special groups are having receptions or other social events. Please see the "Social Events" section of this announcement for details.

## *Association for Symbolic Logic (ASL)*

This two-day program on Friday and Saturday will include sessions of contributed papers and Invited Addresses by: Matt Foreman, University of California Irvine; Steve Jackson, University of North Texas; Byunghan Kim, Massachusetts Institute of Technology; Julia Knight, University of Notre Dame; R.W. Knight, Oxford, UK; Steffen Lempp, University of Wisconsin; Kobi Peterzil, Haifa, Israel; Francoise M. Point, University of Mons-Hainut; and Slawomir Solecki, University of Illinois-Urbana. All titles are to be announced.

## *Association for Women in Mathematics (AWM)*

TWENTY-FOURTH ANNUAL EMMY NOETHER LECTURE  
**Svetlana R. Katok, The Pennsylvania State University**  
**Symbolic dynamics for geodesic flows**  
**Thursday, 9:00 a.m.–9:50 a.m.**

A dinner in honor of the lecturer will be held on Wednesday evening. See the "Social Events" section for details on how to participate.

SUPPORTING THE DIVERSE PERSONAL LIVES  
OF MATHEMATICIANS  
**Organized by Carolyn S. Gordon, Dartmouth College;**  
**Marianne Korten, Kansas State University; Helen Moore,**  
**American Institute of Mathematics Research Conference**  
**Center; and Christina Sormani, Lehman College, CUNY**  
**Wednesday, 3:20 p.m.–4:20 p.m.**

The discussion will address challenges faced by mathematicians in the context of their personal lives: solving lesbian two-body problems, parenting special-needs children, being single in a small college town, and more. Panelists include Beth Bradley, University of Louisville; Dawn A. Lott, New Jersey Institute of Technology; and Elizabeth Stanhope, Willamette University.

At the conclusion of the panel discussion, AWM will recognize the Alice T. Schafer prizewinner, runner-up, and honorable mention honorees. Note that formal prizewinner announcements are made at the Joint Prize Session on Thursday afternoon.

BUSINESS MEETING  
**Wednesday, 4:20 p.m.–4:50 p.m.**

WORKSHOP  
**Saturday, 8:30 a.m.–5:00 p.m.**

With funding from the Office of Naval Research and the National Science Foundation (pending final funding approval), AWM will conduct its workshop for women graduate students

and women who have received the Ph.D. within the last five years.

Twenty women mathematicians have been selected in advance of this workshop to present their research. The selected graduate students will present posters, and the recent Ph.D.'s will give 20-minute talks. Travel funds are provided to the twenty selected presenters. The workshop will also include a panel discussion on issues of career development and a luncheon. 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 entire 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 and the associated meetings. The deadline for applications for presenting and funding has expired. Inquiries regarding future workshops may be made to AWM by telephone: 301-405-7892, by email: [awm@math.umd.edu](mailto:awm@math.umd.edu), or by visiting <http://www.awm-math.org/>. AWM seeks volunteers to lead discussion groups and to act as mentors for workshop participants. If you are interested in volunteering, please contact the AWM office.

RECEPTION  
**Wednesday, 9:30 p.m.–11:00 p.m.**

See the listing in the "Social Events" section of this announcement.

## *London Mathematical Society (LMS)*

On Friday from 3:30 p.m. to 6:30 p.m., there will be a meeting of the Society, an Invited Address, and a reception. All meetings participants are invited to attend.

## *National Association of Mathematicians (NAM)*

GRANVILLE-BROWN-HAYNES SESSION OF PRESENTATIONS BY  
RECENT DOCTORAL RECIPIENTS IN THE MATHEMATICAL  
SCIENCES  
**Friday, 2:15 p.m.–4:00 p.m.**

COX-TALBOT ADDRESS  
To be given Friday after the banquet; speaker and title to be announced.

PANEL DISCUSSION  
**Saturday, 9:00 a.m.–9:50 a.m.**

BUSINESS MEETING  
**Saturday, 10:00 a.m.–10:50 a.m.**

# Activities of Other Organizations

CLAYTOR-WOODARD LECTURE

**Saturday, 1:00 p.m.**

Speaker and title to be announced.

See details about the banquet on Friday in the "Social Events" section.

## National Science Foundation (NSF)

The NSF will be represented at a booth in the exhibit area. NSF staff members will be available to provide counsel and information on NSF programs of interest to mathematicians. The booth is open the same days and hours as the exhibits. Times that staff will be available will be posted at the booth.

## Pi Mu Epsilon (PME)

COUNCIL MEETING

**Friday, 8:00 a.m.–11:00 a.m.**

## Rocky Mountain Mathematics Consortium (RMMC)

BOARD OF DIRECTORS MEETING

**Friday, 2:15 p.m.–4:10 p.m.**

## Society for Industrial & Applied Mathematics (SIAM)

A two-day program on Wednesday and Thursday will include an Invited Address and minisymposia. The Invited Address will be given by Martin Golubitsky, University of Houston, Coupled cell systems: A potpourri of theory and examples, at 11:10 a.m. on Thursday. Minisymposia and the organizers are listed below.

MATHEMATICS EDUCATION

**William Briggs, University of Colorado at Denver, and Terry L. Herdman, Virginia Tech**

DYNAMICS AND STABILITY OF COHERENT STRUCTURES

**Joceline Lega, University of Arizona**

TITLE TO BE ANNOUNCED

**Michael Tabor and Alain I. Goriely, University of Arizona**

APPLIED DYNAMICS

**Eric Kostelich, Arizona State University**

MATHEMATICAL MODELING IN NEUROSCIENCE, BIOMEDICINE, GENETICS AND EPIDEMIOLOGY

**Hal Smith and Frank C. Hoppensteadt, Arizona State University, and Ivo Dinov, University of California, Los Angeles.**

## Young Mathematicians Network (YMN)

CONCERNS OF YOUNG MATHEMATICIANS: A TOWN MEETING

**Organized by Kevin E. Charlwood, Washburn University  
Wednesday, 7:15 p.m.–8:15 p.m.**

This panel discussion will focus on the current primary concerns of young mathematicians, with emphasis on audience participation.

## Ancillary CONFERENCES

AMERICAN STATISTICAL ASSOCIATION (ASA)

A one-day course will be offered January 6 preceding the Joint Mathematics Meetings in Phoenix. Visit the LearnSTAT site at <http://www.amstat.org/education/learnstat.html> for more details as they are developed. Inquiries can be directed to [learnstat@amstat.org](mailto:learnstat@amstat.org).

MATHEMATICS KNOWLEDGE MANAGEMENT (MKM)

**Organized by William Farmer, McMaster University; Michael Kohlhase and Dana Scott, Carnegie Mellon University; and Bernd Wegner, Technische Universität Berlin.**

**Tuesday, 9:00 a.m. to 5:30 p.m.**

The goal of this second North American workshop on MKM is to introduce its principles and to facilitate collaboration between the the North American mathematics community and other researchers in MKM. The workshop will begin with an invited lecture/tutorial and continue with a second invited address and selected contributed talks to introduce participants to the major issues and current research in MKM. There will be ample time for formal and informal discussion. Watch the meeting website at [http://www.ams.org/asmtgs/2078\\_intro.html](http://www.ams.org/asmtgs/2078_intro.html) and follow the links to "Ancillary Conferences" for further session information and how to register.

MATH ON THE WEB

**Wednesday–Saturday, various times**

The problem of communicating Math on the Web is really no different than communicating math via other media. Namely, authoring and displaying mathematical notation is difficult. On top of that, the Web is a dynamic medium, where users can interact with rich media documents in sophisticated ways. This introduces a whole new layer of challenges and possibilities for engaging, interactive communication between authors and readers.

SUMMER PROGRAM FOR WOMEN IN MATHEMATICS (SPWM)

**Organized by Murli Gupta, George Washington University  
Thursday, 2:00 p.m.–4:00 p.m.**

SPWM participants will describe their experiences from past programs.



## Save the Date!

**MathFest 2004  
Providence, RI  
August 12 - 14, 2004**

### **The Annual Summer Meeting of The Mathematical Association of America**

## **NEW From the MAA!**

### **Essential Mathematics**

*Margie Hale*

Every mathematician must make the transition from the calculations of high school to the structural and theoretical approaches of graduate school. **Essentials of Mathematics** provides the knowledge needed to move onto advanced mathematical work, and a glimpse of what being a mathematician might be like. No other book takes this particular holistic approach to the task.

The content is of two types. There is material for a “Transitions” course at the sophomore level; introductions to logic and set theory, discussions of proof writing and proof discovery, and introductions to the number systems (natural, rational, real, and complex). The material is presented in a fashion suitable for a Moore Method course, although such an approach is not necessary. An accompanying Instructor’s Manual provides support for all flavors of teaching styles. In addition to presenting the important results for student proof, each area provides warm-up and follow-up exercises to help students internalize the material.

The second type of content is an introduction to the professional culture of mathematics. There are many things that mathematicians know but weren’t exactly taught. To give college students a sense of the mathematical universe, the book includes narratives on this kind of information. .

The prerequisites for a course based on this book include the content of high school mathematics and a certain level of mathematical maturity. The student must be willing to think on an abstract level. Two semesters of calculus indicates a readiness for this material.

Catalog Code: ELM

**List: \$47.50 MAA Member: \$37.95**

To order call 1-800-331-1622 or visit the MAA’s Online bookstore at <http://www.maa.org>.



It is strongly recommended that for any event requiring a ticket, tickets should be purchased through advance registration. Only a very limited number of tickets, if any, will be available for sale on site. If you must cancel your participation in a ticketed event, you may request a 50% refund by returning your ticket(s) to the Mathematics Meetings Service Bureau (MMSB) by December 30. After that date no refunds can be made. Special meals are available at banquets upon advance request, but this must be indicated on the Advance Registration/Housing Form..

## STUDENT HOSPITALITY CENTER

**Organized by Richard Neal, University of Oklahoma**  
**Wednesday–Friday, 9:00 a.m.–5:00 p.m.,**  
**and Saturday, 9:00 a.m.–3:00 p.m.**

## GRADUATE STUDENT RECEPTION

**Organized by Betty Mayfield, Hood College, and Shawnee McMurran, California State University, San Bernardino.**  
**Wednesday, 5:00 p.m.–6:00 p.m.**

Mathematicians representing a wide range of disciplines will join interested graduate students at an informal reception. Complimentary food and beverages will be served. NOTE: This event is only for students who sign up on the Advance Registration/Housing Form.

## MATHEMATICAL SCIENCES INSTITUTES RECEPTION

**Wednesday, 5:30 p.m.–8:00 p.m.**

## RECEPTION FOR FIRST-TIME PARTICIPANTS

**Wednesday, 6:00 p.m.–7:00 p.m.**

The MAA Committee on Membership and the AMS are cosponsoring this social hour. All participants (especially first-timers) are encouraged to come and meet some old-timers and pick up a few tips on how to survive the environment of a large meeting. Refreshments will be served.

## AWM NOETHER LECTURE DINNER

**Wednesday, 6:00 p.m.–7:00 p.m.**

All participants are invited to a dinner to honor AWM's Noether Lecturer on Wednesday. A sign-up sheet for those interested will be located at the AWM table in the exhibit area and also at the AWM panel discussion.

## AWM RECEPTION

**Wednesday at 9:30 p.m.**

There is an open reception after the AMS Gibbs Lecture. This has been a popular, well-attended event in the past.

## ASSOCIATION OF LESBIAN, GAY, BISEXUAL, AND TRANSGENDERED MATHEMATICIANS RECEPTION

**Thursday, 6:00 p.m.– 8:00 p.m.**

All are welcome to attend this open reception.

## MER BANQUET

**Thursday 6:30 p.m. –8:30 p.m.**

The Mathematicians and Education Reform (MER) Forum welcomes all mathematicians who are interested in precollege, undergraduate, and/or graduate educational reform to attend the MER banquet on Thursday evening. This is an opportunity to make or renew contacts with other mathematicians who are involved in education projects and to engage in lively conversation about educational issues. The after-dinner discussion is an open forum for participants to voice their impressions, observations, and analyses of the current education scene. There will be a cash bar beginning at 6:30 p.m. Dinner will be served at 7:30 p.m. Tickets are \$45 each, including tax and gratuity.

## KNITTING CIRCLE

**Thursday, 8:15 p.m.–9:45 p.m.**

Bring a project (knitting/crochet/tatting/beading/etc.) and chat with other mathematical crafters.

## RECEPTION FOR MATHEMATICIANS IN BUSINESS, INDUSTRY, AND GOVERNMENT

**Organized by Philip E. Gustafson, Mesa State College**

**Friday, 5:00 p.m.–6:00 p.m.**

This welcome reception is open to all conference participants and in particular those interested in the mathematics of business, government, and industry (BIG). The reception will be a great opportunity to interact with BIG mathematicians and learn more about BIG mathematics. The reception is sponsored by the BIG SIGMAA. University of Illinois at Urbana-Champaign Department of Mathematics Reception, Friday 5:15 p.m.–7:15 p.m.

## NEW MEXICO STATE UNIVERSITY MATHEMATICS ASSOCIATION RECEPTION

**Friday, 5:30 p.m.–7:30 p.m.**

All members and friends are invited; there will be a no-host bar available.

## NAM BANQUET

**Friday, 5:30 p.m.–8:00 p.m.**

The National Association of Mathematicians will host a banquet on Friday evening. A cash bar reception will be held at 5:30 p.m., and dinner will be served at 6:00 p.m. Tickets are \$46 each, including tax and gratuity.

## MATHEMATICAL REVIEWS RECEPTION

**Friday, 6:00 p.m.– 7:00 p.m.**

All friends of *Mathematical Reviews* (MR) are invited to join reviewers and MR editors and staff (past and present) for a reception in honor of all the efforts that go into the creation and publication of the *Mathematical Reviews* database. Refreshments will be served.

## MAA PROJECT NEXT RECEPTION

**Friday, 8:30 p.m.–10:30 p.m.**

All MAA Project NExT national and Section NExT Fellows, consultants, and other friends of MAA Project NExT are invited.

## AMS BANQUET

**Saturday evening**

As a fitting culmination to the meetings, the AMS banquet provides an excellent opportunity to socialize with fellow participants in a relaxed atmosphere. The participant who has been a member of the Society for the greatest number of years will be recognized and will receive a special award. The banquet will be held on Saturday, with a cash bar reception at 6:30 p.m. and dinner at 7:30 p.m. Tickets are \$44, including tax and gratuity.

## Book Sales and EXHIBITS

All participants are encouraged to visit the book, education media, and software exhibits from noon to 5:30 p.m. on Wednesday, 10:00 a.m. to 6:00 p.m. on Thursday, 9:30 a.m. to 5:30 p.m. on Friday, and 9:00 a.m. to noon on Saturday. Books published by the MAA and AMS will be sold at discounted prices somewhat below the cost for the same books purchased by mail. These discounts will be available only to registered participants wearing the official meetings badge. Most major credit cards will be accepted for book sale purchases at the meetings. Also, AMS electronic products and the AMS website will be demonstrated. Participants visiting the exhibits will be asked to display their meetings badge in order to enter the exhibit area.

## Mathematical Sciences Employment CENTER

**M**athematical Sciences Employment Center: Those wishing to participate in the Mathematical Sciences Employment Center should read carefully the important article about the center at <http://www.ams.org/emp-reg/>.

## Networking OPPORTUNITIES

There are many opportunities to meet new friends and greet old acquaintances in addition to the vast array of scientific sessions offered at these meetings. These opportunities are listed on the new comers page at [http://www.ams.org/amsmtgs/2078\\_newcomers.html](http://www.ams.org/amsmtgs/2078_newcomers.html). Newcomers may want to investigate the many receptions listed in the “Social Events” section, the Student Hospitality Center, and the Employment Center. On site a Networking Center featuring casual seating and lists of registered participants sorted by school and math subject classification will be available for your perusal. This is a great place to relax between sessions and forge new friendships.





# Advanced Registration

## HOW TO REGISTER IN ADVANCE

The importance of advance registration cannot be overemphasized. Advance registration fees are considerably lower than the fees that will be charged for registration at the meeting. Participants registering by November 7 will receive their badges, programs, and tickets purchased in advance by mail approximately three weeks before the meetings, unless they check the appropriate box to the contrary on the Advance Registration/Housing Form. Because of delays that occur in U.S. mail to Canada, it is strongly suggested that advance registrants from Canada choose to pick up their materials at the meetings. Because of delays that occur in U.S. mail to overseas, materials are never mailed overseas. There will be a special Registration Assistance Desk at the Joint Meetings to assist individuals who either do not receive this mailing or who have a problem with their registration. Please note that a \$5 replacement fee will be charged for programs and badges that are mailed but not taken to Phoenix. Acknowledgments of registrations will be sent by email to the email addresses given on the Advance Registration/Housing Form. If you do not wish your registration acknowledged by email, please mark the appropriate box on the form.

## EMAIL ADVANCE REGISTRATION

This service is available for advance registration and housing arrangements by requesting the forms via email from [meetreg-request@ams.org](mailto:meetreg-request@ams.org) or by visiting [http://www.ams.org/amsmtgs/2078\\_reghsg.html](http://www.ams.org/amsmtgs/2078_reghsg.html). VISA, MasterCard, Discover, and American Express are the only methods of payment which can be accepted for email advance registration, and charges to credit cards will be made in U.S. funds. Completed email forms should be sent to [meetreg-submit@ams.org](mailto:meetreg-submit@ams.org). All advance registrants will receive acknowledgment of payment prior to the meetings.

## INTERNET ADVANCE REGISTRATION

This service is available for advance registration and housing arrangements online at [http://www.ams.org/amsmtgs/2078\\_reghsg.html](http://www.ams.org/amsmtgs/2078_reghsg.html).

VISA, MasterCard, Discover, and American Express are the only methods of payment which are accepted for Internet advance registration, and charges to credit cards will be made in U.S. funds. All Internet advance registrants will receive acknowledgment of payment upon submission of this form.

**Cancellation Policy:** Those who cancel their advance registration for the meetings, MAA Minicourses, or Short Courses by January 10 (the deadline for refunds for banquet tickets is January 2) will receive a 50% refund of fees paid. No refunds will be issued after this date.

## FULL-TIME STUDENTS

Those students currently working toward a degree or diploma. Students are asked to determine whether their status can be

described as graduate (working toward a degree beyond the bachelor's), undergraduate (working toward a bachelor's degree), or high school (working toward a high school diploma) and to mark the Advance Registration/Housing Form accordingly.

## EMERITUS

Any person who has been a member of the MAA or AMS for twenty years or more and who retired because of age or long-term disability from his or her latest position.

## LIBRARIAN

Any librarian who is not a professional mathematician.

## UNEMPLOYED

Any person currently unemployed, actively seeking employment, and not a student. It is not intended to include any person who has voluntarily resigned or retired from his or her latest position.

## DEVELOPING COUNTRY PARTICIPANT

Any person employed in developing countries where salary levels are radically noncommensurate with those in the U.S.

## TEMPORARILY EMPLOYED

Any person currently employed but who will become unemployed by June 1, 2004, and who is actively seeking employment.

## NONMATHEMATICIAN GUEST

Any family member or friend who is not a mathematician and who is accompanied by a participant at the meetings. These official guests will receive a badge and may attend all sessions and the exhibits.

Participants Who Are Not Members of the AMS and register for the meetings as a nonmember will receive mailings after the meetings are over with a special membership offer. Advance registration and on-site registration fees only partially cover the expenses of holding meetings.

All mathematicians who wish to attend sessions are expected to register and should be prepared to show their badges if so requested. Badges are required to enter the exhibit area, to obtain discounts at the MAA and AMS Book Sales, and to cash a check with the Joint Meetings cashier.

Advance registration forms accompanied by insufficient payment will be returned, thereby delaying the processing of any housing request, or a \$5 charge will be assessed if an invoice

## JOINT MATHEMATICS MEETINGS REGISTRATION FEES

	<i>by Dec. 12</i>	<i>at meeting</i>
Member of AMS, ASL, Canadian Mathematical Society, MAA, SIAM	\$193	\$251
Emeritus Member of AMS, MAA; Graduate Student; Unemployed; Librarian; High School Teacher; Developing Countries Special Rate	\$38	\$48
Undergraduate Student	\$20	\$26
Temporarily Employed	\$153	\$176
Nonmember	\$299	\$389
High School Student	\$2	\$5
Nonmathematician Guest	\$10	\$10
One-Day Nonmember	n/a	\$214
One-Day Member of AMS, ASL, CMS, MAA, SIAM	n/a	\$138
MAA Minicourses Minicourses # 1-6 (computers)	\$90	\$90*
<i>(Please note: there is no onsite registration for minicourse #5)</i>		
Minicourses # 7	\$70	\$70*
Minicourses # 8-16	\$60	\$60*
*if space is available		
MAA Short Course		
MAA Member	\$125	\$140
Nonmember	\$175	\$190
Student/Unemployed/Emeritus	\$ 50	\$ 60
AMS Short Course		
Member of AMS or MAA	\$80	\$100
Nonmember	\$110	\$130
Student/Unemployed/Emeritus	\$35	\$50
Employment Center		
Employer (first table)	\$220	\$300
Employer (each additional table, )	\$65	\$100
Employer Posting Fee	\$50	N/A
Applicants (all services)	\$40	\$75
Applicants (Winter List & message center only)	\$20	\$20

must be prepared to collect the delinquent amount. Overpayments of less than \$5 will not be refunded.

For each invalid check or credit card transaction that results in an insufficient payment for registration or housing, a \$5 charge will be assessed. Participants should check with their tax preparers for applicable deductions for education expenses as they pertain to these meetings.

If you wish to be included in a list of individuals sorted by mathematical interest, please provide the one mathematics subject classification number of your major area of interest on the Advance Registration/Housing Form. (A list of these numbers is available by sending an empty email message to [abs-submit@ams.org](mailto:abs-submit@ams.org); include the number 993 as the subject of the message.) Copies of this list will be available for your perusal in the Networking Center.

If you do not wish to be included in any mailing list used for promotional purposes, please indicate this in the appropriate box on the Advance Registration/Housing Form.

## ADVANCE REGISTRATION DEADLINES

There are four separate advance registration deadlines, each with its own advantages and benefits.

### EMPLOYMENT CENTER

Advance registration (inclusion in the Winter Lists)

**October 24**

### EARLY MEETINGS ADVANCE REGISTRATION

(room lottery)

**October 31**

### ORDINARY MEETINGS ADVANCE REGISTRATION

(hotel reservations, materials mailed)

**November 7**

### FINAL MEETINGS ADVANCE REGISTRATION

(advance registration, Short Courses, Employment Center, MAA Minicourses, banquets)

**December 12**

### EMPLOYMENT CENTER ADVANCE REGISTRATION

Applicant and employer forms must be received by October 24 in order to appear in the publications distributed to all participants. For detailed information on the Employment Center, see <http://www.ams.org/emp-reg/>.

**Early Advance Registration:** Those who register by the early deadline of October 31 will be included in a random drawing to select winners of complimentary hotel rooms in Phoenix. Multiple occupancy is permissible. The location of rooms to be used in this lottery will be based on the number of complimentary rooms available in the various hotels. Therefore, the free room may not necessarily be in the winner's first-choice hotel. The winners will be notified by mail prior to December 19. So register early! (See the list of the winners in Baltimore.) Also, applicant and employer forms must be received by October 24 in order to be reproduced in the Winter Lists for the Employment Center.

**Ordinary Advance Registration:** Those who register after October 31 and by the ordinary deadline of November 7 may use the housing services offered by the MMSB but are not eligible for the room lottery. You may also elect to receive your badge and program by mail in advance of the meetings.

**Final Advance Registration:** Those who register after November 7 and by the final deadline of December 12 must pick up their badges, programs, and any tickets for social events at the meetings. Unfortunately, it is not possible to provide final advance registrants with housing. Please note that the December 12 deadline is firm; any forms received after that date will be returned and full refunds issued. Please come to

the registration desk in Hall D of the Phoenix Civic Plaza to register on site.

## HOTEL RESERVATIONS

Participants should be aware that the MAA and AMS contract only with facilities who are working toward being in compliance with the public accommodations requirements of the ADA.

Participants requiring hotel reservations should read the hotel instructions on pages 40-41. Participants who did not reserve a room during advance registration and would like to obtain a room at one of the hotels listed on the following pages should call the hotels directly after December 11. However, after that date the MMSB can no longer guarantee availability of rooms or special convention rates. Participants should be aware that most hotels are starting to charge a penalty fee to guests for departure changes made before or after guests have checked into their rooms. These hotels are indicated on the hotel page at [http://www.ams.org/ams\\_mtgs/2078\\_hotelpage.html](http://www.ams.org/ams_mtgs/2078_hotelpage.html). Participants should also inquire about this at check-in and make their final plans accordingly.

Participants should also be aware that it is general hotel practice in most cities to hold a nonguaranteed reservation until 6:00 p.m. only. When one guarantees a reservation by paying a deposit or submitting a credit card number as a guarantee in advance, however, the hotel usually will honor this reservation up until checkout time the following day. If the individual holding the reservation has not checked in by that time, the room is then released for sale, and the hotel retains the deposit or applies one night's room charge to the credit card number submitted.

If you hold a guaranteed reservation at a hotel but are informed upon arrival that there is no room for you, there are certain things you can request the hotel do. First, they should provide for a room at another hotel in town for that evening at no charge. (You already paid for the first night when you made your deposit.) They should pay for taxi fares to the other hotel that evening and back to the meetings the following morning. They should also pay for one telephone toll call so that you can let people know you are not at the hotel you expected. They should make every effort to find a room for you in their hotel the following day and, if successful, pay your taxi fares to and from the second hotel so that you can pick up your baggage and bring it to the first hotel. Not all hotels in all cities follow this practice, so your request for these services may bring mixed results or none at all.

## AUDIO-VISUAL EQUIPMENT:

Standard equipment in all session rooms is one overhead projector and screen. (Invited 50-minute speakers are automatically provided with two overhead projectors.) Blackboards are not available. Organizers of sessions that by their nature demand additional equipment (e.g., VCR and monitor or projection panel) and where the majority of

# Miscellaneous Information

speakers in the session require this equipment should contact the audio-visual coordinator for the meetings at the AMS office in Providence at 401-455-4140 or by email at [wsd@ams.org](mailto:wsd@ams.org) to obtain the necessary approvals. Individual speakers must consult with the session organizer(s) if additional equipment or services are needed. If your session has no organizer, please contact the audio-visual coordinator directly. All requests should be received by November 4.

Equipment requests made at the meetings most likely will not be granted because of budgetary restrictions. Unfortunately no audio-visual equipment can be provided for committee meetings or other meetings or gatherings not on the scientific program.

## CHILDCARE

Many hotels will provide recommendations for in-room childcare for guests through their concierge or front desks. Call as early as possible for the best service, and at least one day in advance. Arrangements represent a contractual agreement between each individual and the child-care provider. The Joint Meetings assumes no responsibility for the services rendered.

## EMAIL SERVICES

Limited email access for all Joint Meeting participants will be available. The hours of operation will be published in the program.

## INFORMATION DISTRIBUTION

Tables are set up in the exhibit area for dissemination of general information of possible interest to the members and for the dissemination of information of a mathematical nature not promoting a product or program for sale.

If a person or group wishes to display information of a mathematical nature promoting a product or program for sale, they may do so in the exhibit area at the Joint Books, Journals, and Promotional Materials exhibit for a fee of \$58 (posters are slightly higher) per item. Please contact the exhibits manager, MMSB, P.O. Box 6887, Providence, RI 02940, for further details.

The administration of these tables is in the hands of the MAA-AMS Joint Meetings Committee, as are all arrangements for Joint Mathematics Meetings.

## LOCAL INFORMATION

See <http://www.visitphoenix.com> for information about the city.

## PETITION TABLE

At the request of the AMS Committee on Human Rights of Mathematicians, a table will be made available in the exhibit area at which petitions on behalf of named individual mathematicians suffering from human rights violations may be displayed and signed by meetings participants acting in their individual capacities. For details contact the director of meetings in the Providence office at 401-455-4137 or by email at [dms@ams.org](mailto:dms@ams.org).

Signs of moderate size may be displayed at the table but must not represent that the case of the individual in question is backed by the Committee on Human Rights unless it has, in fact, so voted. Volunteers may be present at the table to provide information on individual cases, but notice must be sent at least seven days in advance of the meetings to the director of meetings in the Providence office. Since space is limited, it may also be necessary to limit the number of volunteers present at the table at any one time. The Committee on Human Rights may delegate a person to be present at the table at any or all times, taking precedence over other volunteers.

Any material that is not a petition (e.g., advertisements, resumes) will be removed by the staff. At the end of the exhibits on Saturday, any material on the table will be discarded, so individuals placing petitions on the table should be sure to remove them prior to the close of exhibits.

## TELEPHONE MESSAGES

The most convenient method for leaving a message is to do so with the participant's hotel. Another method would be to leave a message at the meetings registration desk from January 7 through 10 during the hours that the desk is open. These messages will be posted on the Math Meetings Message Board; however, staff at the desk will try to locate a participant in the event of a bona fide emergency. The telephone number will be published in the program.

## DISCOUNTED AIR TRAVEL

Phoenix is on Standard Time. The Phoenix Sky Harbor International Airport (PHX) is located in the middle of the greater Phoenix Metropolitan area and is served by all major airlines.

**Official airlines for the meetings are Southwest Airlines and United Airlines.** Given the volatility in airfares because of "fare wars", we cannot guarantee that these will be the lowest fares when you make your arrangements. However, we strongly urge participants to make use of this special deal if at all possible, since the MAA and AMS can earn complimentary tickets. These tickets are used to send meetings' staff (not officers or other staff) to the Joint Mathematics Meetings, thereby keeping the costs of the meetings (and registration fees) down.

The following specially negotiated rates are available only for these meetings and exclusively to mathematicians and their families for the period January 1–14, 2004. Other restrictions/discounts may apply, and seats are limited.

**Southwest Airlines** is offering a 10% discount on most of its already low fares for air travel to and from the event. You or your travel agent may call Southwest Airlines Group and Meetings Reservations at 1-800-433-5368 and reference the ID Code Q0158. Reservations sales agents are available 7:00 a.m.–8:00 p.m. Monday–Friday; or 8:30 a.m.–5:30 p.m. Saturday and Sunday, Central Standard Time.

# Miscellaneous Information

**United Airlines** offers a 5% discount off any United or United Express published fare, including First Class, in effect when tickets are published, subject to all applicable restrictions. Applicable BUA, or like, fares earn 10% discount with seven-day advance purchase. An additional 5% discount is applicable when tickets are issued 30 days prior to travel.

For reservations call (or have your travel agent call) Meeting Plus Reservation Center toll free at 1-800-521-4041 between 8:00 a.m. and 10:00 p.m. Eastern Time. Refer to **Meeting Plus ID Code 514ZM**.

**Ground Transportation from the Airport:** SuperShuttle, operates 24 hours a day on a time-scheduled basis and offers airport-to-door service. Vans usually depart every 15 minutes from 9:00 a.m. to 9:00 p.m., but with lesser frequency from 9:00 p.m. to 9:00 a.m. Fares are charged on a flat rate to each sector of geographic area. Check rates on the outside of the vehicle or contact SuperShuttle at 602-244-9000 for reservations and prices.

## DISCOUNTED CAR RENTAL

**Avis Rent-A-Car** is the official car rental company for the meeting. All car rentals include unlimited free mileage and are available to renters 25 years and older. *Avis offers special convention rental rates effective January 4-17, 2004:*

Car Type	Daily	Weekly	Weekend/Daily
Subcompact	\$40.00	\$165.00	\$26.00
Compact	\$44.00	\$176.00	\$27.00
Intermediate	\$48.00	\$192.00	\$29.00
Full-Size 2-Door	\$49.00	\$203.00	\$30.00
Full-Size 4-Door	\$52.00	\$214.00	\$31.00
Premium	\$55.00	\$225.00	\$34.00
Luxury	\$87.00	\$385.00	\$80.00
Minivan	\$87.00	\$385.00	\$80.00
Convertible	\$87.00	\$385.00	\$80.00
Sport Utility	\$87.00	\$385.00	\$80.00

Should a lower qualifying rate become available, Avis is pleased to present a 5% discount off the lower qualifying rate or the meeting rate, whichever is lowest. Rates do not include any state or local surcharges, tax, optional coverages, or gas refueling charges. Renters must meet Avis's age, driver, and credit requirements. Reservations can be made by calling 800-331-1600; cite group **ID number J098887**. Reservations can also be made online at [www.avis.com](http://www.avis.com).

## WEATHER

The temperature ranges from about 43°F. to 65°F. Average precipitation in January is .83 inches. Visit your favorite weather site for up-to-the-minute forecasts, or see <http://asp.usatoday.com/weather/CityForecast.aspx?LocationID=USAZ0166&ps=L1>.

## Join us in England for the MAA's 2nd Annual Mathematical Study Tour May 20 - June 3, 2004

Our tour begins on the afternoon of your arrival in London with afternoon tea and getting acquainted with your traveling companions. Strolling through the streets of London and learning about ancient mathematics while visiting the British Museum and the Science Museum gets us off to a great start. We will contemplate astronomy, ancient and modern, a visit to Stonehenge and a boat cruise up the Thames to the Greenwich Observatory. Bletchley Park, a destination, is where Alan Turing and others broke the German Enigma code. Then on to Oxford, the site of one of the oldest and most distinguished universities in the world. Imagine walking in Hardy's footsteps beneath the majestic spires. We will visit with our colleagues at the university and dine in Oxford's ancient halls. The curator of the Museum of the History of Science will give us a private tour. In Cambridge we will peruse the renowned Wren Library and Fitzwilliam Museum. A Sir Isaac Newton Day will trace his life and accomplishments from his birth in Woolsthorpe through his fellowship at Trinity College. At the Whipple Mu-

seum we will be treated to a talk on the history of science. Talks on Hardy, Littlewood, Russell, Whitehead, and Wittgenstein are just some of the many possibilities to be followed by a delightful interlude of punting on the Cam. After a stop for a lecture on the magnificent Ely Cathedral, our journey continues back to London to appreciate the architectural wonder of St. Paul's Cathedral and visit the Royal Society of England. All this and much more plus time for exploring, shopping, and pursuing your own interests. **Full detail**, itinerary, and pricing will be available on October 1, 2003 on MAA Online (<http://www.maa.org>).

*Number of travelers is limited to 30.*

### Contact information:

Lisa Kolbe [lkolbe@maa.org](mailto:lkolbe@maa.org)  
Paul Wolfson [pwolfson2@juno.com](mailto:pwolfson2@juno.com)

Registration Form-2 pages  
of Film Enclosed for this  
page

Registraton Form-film enclosed

# Schedule of Events

## MONDAY JANUARY 5, 2004

- 9:00 a.m.-5:00 p.m. MAA Short Course  
The History of Mathematical Technologies
- 9:00 a.m.-5:00 p.m. AMS Short Course  
Trends in Optimization, 2004

## TUESDAY JANUARY 6, 2004

- 8:30 a.m.-4:00 p.m. MAA Board of Governors
- 9:00 a.m.-5:00 p.m. MAA Short Course  
The History of Mathematical Technologies
- 9:00 a.m.-5:00 p.m. AMS Short Course  
Trends in Optimization, 2004
- 1:00 p.m.-10:00 p.m. AMS Council
- 3:00 p.m.-7:00 p.m. Joint Meetings Registration

## WEDNESDAY JANUARY 7, 2004

- 7:30 a.m.-4:00 p.m. Joint Meetings Registration
- 7:30 a.m.-5:00 p.m. Employment Center
- 8:00 a.m.-10:50 a.m. MAA-AMS-MER Special Session  
Mathematics and Education Reform, I
- 8:00 a.m.-10:50 a.m. AMS-ASL Special Session  
Infinite Combinatorics and Inner Model Theory, I
- AMS SPECIAL SESSIONS**
- 8:00 a.m.-10:50 a.m. Celestial Mechanics, I
- 8:00 a.m.-10:50 a.m. Mathematics in Natural Resource Modeling, I
- 8:00 a.m.-10:50 a.m. Probability and Its Applications in Combinatorics and Algorithms, I
- 8:00 a.m.-10:50 a.m. Discrete Dynamics and Difference Equations, I
- 8:00 a.m.-10:50 a.m. Time Scales and Applications, I
- 8:00 a.m.-10:50 a.m. The Many Lives of Lattice Theory and the Theory of Ordered Sets, With Connections to Combinatorics, I
- 8:00 a.m.-10:50 a.m. Coding and Design-Theoretic Applications of Polynomials, I
- 8:00 a.m.-10:50 a.m. Geometry and Combinatorics, I
- 8:00 a.m.-10:50 a.m. Nonlinear Partial Differential Equations and Conformal Geometry, I
- 8:00 a.m.-10:50 a.m. AMS Sessions for Contributed Papers

### MAA CONTRIBUTED PAPER SESSIONS

- 8:00 a.m.-10:55 a.m. Teaching a History of Mathematics Course
- 8:00 a.m.-10:55 a.m. Teaching Operations Research in the Undergraduate Classroom
- 8:00 a.m.-10:55 a.m. Uses of the WWW that Enrich and Promote Learning, I

- 8:00 a.m.-10:55 a.m. Mathematical Experiences for Students Outside the Classroom
- 8:00 a.m.-10:55 a.m. SIAM Minisymposia
- 9:00 a.m.-10:20 a.m. MAA Subcommittee on Curriculum Renewal Across the First Two Years Panel Discussion  
Open Discussion on Beginning Level Courses
- 9:00 a.m.-11:00 a.m. MAA Minicourse #12: Part A  
Incorporating Discrete Mathematics in the Preparation of K-12 Mathematics Teachers
- 9:00 a.m.-11:00 a.m. MAA Minicourse #1: Part A  
Designing and Evaluating Assessments for Introductory Statistics
- 9:00 a.m.-11:00 a.m. MAA Minicourse #7: Part A  
Origami in Undergraduate Mathematics Courses
- 10:05 a.m.-10:55 a.m. AMS Invited Address  
Michael Aschbacher  
The Status of the Classification of the Finite Simple Groups
- 11:10 a.m.-12:00 p.m. MAA-AMS Invited Address  
Stephen Wolfram  
Title to be announced
- 12:00 p.m.-5:30 p.m. Exhibits and Book Sales
- 1:00 p.m.-2:00 p.m. AMS Colloquium Lectures: Lecture I  
Sun-Yang Alice Chang  
Conformal Invariants and Partial Differential Equations, Part I
- 2:15 p.m.-3:05 p.m. **MAA INVITED ADDRESS**  
**Neil A.J. Sloane**  
The On-line Encyclopedia of Integer Sequences, or, Confessions of a Sequence Addict
- 2:15 p.m.-3:35 p.m. Panel Session  
Service Learning in Mathematics: They Wrote the Book
- 2:15 p.m.-3:35 p.m. MAA CUPM Subcommittee on Quantitative Literacy Requirements Panel Discussion  
Quantitative Literacy Across the Curriculum
- 2:15 p.m.-4:15 p.m. MAA Minicourse #13: Part A  
The Fibonacci and Catalan Numbers
- 2:15 p.m.-4:15 p.m. MAA Minicourse #2: Part A  
Hands-on Discrete Math With Technology
- 2:15 p.m.-4:15 p.m. MAA Minicourse #8: Part A  
Some Mathematics of Leonhard Euler
- 2:15 p.m.-5:00 p.m. Math on the Web
- 2:15 p.m.-6:00 p.m. SIAM Minisymposia
- 2:30 p.m.-4:00 p.m. MAA Project Next Panel Discussion  
Writing Textbooks in Mathematics



# Schedule of Events

## WEDNESDAY JANUARY 7 CONTINUED

- 2:30 p.m.-5:00 p.m. MAA Section Officers
- 3:20 p.m.-4:10 p.m. **MAA INVITED ADDRESS**  
**William W. Dunham**  
Selections from the Calculus Museum
- 3:20 p.m.-4:20 p.m. AWM Panel Discussion  
Supporting the Diverse Personal Lives  
of Mathematicians
- 3:45 p.m.-5:05 p.m. MAA-CUPM -CRAFTY Panel Discussion  
The Impact of Laptop Computers on  
Classroom Instruction
- 4:20 p.m.-4:50 p.m. AWM Business Meeting

### AMS SPECIAL SESSIONS

- 2:15 p.m.-6:05 p.m. Celestial Mechanics, II
- 2:15 p.m.-6:05 p.m. Mathematics in Natural Resource Modeling, II
- 2:15 p.m.-6:05 p.m. Probability and Its Applications in  
Combinatorics and Algorithms, II
- 2:15 p.m.-6:05 p.m. Discrete Dynamics and Difference Equations, II
- 2:15 p.m.-6:05 p.m. Time Scales and Applications, II
- 2:15 p.m.-6:05 p.m. Theory and Applications of Orthogonal  
Polynomials, I
- 2:15 p.m.-6:05 p.m. The Many Lives of Lattice Theory and the  
Theory of Ordered Sets, With Connections to  
Combinatorics, II
- 2:15 p.m.-6:05 p.m. Coding and Design-Theoretic Applications of  
Polynomials, II
- 2:15 p.m.-6:05 p.m. Geometry and Combinatorics, II
- 2:15 p.m.-6:05 p.m. Nonlinear Partial Differential Equations  
and Conformal Geometry, II
- 2:15 p.m.-6:05 p.m. Nonstandard Methods, I

### MAA CONTRIBUTED PAPER SESSIONS

- 2:15 p.m.-6:00 p.m. Courses Below Calculus: A New Focus, I
- 2:15 p.m.-6:00 p.m. Getting Students to Discuss and Write  
About Mathematics
- 2:15 p.m.-6:00 p.m. The Effective Use of Computer Algebra  
Systems in the Teaching of Mathematics
- 2:15 p.m.-6:00 p.m. General Contributed Paper Session, I
- 4:30 p.m.-6:30 p.m. MAA Minicourse #14: Part A  
Introduction to Mathematical Card Tricks
- 4:30 p.m.-6:30 p.m. MAA Minicourse #3: Part A  
Computation and Discovery in the  
Number Theory Classroom
- 4:30 p.m.-6:30 p.m. MAA Minicourse #9: Part A  
PMET: Preparing Mathematicians to  
Educate Teachers, Grades 7-12

- 4:30 p.m.-6:00 p.m. AMS Committee on the Profession  
Panel Discussion
- 5:00 p.m.-6:00 p.m. Graduate Student Reception
- 5:30 p.m.-8:00 p.m. Mathematical Sciences Institutes Reception
- 6:00 p.m.-8:00 p.m. History of Mathematics (HOM) SIGMAA  
Annual Meeting and Inaugural Address
- 6:00 p.m.-7:00 p.m. Reception for First-Time Participants
- 7:15 p.m.-8:15 p.m. Young Mathematicians Network Town Meeting
- 8:30 p.m.-9:30 p.m. AMS Josiah Willard Gibbs Lecture  
**Eric Lander**  
Title to be announced
- 9:30 p.m.-11:00 p.m. AWM Reception

## THURSDAY JANUARY 8, 2004

- 7:00 a.m.-7:00 p.m. Employment Center
- 7:30 a.m.-4:00 p.m. Joint Meetings Registration
- 8:00 a.m.-10:00 a.m. MAA Minicourse #4: Part A  
Java Applets in Teaching Mathematics
- 8:00 a.m.-11:50 a.m. MAA-AMS-SIAM Special Session  
Research in Mathematics by Undergraduates, I
- 8:00 a.m.-11:50 a.m. MAA-AMS-MER Special Session  
Mathematics and Education Reform, III
- 8:00 a.m.-11:50 a.m. AMS-ASL Special Session  
Infinite Combinatorics and Inner  
Model Theory, III

### AMS SPECIAL SESSIONS

- 8:00 a.m.-11:50 a.m. Probability and Its Applications in  
Combinatorics and Algorithms, III
- 8:00 a.m.-11:50 a.m. Mathematical Modeling in Neuroscience,  
Biomedicine, Genetics, and Epidemiology, I
- 8:00 a.m.-11:50 a.m. Discrete Dynamics and Difference  
Equations, III
- 8:00 a.m.-11:50 a.m. Partial Differential Equations and  
Applications, I
- 8:00 a.m.-11:50 a.m. Theory and Applications of Orthogonal  
Polynomials, II
- 8:00 a.m.-11:50 a.m. Topological Dynamics and Ergodic Theory, I
- 8:00 a.m.-11:50 a.m. The Many Lives of Lattice Theory and the  
Theory of Ordered Sets, with Connections to  
Combinatorics, III
- 8:00 a.m.-11:50 a.m. Coding and Design-Theoretic Applications of  
Polynomials, III
- 8:00 a.m.-11:50 a.m. Nonlinear Partial Differential Equations  
and Conformal Geometry, III

8:00 a.m.-11:50 a.m.	Nonstandard Methods, II	11:10 a.m.-12:00 p.m.	SIAM Invited Address <b>Martin Golubitsky</b> Coupled Cell Systems: A Potpourri of Theory and Examples
<b>MAA CONTRIBUTED PAPER SESSIONS</b>			
8:00 a.m.-12:00 p.m.	Courses Below Calculus: A New Focus, II	1:00 p.m.-2:00 p.m.	AMS Colloquium Lectures: Lecture II <b>Sun-Yang Alice Chang</b> Conformal Invariants and Partial Differential Equations, II
8:00 a.m.-12:00 p.m.	Placement Strategies	1:00p.m.-2:20 p.m.	MAA Panel Discussion Mathematics Education in a Research Department: What Makes it Work?
8:00 a.m.-12:00 p.m.	Chaotic Dynamics and Fractal Geometry	1:00 p.m.-2:30 p.m.	MAA Panel Discussion Successful Activities for a Math Club
8:00 a.m.-12:00 p.m.	Truth in Using the History of Mathematics in Teaching Mathematics	1:00 p.m.-2:30 p.m.	MAA Project NExT Panel Discussion Technology and the Mathematics Major
8:00 a.m.-12:00 p.m.	SIAM Minisymposia	1:00 p.m.-3:00 p.m.	MAA Minicourse #11: Part A Developing Your Department's Assessment Plan
9:00 a.m.-9:50 a.m.	AWM Emmy Noether Lecture <b>Svetlana R. Katok</b> Symbolic Dynamics for Geodesic Flows	1:00 p.m.-3:00 p.m.	MAA Minicourse #16: Part A Getting Students Involved in Undergraduate Research
9:00 a.m.-10:20 a.m.	MAA Project Next Panel Discussion Mentoring New Faculty	1:00 p.m.-3:50 p.m.	MAA-AMS-SIAM Special Session Research in Mathematics by Undergraduates, II
9:00 a.m.-10:20 a.m.	MAA-CUPM -CRAFTY Panel Discussion The Impact of Technology in Calculus Courses on Long-Term Student Performance and Employment	1:00 p.m.-3:50 p.m.	MAA-AMS-MER Special Session Mathematics and Education Reform, IV
9:00 a.m.-10:20 a.m.	MAA Special Presentation National Science Foundation Programs Supporting Learning and Teaching in the Mathematical Sciences	1:00 p.m.-3:50 p.m.	AMS-AWM Special Session Coding, Geometry, and Hyperbolic Dynamics, I
9:00 a.m.-10:20 a.m.	MAA Committee on Minority Participation Panel Discussion Strengthening Underrepresented Minority Mathematics Participation (SUMMA)	1:30 p.m.-3:30 p.m.	MAA Minicourse #6: Part A Using Interactive Labs to Explore Abstract Algebra Topics
9:00 a.m.-11:00 a.m.	MAA Minicourse #10: Part A Teaching Linear Algebra With Applications	<b>AMS SPECIAL SESSIONS</b>	
9:00 a.m.-11:00 a.m.	MAA Minicourse #15: Part A Fair Enough? Mathematics of Equity	1:00 p.m.-3:50 p.m.	Probability and Its Applications in Combinatorics and Algorithms, IV
10:00 a.m.-6:00 p.m.	Exhibits and Book Sales	1:00 p.m.-3:50 p.m.	Mathematical Modeling in Neuroscience, Biomedicine, Genetics, and Epidemiology, II
10:05 a.m.-10:55 a.m.	<b>MAA INVITED ADDRESS</b> <b>Manjul Bhargava</b> Title to be announced	1:00 p.m.-3:50 p.m.	Discrete Dynamics and Difference Equations, IV
10:15 a.m.-12:15 p.m.	MAA MINICOURSE #5: PART A Visual Linear Algebra	1:00 p.m.-3:50 p.m.	Time Scales and Applications, III
10:30 a.m.-5:00 p.m.	Math on the Web	1:00 p.m.-3:50 p.m.	Partial Differential Equations and Applications, II
10:45 a.m.-12:05 p.m.	MAA Project Next and the Young Mathematicians Network Panel Discussion Finding Your Next Job	1:00 p.m.-3:50 p.m.	Theory and Applications of Orthogonal Polynomials, III
10:45 a.m.-12:05 p.m.	MAA Committee on the Undergraduate Program in Mathematics Panel Discussion Undergraduate Programs and Courses in the Mathematical Sciences: A CUPM Curriculum Guide	1:00 p.m.-3:50 p.m.	The Many Lives of Lattice Theory and the Theory of Ordered Sets, with Connections to Combinatorics, IV
10:45 a.m.-12:05 p.m.	MAA-CUPM-CRAFTY Panel Discussion Assessment in a Refocused College Algebra Program	1:00 p.m.-3:50 p.m.	Geometry and Combinatorics, III

# Schedule of Events

## THURSDAY JANUARY 8 CONTINUED

- 1:00 p.m.-3:50 p.m. Fixed Points: Theory and Application, I  
 1:00 p.m.-3:50 p.m. Nonstandard Methods, III  
 1:00 p.m.-4:00 p.m. MAA Invited Paper Session  
 WeBWork, A Web Based Homework System

### MAA CONTRIBUTED PAPER SESSIONS

- 1:00 p.m.-4:10 p.m. Innovations in Teaching Discrete Mathematics  
 1:00 p.m.-4:10 p.m. Initiating and Sustaining Undergraduate Research Projects and Programs  
 1:00 p.m.-4:10 p.m. Mathlets for Teaching and Learning Mathematics  
 1:00 p.m.-4:10 p.m. General Contributed Paper Session, II  
 1:00 p.m.-4:10 p.m. SIAM Minisymposia  
 2:00 p.m.-4:00 p.m. MAA Project Next-Young Mathematicians Network Poster Session  
 2:00 p.m.-4:00 p.m. Summer Program for Women in Mathematics (SPWM)  
 2:15 p.m.-3:05 p.m. AMS Invited Address  
**Eva Tardos**  
 Title to be announced  
 2:40 p.m.-4:00 p.m. MAA SIGMAA on Statistics Education Panel Discussion  
 The Undergraduate Mathematical Statistics Sequence  
 2:40 p.m.-4:00 p.m. MAA SIGMAA on the History of Mathematics Panel Discussion  
 The History of Applications in Teaching Undergraduate Mathematics: 1950-2000  
 3:20 p.m.-4:10 p.m. AMS Retiring Presidential Address  
**Hyman Bass**  
 Title to be announced  
 4:25 p.m.-6:30 p.m. MAA-AMS Joint Prize Session and Reception  
 5:45 p.m.-7:15 p.m. MAA Panel Discussion  
 Web SIGMAA Panel Discussion and Inaugural Business Meeting  
 6:00 p.m.-8:00 p.m. Association of Gay, Lesbian, Bisexual and Transgendered Mathematicians Reception  
 6:30 p.m.-9:30 p.m. MER Banquet  
 8:15 p.m.-9:45 p.m. Knitting Network

## FRIDAY JANUARY 9, 2004

- 7:00 a.m.-8:00 a.m. PME and MAA Student Chapter Advisors' Breakfast  
 7:00 a.m.-7:30 p.m. Employment Center  
 7:30 a.m.-4:00 p.m. Joint Meetings Registration  
 8:00 a.m.-10:50 a.m. MAA-AMS-SIAM Special Session  
 Research in Mathematics by Undergraduates, III  
 8:00 a.m.-10:50 a.m. MAA-AMS Special Session  
 Mathematical Techniques in Musical Analysis, I  
 8:00 a.m.-10:50 a.m. MAA-AMS Special Session  
 History of Mathematics, I  
 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session  
 Classical and Nonlinear Special Functions, I  
 8:00 a.m.-10:50 a.m. AMS-AWM Special Session  
 Coding, Geometry, and Hyperbolic Dynamics, II

### AMS SPECIAL SESSIONS

- 8:00 a.m.-10:50 a.m. Competitive and Adaptive Dynamics in Ecology, I  
 8:00 a.m.-10:50 a.m. Multiscale and Oscillatory Phenomena: Modeling, Numerical Techniques, and Applications, I  
 8:00 a.m.-10:50 a.m. Continued Fractions, I  
 8:00 a.m.-10:50 a.m. Topological Dynamics and Ergodic Theory, II  
 8:00 a.m.-10:50 a.m. Fixed Points: Theory and Application, II  
 8:00 a.m.-10:50 a.m. Nonlinear PDEs and Variational Problems, I  
 8:00 a.m.-10:50 a.m. Low-Dimensional Topology, I

### MAA CONTRIBUTED PAPER SESSIONS

- 8:00 a.m.-10:55 a.m. Statistics Education Discourse on Inference  
 8:00 a.m.-10:55 a.m. Math and the Arts  
 8:00 a.m.-10:55 a.m. Applications of Mathematics in Computer Science  
 8:00 a.m.-10:55 a.m. Mathematics Experiences in Business, Industry, and Government  
 8:00 a.m.-10:55 a.m. MAA General Contributed Paper Session, III  
 8:00 a.m.-10:55 a.m. ASL Invited Addresses and Contributed Papers  
 8:00 a.m.-11:00 a.m. PME Council  
 9:00 a.m.-9:50 a.m. AMS Invited Address  
**James A. Yorke**  
 Properties of "almost every"  $C^1$  Image of Compact Sets  
 9:00 a.m.-10:20 a.m. MAA Special Presentation  
 Proposal Writing Workshop for Grant Applications to the NSF Division of Undergraduate Education

9:00 a.m.-10:20 a.m.	MAA Panel Discussion Preparing Mathematicians to Educate Teachers	1:00 p.m.-3:00 p.m.	MAA Minicourse #13: Part B The Fibonacci and Catalan Numbers
9:00 a.m.-10:30 a.m.	MAA Project NexT Panel Discussion Writing Expository Mathematics	1:00 p.m.-3:00 p.m.	MAA Minicourse #2: Part B Hands-On Discrete Math With Technology
9:00 a.m.-11:00 a.m.	MAA Poster Session on Projects Supported by the NSF Assessment of Student Learning in Under- graduate Mathematics: Works in Progress	1:00 p.m.-3:00 p.m.	MAA Minicourse #8: Part B Some Mathematics of Leonhard Euler
9:00 a.m.-11:00 a.m.	Mathematics for Business Decisions	1:00 p.m.-3:00 p.m.	MAA Poster Session on Projects Supported by the NSF Division of Undergraduate Education
9:00 a.m.-11:00 a.m.	MAA Minicourse #12: Part B Incorporating Discrete Mathematics in the Preparation of K-12 Mathematics Teachers	1:00 p.m.-5:50 p.m.	<b>AMS SPECIAL SESSIONS</b> Mathematical Modeling in Neuroscience, Biomedicine, Genetics, and Epidemiology, III
9:00 a.m.-11:00 a.m.	MAA Minicourse #1: Part B Designing and Evaluating Assessments for Introductory Statistics	1:00 p.m.-5:50 p.m.	Current Events
9:00 a.m.-11:00 a.m.	MAA Minicourse #7: Part B Origami in Undergraduate Mathematics Courses	1:00 p.m.-5:50 p.m.	Continued Fractions, II
9:30 a.m.-5:30 p.m.	Exhibits and Book Sales	1:00 p.m.-5:50 p.m.	Modern Function Theory, I
10:00 a.m.-11:00 a.m.	AMS Special Presentation Who Wants to be a Mathematician?	1:00 p.m.-5:50 p.m.	Arithmetical Algebraic Geometry, I
10:00 a.m.-5:00 p.m.	Math on the Web	1:00 p.m.-5:50 p.m.	Fixed Points: Theory and Application, III
10:05 a.m.-10:55 a.m.	AMS Invited Address <b>Gregory F. Lawler</b> Random Planar Curves and Conformal Invariance	1:00 p.m.-5:50 p.m.	Nonlinear PDEs and Variational Problems, II
11:10 a.m.-12:00 p.m.	MAA-AMS Invited Address <b>Bonnie Berger</b> Title to be announced	1:00 p.m.-5:50 p.m.	Low-Dimensional Topology, II
1:00 p.m.-1:50 p.m.	MAA Student Lecture <b>Mark M. Meerschaert</b> Fractional Calculus With Applications	<b>MAA CONTRIBUTED PAPER SESSIONS</b> 1:00 p.m.-3:30 p.m.	Teaching and Learning of Undergraduate Mathematics, I
1:00 p.m.-2:00 p.m.	AMS Colloquium Lectures: Lecture III <b>Sun-Yang Alice Chang</b> Conformal Invariants and Partial Differential Equations, Part III	1:00 p.m.-3:30 p.m.	My Favorite Demo: Innovative Strategies for Mathematical Instructors, I
1:00 p.m.-5:50 p.m.	MAA-AMS-SIAM Special Session Research in Mathematics by Undergraduates, IV	1:00 p.m.-3:30 p.m.	Mathematical Models of the Environment
1:00 p.m.-5:50 p.m.	MAA-AMS Special Session The History of Mathematics, II	1:00 p.m.-2:20 p.m.	MAA Panel Discussion Voices of the Partner Disciplines: Building on the MAA Curriculum Foundations Project
1:00 a.m.-5:50 p.m.	AMS-SIAM Special Session Classical and Nonlinear Special Functions, II	1:00 p.m.-2:20 p.m.	MAA Panel Discussion Session for Chairs: The Chair's Role in Teaching Teachers
1:00 a.m.-5:50 p.m.	AMS-AWM Special Session Coding, Geometry, and Hyperbolic Dynamics, III	1:00 p.m.-3:00 p.m.	Mathematics for Business Decisions
1:00 p.m.-6:00 p.m.	MAA-AMS Special Session Mathematical Techniques in Musical Analysis, II	1:00 p.m.-5:00 p.m.	ASL Invited Addresses and Contributed Paper Sessions
		2:00 p.m.-6:30 p.m.	MAA Session Philosophy of Mathematics
		2:15 p.m.-4:00 p.m.	NAM Granville-Brown-Haynes Session Presentations by Recent Doctoral Recipients in the Mathematical Sciences
		2:15 p.m.-4:10 p.m.	RMMC Board of Directors
		2:30 p.m.-4:00 p.m.	Presentations by MAA Teaching Award Recipients
		2:30 p.m.-4:00 p.m.	AMS Committee on Science Policy Panel Discussion

# Schedule of Events

## FRIDAY JANUARY 9 CONTINUED

- 2:30 p.m.-5:30 p.m. MAA Invited Paper Session  
Assessment of Student Learning in Undergraduate Mathematics
- 2:30 p.m.-5:30 p.m. MAA Invited Paper Session  
The Use of Hand-Held Technology in College and University Developmental Algebra Classrooms
- 3:15 p.m.-5:15 p.m. MAA Minicourse #3: Part B  
Computation and Discovery in the Number Theory Classroom
- 3:15 p.m.-5:15 p.m. MAA Minicourse #9: Part B  
PMET: Preparing Mathematicians to Educate Teachers, Grades 7-12
- 3:30 p.m.-6:30 p.m. London Mathematical Society
- 4:00 p.m.-6:00 p.m. SIGMAA on Research on Undergraduate Mathematics Education  
Business Meeting and Invited Address
- 4:00 p.m.-6:30 p.m. MAA Committee on Undergraduate Student Activities and Chapters Undergraduate Poster Session
- 4:15 p.m.-6:00 p.m. MAA Special Presentation  
CINEMATH: Mathematics on the Silver Screen
- 4:20 p.m.-5:10 p.m. MAA Science Policy-AMS Committee on Science Policy Committee Government Speaker
- 4:30 p.m.-6:30 p.m. MAA Minicourse #14: Part B  
Introduction to Mathematical Card Tricks
- 5:00 p.m.-6:00 p.m. MAA BIG SIGMAA Reception  
Welcome Reception for Mathematicians in Business, Industry, and Government
- 5:00 p.m.-7:00 p.m. Mathematics for Business Decisions
- 5:15 p.m.-7:15 p.m. University of Illinois at Urbana-Champaign  
Department of Mathematics Reception
- 5:30 p.m.-7:30 p.m. New Mexico State University Mathematics Association Reception
- 5:30 p.m.-9:00 p.m. NAM Reception, Banquet, and Cox-Talbot Address
- 6:00 p.m.-7:00 p.m. *Mathematical Reviews* Reception
- 8:30 p.m.-10:30 p.m. MAA Project NEXt Reception

- 9:00 a.m.-11:00 a.m. MAA Minicourse #10: Part B  
Turning a Nonscience or Developmental Course Into a Capstone Mathematical Experience
- 9:00 a.m.-11:00 a.m. MAA Minicourse #15: Part B  
Real Fun Exploring Basic Mathematics
- 9:00 a.m.-11:00 a.m. MAA Minicourse #4: Part B  
Visual Linear Algebra

### AMS SPECIAL SESSIONS

- 8:00 a.m.-10:50 a.m. Nonassociative Algebra, I
- 8:00 a.m.-10:50 a.m. Competitive and Adaptative Dynamics in Ecology, II
- 8:00 a.m.-10:50 a.m. Multiscale and Oscillatory Phenomena: Modeling, Numerical Techniques, and Applications, II
- 8:00 a.m.-10:50 a.m. Modern Function Theory, II
- 8:00 a.m.-10:50 a.m. Smooth Dynamical Systems and Applications, I
- 8:00 a.m.-10:50 a.m. Geometric Structures on Manifolds, I
- 8:00 a.m.-10:50 a.m. Arithmetical Algebraic Geometry, II
- 8:00 a.m.-10:50 a.m. Value Distribution Theory in Classical and p-adic Function Theory, I
- 8:00 a.m.-10:50 a.m. Nonlinear PDEs and Variational Problems, III
- 8:00 a.m.-10:50 a.m. Low-Dimensional Topology, III

### MAA CONTRIBUTED PAPER SESSIONS

- 8:00 a.m.-10:55 a.m. Teaching and Learning of Undergraduate Mathematics, II
- 8:00 a.m.-10:55 a.m. My Favorite Demo: Innovative Strategies for Mathematics Instructors, II
- 8:00 a.m.-10:55 a.m. Focus on Integrating Graphic Handhelds into Collegiate Mathematics
- 8:00 a.m.-10:55 a.m. Mathematics and Sports
- 8:00 a.m.-10:55 a.m. General Contributed Paper Session, IV
- 8:00 a.m.-10:55 a.m. ASL Invited Addresses and Contributed Papers
- 8:30 a.m.-10:00 a.m. AMS Committee on Education Panel Discussion
- 8:30 a.m.-5:00 p.m. AWM Workshop Posters and Talks

## SATURDAY JANUARY 10, 2004

- 7:30 a.m.-2:00 p.m. Joint Meetings Registration
- 8:00 a.m.-10:50 a.m. MAA-AMS Special Session  
The History of Mathematics, III
- 8:00 a.m.-10:50 a.m. AMS-SIAM Special Session  
Classical and Nonlinear Special Functions, III

- 9:00 a.m.-9:50 a.m. **MAA INVITED ADDRESS**  
**Erica L. Flappan**  
When Topology Meets Chemistry
- 9:00 a.m.-10:00 a.m. NAM Panel Discussion
- 9:00 a.m.-10:20 a.m. MAA Panel Discussion  
Mathematicians and Mathematics Teacher Educators Working Together to Improve K-12 Mathematics Education

9:00 a.m.-10:20 a.m.	MAA Panel Discussion Doctorates in Mathematics Education: Where Do They Go? What Do They Do? How Can Mathematics Departments Contribute?	1:00 p.m.-5:50 p.m.	Smooth Dynamical Systems and Applications, II
9:00 a.m.-10:20 a.m.	MAA-AMS Committee on Teaching Assistants and Part-Time Instructors Panel Discussion Nonpermanent Instructors: Implications and Issues	1:00 p.m.-5:50 p.m.	Geometric Structures on Manifolds, II
9:00 a.m.-11:00 a.m.	MAA Minicourse #10: Part B Teaching Linear Algebra With Applications	1:00 p.m.-5:50 p.m.	Arithmetical Algebraic Geometry, III
9:00 a.m.-11:00 a.m.	MAA Minicourse #15: Part B Fair Enough? Mathematics of Equity	1:00 p.m.-5:50 p.m.	Value Distribution Theory in Classical and p-adic Function Theory, II
9:00 a.m.-11:00 a.m.	MAA Minicourse #4: Part B Java Applets in Teaching Mathematics	1:00 p.m.-5:50 p.m.	Nonlinear PDEs and Variational Problems, IV
9:00 a.m.-12:00 p.m.	Employment Center	1:00 p.m.-5:50 p.m.	Low-Dimensional Topology, IV
9:30 a.m.-12:00 p.m.	Exhibits and Book Sales	<b>MAA CONTRIBUTED PAPER SESSIONS</b>	
10:00 a.m.-10:50 a.m.	NAM Business Meeting	1:00 p.m.-5:30 p.m.	Uses of the WWW that Enrich and Promote Learning, II
10:00 a.m.-12:00 p.m.	Math on the Web	1:00 p.m.-5:30 p.m.	Technology in Mathematics Teacher Preparation Courses
10:05 a.m.-10:50 a.m.	<b>MAA RETIRING PRESIDENTIAL ADDRESS</b> <b>Ann E. Watkins</b> Fallacies in Elementary Statistics	1:00 p.m.-5:30 p.m.	Strategies that Work to Positively Change Student Attitudes Toward Mathematics
11:10 a.m.-11:40 a.m.	MAA Business Meeting	1:00 p.m.-5:30 p.m.	General Contributed Paper Session, V
11:45 a.m.-12:15 p.m.	AMS Business Meeting	1:00 p.m.-2:20 p.m.	MAA-CUPM-CRAFTY Panel Discussion What Are Colleges Doing With Students With AP Placement?
1:00 p.m.-1:50 p.m.	NAM Claytor-Woodard Lecture	1:00 p.m.-2:20 p.m.	MAA Special Presentation Oral Presentations: Let's Talk About It!
1:00 p.m.-5:50 p.m.	MAA-AMS Special Session The History of Mathematics, IV	1:00 p.m.-2:20 p.m.	MAA Panel Discussion What Can You Do With a Degree in Mathematics?
1:00 p.m.-6:00 p.m.	MAA-AMS Special Session Mathematical Techniques in Musical Analysis, III	1:00 p.m.-4:00 p.m.	MAA Invited Paper Session Applications of topology to Biology, Chemistry, and Physics
1:00 p.m.-3:00 p.m.	MAA Minicourse #11: Part B Developing Your Department's Assessment Plan	1:00 p.m.-5:00 p.m.	ASL Invited Addresses and Contributed Paper Sessions
1:00 p.m.-3:00 p.m.	MAA Minicourse #16: Part B Getting Students Involved in Undergraduate Research	2:30 p.m.-3:30 p.m.	MAA Panel Discussion Revisiting Crossroads: Continuing the Dialogue on Two-Year College Mathematics
1:00 p.m.-3:00 p.m.	MAA Minicourse #5: Part B Visual Linear Algebra	2:45 p.m.-4:05 p.m.	MAA-CUPM-CRAFTY How to Implement Curriculum Change
<b>AMS SPECIAL SESSIONS</b>		2:45 p.m.-4:45 p.m.	MAA Special Presentation Informal Session on Actuarial Education
1:00 p.m.-5:50 p.m.	Nonassociative Algebra, II	3:15 p.m.-5:15 p.m.	MAA Minicourse #6: Part B Using Interactive Labs to Explore Abstract Algebra Topics
1:00 p.m.-5:50 p.m.	Competitive and Adaptative Dynamics in Ecology, III	4:15 p.m.-5:35 p.m.	MAA-CUPM-CRAFTY How to Assess Problem Solving
1:00 p.m.-5:50 p.m.	Multiscale and Oscillatory Phenomena: Modeling, Numerical Techniques, and Applications, III	6:30 p.m.-10:00 p.m.	AMS Banquet
1:00 p.m.-5:50 p.m.	Modern Function Theory, III		

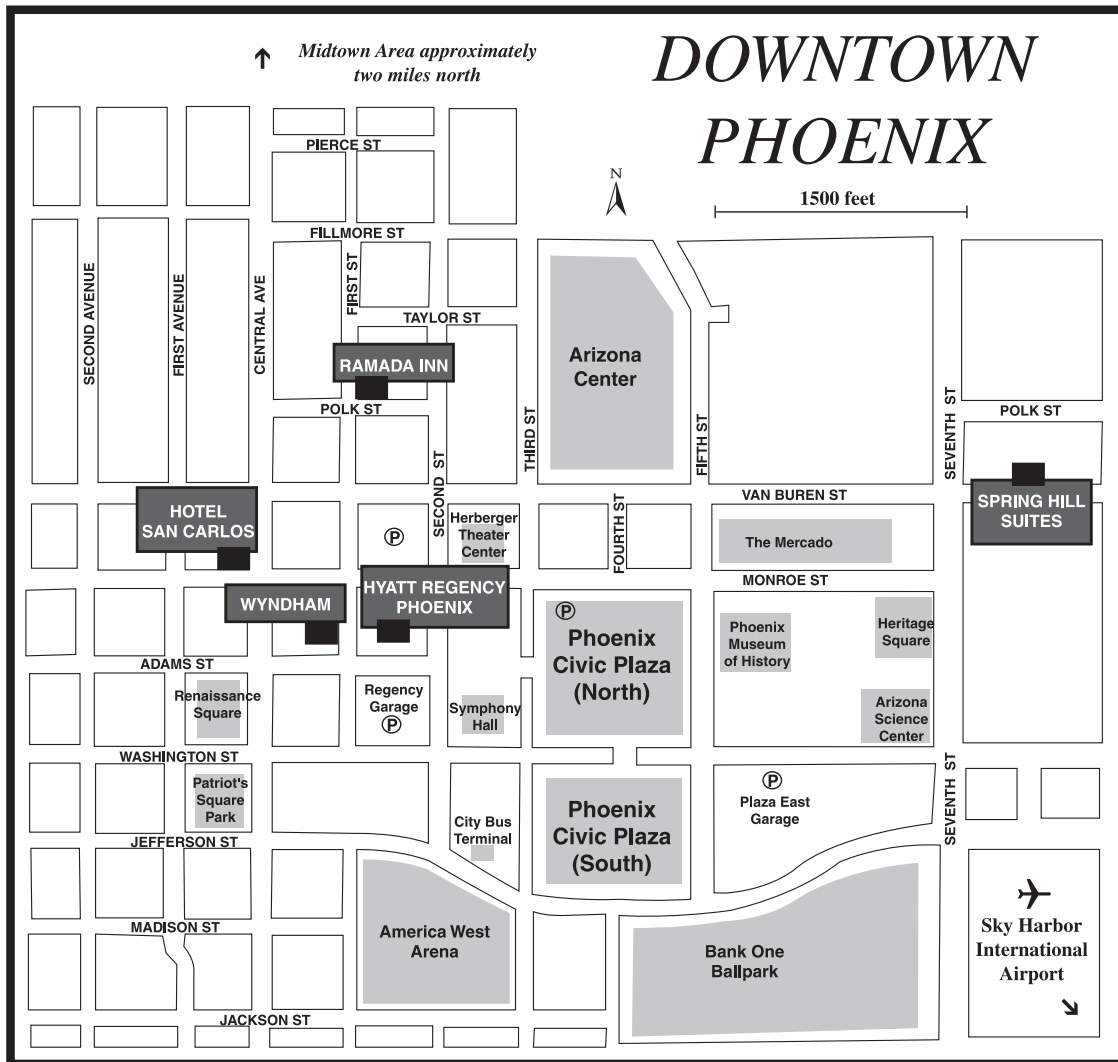
# How to Obtain Hotel Accommodations

<p><b>Room Lottery:</b> (See the <i>How to Register in Advance</i> section to learn how to qualify for this year's room lottery.) Last year's winners were Pat Allaire, Chenes Blayneh, Kevin Chartwood, Orin Chein, Hugh Edgar, George Gasper, Stanley Gurak, John Harris, Morris Kaika, Peter Loth, Katherine Mawhinney, Megan McKinney, Andrew Miller, Chihiro Oshima, Judith Packer, Joseph Palen, Amelia Taylor, and Dave Trummel.</p>	<p><b>General Instructions:</b> Participants must register in advance in order to obtain hotel accommodations through the Mathematics Meetings Service Bureau (MMSB). Special meeting rates have been negotiated at the following hotels. These rates apply exclusively to reservations made through the MMSB. Hotels will start accepting reservations directly after <b>December 15</b>, at which time rooms and rates will be based on availability. A <b>higher rate will be applied to any rooms reserved directly with any of the hotels before December 16</b>.</p> <p><b>To make a reservation</b>, please submit a completed housing section of the Advance Registration/Housing (ARH) Form (paper or electronic) with a guarantee by <b>November 7</b>. <b>Sorry, reservations cannot be taken by phone.</b> Participants interested in reserving suites should contact the MMSB for further information.</p>	<p><b>Deadlines:</b></p> <ul style="list-style-type: none"> <li>• Room lottery qualification: <b>October 31, 2003</b></li> <li>• Reservations through MMSB: <b>November 7, 2003</b></li> <li>• Changes/cancellations through MMSB: <b>December 1, 2003</b></li> </ul>			
<p><b>Rates:</b></p> <ul style="list-style-type: none"> <li>• Subject to 12.07% state tax</li> <li>• Only certified students or unemployed mathematicians qualify for student rates.</li> <li>• See ARH Form for detailed rate structure of each property.</li> </ul>	<p><b>General Information:</b></p> <ul style="list-style-type: none"> <li>• Check-in: 4:00 p.m./checkout: noon – Wyndham, Sunshine, and Ramada (For all others, check-in is at 3:00 p.m., checkout is noon, with the exception of the Wellesley Inn &amp; Suites whose check-in is 2:00 p.m.)</li> <li>• <b>Windows do not open</b> in rooms unless otherwise indicated.</li> <li>• Children at different ages are free in existing beds only.</li> <li>• Limited availability of cribs, free of charge</li> <li>• All hotels (with the exception of Wellesley Inn &amp; Suites who have no policy) have a limited environmental policy regarding linens where all requests for a limited change of linens will be honored.</li> <li>• Distance from hotel to Phoenix Civic Plaza is indicated in each listing.</li> <li>• Shuttle service is provided for some hotels.</li> <li>• All hotels are in acceptable compliance with ADA except for the Hotel San Carlos. It is a historic property and is not wheelchair accessible. All hotels have TTYs/TDDs; text telephones on the premises.</li> </ul>	<p><b>Guarantee Requirements/Cancellation Policy:</b></p> <ul style="list-style-type: none"> <li>• One night deposit by check, or</li> <li>• Credit cards accepted: VISA, MC, AMEX, and Diners (cards may be charged one night deposit). See Wyndham Hotel.</li> <li>• <b>72-hour cancellation policy:</b> Hampton, Wyndham, Sunshine, Ramada, SpringHill</li> <li>• <b>48-hour cancellation policy:</b> San Carlos, Hilton Garden</li> <li>• <b>24-hour cancellation policy:</b> Holiday Inn, Hyatt</li> <li>• <b>6:00 p.m. day of arrival cancellation policy:</b> Wellesley</li> <li>• <b>Please note that some hotels enforce early departure penalties.</b></li> </ul>			
<p><b>Hyatt Regency Phoenix (headquarters)</b> (1 block)</p> <p>122 North Second Street Phoenix, AZ 85004-2379 (602) 252-1234 Regular—\$152 single/double Student—\$130 single/double</p> <p>Restaurants; Lounge; Health club; Outdoor heated pool; Sauna; Gift shop; Parking \$18 (valet), \$14 (self); All rooms have full amenities including 2-line phones; Children under 18 years free; <b>All changes to departure dates must be made 24 hours before arrival to avoid a penalty charge.</b></p>	<p><b>Wyndham (formerly Crowne Plaza)</b> (2 blocks)</p> <p>50 East Adams Phoenix, AZ 85004 (602) 333-0000 Regular—\$145 single/double Student—\$130 single/double</p> <p>Restaurants; Lounge; Fitness center; Outdoor heated pool; Parking \$10 (self); All rooms have full amenities including high speed internet capability, 2-line modems, and windows that open; Children under 18 years free; <b>Hotel will charge one night deposit at time of booking; All changes to departure dates must be made 72 hours before arrival to avoid a penalty charge.</b></p>	<p><b>Hotel San Carlos</b> (3 blocks)</p> <p>202 North Central Avenue Phoenix, AZ 85004 (602) 253-4121 \$129 single/double</p> <p>Restaurants; Gourmet coffee shop; Gift shop; Rooftop outdoor pool; Parking \$5 (self); All rooms have full amenities including data ports, internet access capability, and some windows that open; Children under 17 years free; <b>Changes to departure dates after check-in will be subject to a penalty charge.</b></p>	<p><b>Ramada Inn-Downtown Phoenix</b> (3 blocks)</p> <p>401 North First Street Phoenix, AZ 85004 (602) 258-3411 Regular—\$129 single/double Student—\$119 single/double</p> <p>Restaurant; Lounge; Outdoor heated pool; Gift shop; Free parking; All rooms have full amenities including data ports and internet access capability; Rooms have a patio or balcony; Children under 18 years free; <b>Changes to departure dates after check-in will be subject to a penalty charge.</b></p>	<p><b>SpringHill Suites</b> (3 blocks—shuttle service provided)</p> <p>802 East Vanburen Street Phoenix, AZ 85006 (602) 307-9929 Regular—\$129 single/double Student—\$119 single/double</p> <p>Complimentary continental breakfast; Fitness room; Whirlpool; Outdoor pool; Free parking; All rooms are suites and have full amenities including mini refrigerators, microwaves, two phone lines, data ports, and windows that open; Extra person no charge</p>	<p><b>Hampton Inn Phoenix/Midtown</b> (2 miles—shuttle service provided)</p> <p>160 West Catalina Drive Phoenix, AZ 85013 (602) 200-0990 \$109 single/\$119 double</p> <p>Complimentary deluxe continental breakfast; Fitness center; Outdoor pool; Whirlpool; Free parking; All rooms have full amenities including 2-line phones, refrigerators, microwaves, data ports, and windows that open; Children under 18 years free; IHOP 1/2 mile away</p>
		<p style="text-align: right;"><b>Continued →</b></p>			

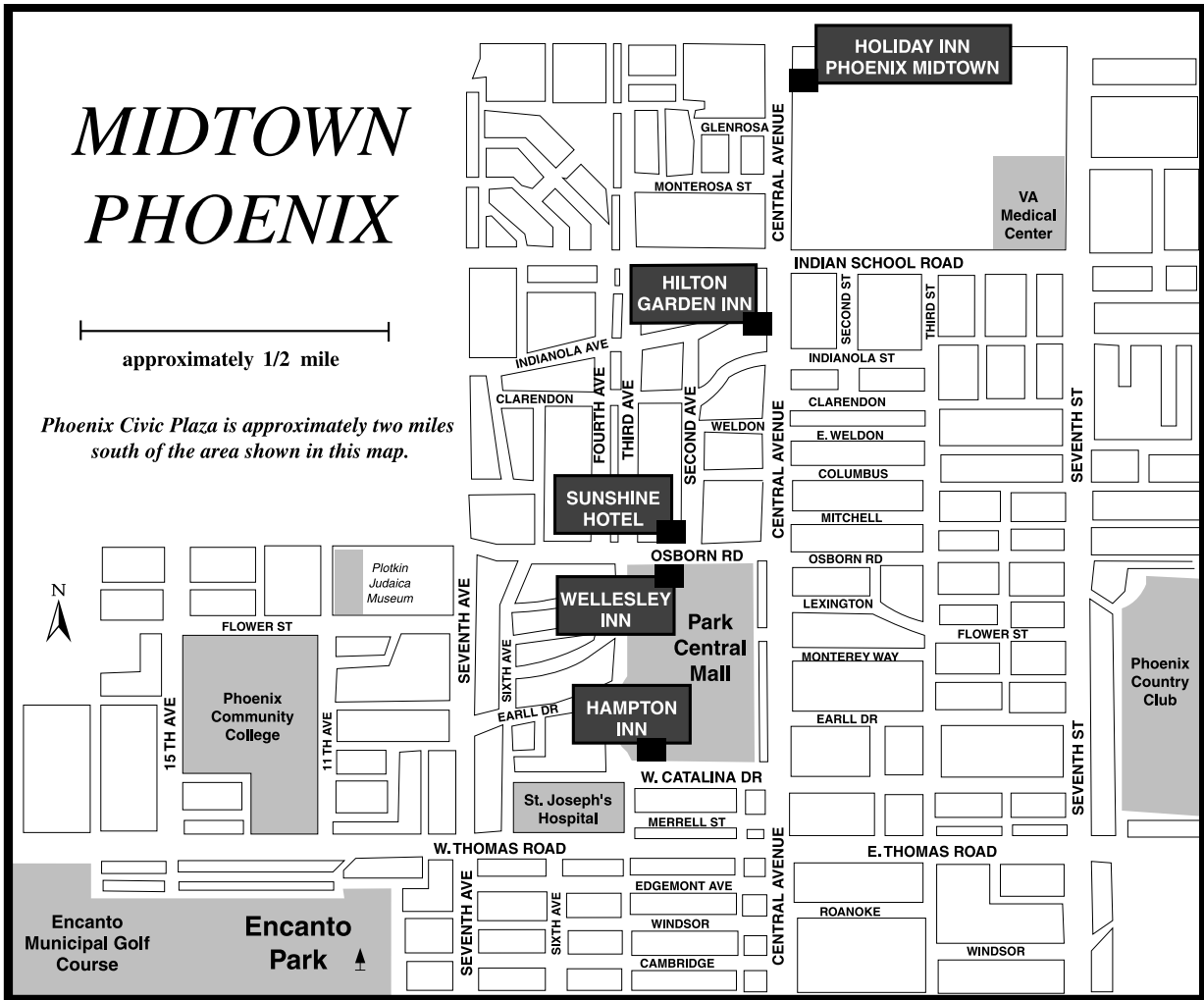
<p><b>Hilton Garden Inn Phoenix/Midtown</b> (3 miles—shuttle service provided)</p> <p>4000 North Central Avenue Phoenix, AZ 85012 (602) 279-9811 \$99 single/double</p> <p>Restaurant; Lobby bar; Fitness center; Whirlpool; Outdoor pool; Free parking; All rooms have full amenities including data ports, free high speed internet access, and windows that open; Children under 18 years free; <b>Changes to departure dates after check-in will be subject to a penalty charge.</b></p>	<p><b>Holiday Inn Phoenix/Midtown</b> (3.5 miles—shuttle service provided)</p> <p>4321 North Central Avenue Phoenix, AZ 85012 (602) 200-8888 \$95 single/double</p> <p>Restaurant; Fitness center; Outdoor pool; Jacuzzi; Free parking; All rooms have full amenities including data ports, high speed internet access and some windows that open (upper floors only); Rooms on ground floor have microwaves and refrigerators; Children under 18 years free</p>	<p><b>Wellesley Inn &amp; Suites Midtown</b> (3 miles—shuttle service provided)</p> <p>217 West Osborn Road Phoenix, AZ 85013 (602) 279-9000 \$89 studio/\$99 suite</p> <p>Free continental breakfast; Fitness center; Outdoor pool; Free parking; All rooms are suites and have all amenities including fully equipped kitchens, 2 phone lines, and data ports; Children under 18 years free</p>	<p><b>Sunshine Hotel &amp; Suites</b> (3 miles—shuttle service provided)</p> <p>3600 North Second Avenue Phoenix, AZ 85013 (602) 248-0222 \$89.95 single/double</p> <p>Restaurant; Fitness center; Outdoor pool; Free parking; All rooms have full amenities including data ports and windows that open; Children under 18 years free</p>	<p><b>Attention Students</b></p> <p>As an alternative housing choice, <b>Hostelling International-Phoenix</b> is located downtown on Ninth Street between Portland and Roosevelt. It is approximately 1.5 miles (20-minute walk) from the Civic Plaza.</p> <p>\$12 - \$14/day 1026 Ninth Street Phoenix, AZ 85006 (602) 254-9803</p> <p>Please call directly for further information and reservations.</p>
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# Map-Downtown Phoenix



# Map-Midtown Phoenix



## MIDTOWN PHOENIX

approximately 1/2 mile

Phoenix Civic Plaza is approximately two miles south of the area shown in this map.



# Employment Opportunities

## ARIZONA

### THE UNIVERSITY OF ARIZONA DEPARTMENT OF MATHEMATICS TUCSON, AZ

The Department of Mathematics is seeking applications for tenure-track positions at either the Assistant, Associate or Full Professor level, which will begin in Fall 2004. By the time of appointment, candidates are expected to have a Ph.D. and excellent research record or potential, as well as a strong commitment to teaching. Rank and salary depend on the qualifications of the selected candidate(s).

The Department may also have postdoctoral or visiting positions for the 2004-2005 academic year (Ph.D. required).

Further information about the full range of the Department's research and educational activities may be found at <http://www.math.arizona.edu>.

Application review begins October 1, 2003 and continues as long as positions remain unfilled. Applications received before October 1, 2003 will receive the fullest consideration; applications received after January 2, 2004 are unlikely to be considered.

Please send a letter of interest (specifying position(s) applied for), an AMS Cover Sheet (which can be downloaded from <http://www.ams.org/coversheet>), a curriculum vitae with a list of publications, a statement of research interests, a statement of teaching experiences/philosophy and a minimum of three (3) letters of recommendation (enclose or arrange to be sent) to:

Personnel Committee  
Department of Mathematics  
University of Arizona  
P.O. BOX 210089  
Tucson, Arizona 85721-0089

The University of Arizona is an EEO/AA Employer-M/W/D/V

## CALIFORNIA

### PITZER COLLEGE Mathematics—Assistant Professor Tenure Track

Pitzer College, an Affirmative Action/Equal Opportunity Employer, seeks a mathematician with Ph.D., in any specialty, to strengthen our mathematics program for majors and liberal arts students alike. We prefer applications received by November 14, 2003. For further information and application instructions, see <http://www.pitzer.edu/offices/mathjob.asp>

## MASSACHUSETTS

### BENTLEY COLLEGE Department of Mathematical Sciences

The Bentley College Mathematical Sciences Department anticipates at least one tenure-track position starting in fall 2004. Candidates must possess an earned doctorate in a mathematical discipline prior to the start of employment. Those with doctoral specialties that lend themselves to interdisciplinary research and curriculum initiatives are especially encouraged to apply. We expect one appointment will be in the area of statistics. Excellence in teaching both introductory and elective courses, as well as strong research potential is essential. Experience integrating technology in a mathematical sciences curriculum is also highly desirable.

Bentley is a business university with a dynamic and expanding arts and sciences program. As an Equal Opportunity Employer, Bentley strives to build strength through diversity.

Interested candidates should send a resume and arrange to have three letters of reference sent to:

Dr. Lucy Kimball  
Chair, Search Committee  
Department of Mathematical Sciences  
Bentley College  
175 Forest Street  
Waltham, Ma. 02452-4705  
(781) 891-2702; email: [lkimball@bentley.edu](mailto:lkimball@bentley.edu)

For best consideration all materials should be received by November 28, 2003. Electronic applications will not be accepted.

Preliminary interviews will be conducted at the AMS/MAA Joint Meetings in Phoenix in January 2004. Please inform us if you plan to attend this conference.

## NEW HAMPSHIRE

### DARTMOUTH COLLEGE John Wesley Young Research Instructorship

The John Wesley Young Instructorship is a post-doctoral two-year appointment intended for promising Ph.D. graduates with strong interests in both research and teaching and whose research interests overlap a department member's. Current research areas include algebra, analysis, combinatorics, geometry, logic and set theory, number theory, probability, and topology. Instructors teach four ten-week courses distributed over three terms, though one of these terms in residence may be free of teaching. The assignments normally include introductory, advanced undergraduate, and graduate courses.

Instructors usually teach at least one course in their own specialty. Nine-month salary of \$44,676.00 supplemented each year by summer research stipend of \$9,928.00 for Instructors in residence for two months in summer. To be eligible for a 2004-2006 Instructorship, candidate must be able to complete all requirements for the Ph.D. degree before September, 2004. Applicants should get a copy of the application information and the required response-form at <http://www.math.dartmouth.edu/recruiting/>. Or, submit a letter of application, curriculum vitae, graduate school transcript, thesis abstract, statement of research plans and interests, and at least three, preferably four, letters of recommendation to Donna Black, Department of Mathematics, Dartmouth College, 6188 Bradley Hall, Hanover, New Hampshire 03755-3551. At least one referee should write about applicant's ability; at least two referees should write about applicant's research ability. Applications received by January 5, 2004 receive first consideration; applications will be accepted until position is filled.

Dartmouth College is committed to diversity and strongly encourages applications from women and minorities.

#### **DARTMOUTH COLLEGE**

The Department of Mathematics anticipates a tenure-track opening with initial appointment in the 2004-2005 academic year. The position is for an Assistant Professor in Applied Mathematics who has practical experience in statistical techniques and methods. Various applied projects in the department are currently funded by NSF, NIH, and DoD. Active collaborations with computer science, the medical and engineering schools, and programs in cognitive neuroscience exist. Collaborations and/or appointments in Dartmouth's M.D./Ph.D. program, as well as Dartmouth's Institute for Secure Technologies Studies, are also possible.

Candidates with several years of experience should be able to give evidence of a research program that has achieved peer-recognition and which promises future research leadership in the mathematical community. Candidates who do not have this level of experience must have demonstrated the potential for future mathematical research leadership in their Ph.D. work. In exceptional circumstances, an appointment to a higher level may be possible.

Candidates for the position must be committed to outstanding teaching and interaction with students at all levels of undergraduate and graduate study, and must demonstrate an exceptional potential for research. Candidates should have demonstrated practical experience in statistical techniques and methods and be eager to take responsibility for the department's statistics offerings.

To create an atmosphere supportive of research, Dartmouth offers new faculty members grants for research-related expenses, a quarter of sabbatical leave for each three academic years in residence and flexible scheduling of teaching responsibilities. The teaching responsibility in mathematics is two courses per quarter for two ten-week quarters or one course for each of two quarters and two courses for one quarter. The combination of committed colleagues and bright, responsive students encourages excellence in teaching at all levels.

To apply, get a copy of the application information and the required response-form at <http://www.math.dartmouth.edu/recruiting/>. Or, send a letter of application, curriculum vitae, and a brief statement of research results and interests, and arrange for four letters of reference, at least one of which specifically addresses teaching, to be sent to Donna Black, Recruiting Secretary, Department of Mathematics, Dartmouth College, 6188 Bradley Hall, Hanover, New Hampshire 03755-3551. Applications received by January 5, 2004 will receive first consideration.

Dartmouth College is committed to diversity and strongly encourages applications from women and minorities. Inquiries about the progress of the selection process may be directed to Dan Rockmore, Recruiting Chair.

#### **NEW YORK**

##### **CORNELL UNIVERSITY**

The Cornell University Department of Mathematics invites applications for our Teaching Program Visiting Faculty Positions beginning August 16, 2004. Two or more half-time visiting positions (any rank) for mathematics professors on sabbatical/other leaves from colleges, universities, and engineering schools. Candidates with substantial experience teaching undergraduate mathematics, and with teaching and research interests compatible with current faculty, are sought. Successful candidates are expected to pursue a program of study and/or research at Cornell. For information about these positions and application instructions, see: <http://www.math.cornell.edu/Positions/facpositions.html> Deadline December 1, 2003. Cornell University is an Affirmative Action/Equal Opportunity Employer.

#### **OREGON**

##### **UNIVERSITY OF OREGON Department of Mathematics**

Applications are invited for tenure-track Assistant or Associate Professor positions in all areas of pure and applied mathematic statistics and mathematics education. Qualifications are a Ph.D. in the mathematical sciences, an excellent record of research accomplishment, and evidence of teaching ability. See <http://darkwing.uoregon.edu/~math/employment.html>

Competitive salary with excellent fringe benefits. Mail complete vita and at least three letters of recommendation to Search Committee, 1222 Department of Mathematics, University of Oregon, Eugene, OR 97403-1222. Application materials may NOT be submitted electronically.

Closing date is January 5, 2004. Women and minorities are encouraged to apply. The University of Oregon is an EO/AA/ADA Institution committed to diversity.

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